

FINDING A BASIC INTERPRETIVE UNIT THROUGH THE HUMAN VISUAL PERCEPTION
AND COGNITION – A COMPARISON BETWEEN FILMMAKERS AND AUDIENCES

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ABSTRACT

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The analysis method and paradigm of film have become a controversial topic in the data-driven era. Film, is not only an attractive industry that can achieve filmmakers' imagination but has become a perfect stimulus to understand human being's mental activity. The core research in this study is to examine the impact of filmmaking experience and the role of narrative denoters from filmmakers' construction to audiences' interpretation. Based on previous studies and integrating cognitive approaches, the thesis re-explores the nature and essence of film and proposes an alternative term - narrative denoter - which can be used as the indication of message exchanging between filmmakers and audiences. Using a released film that has a complete story to do the experiment, this study investigates the relationship between major, film interpretations, event segmentation, and audience's preference. The result showed that filmmaking experience does not impact the interpretation of film; however the identification of the narrative denoter played an important role in film perception and cognition; apart from these, the audience's preference did not correlate with film interpretation. With respect to this result, the narrative denoter can be indicator to demonstrate the message transitions from filmmaker to audience. Suggestions were made for future cognitive film studies on using the narrative denoters as a new analysis unit.

Keywords: Film Cognition; Film Perception; Narrative Denoter; Audience Preference;

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CHAPTER I. INTRODUCTION

Film has been seen as the witness of history, culture, and technology which reflect people's lives and social development since it was invented. Scholars used to explore film from the philosophy and theology perspectives. However, the film is a complex medium that has both corporeal and non-corporeal properties. People are watching the three dimensional world from a two dimensional screen, by filmic techniques they sometimes believe what they see and hear are real. Reality is a kind of illusion caused by the attributes of film. Apart from its abstraction argument, the film also evolves in light of expression techniques, narrative construction, and the access of watching it (Cutting et al, 2011). Recently, scholars from psychology and other disciplines tend to use film as the stimulus to understand the human mind. Researchers conduct the research using film as an expression of humanity, testing the audience's memory, and monitoring and analyzing the audience's emotion as the research focus. Cutting and his colleagues proposed that a film's shot length fluctuates along with human being's attention fluctuation following the principle of the working human mind (Cutting et al, 2011). Other scholars were conducting research based on event theory and requiring their research participants to segment the events in a video clip in order to find the way people interpret the film (Zwaan, Langston, and Graesser, 1995; Zacks and Swallow, 2007; Zacks, & Magliano, 2011), while some scholars recorded the psychological and physical data such as brain activities or eye tracking results to discover how people's attention revealed their mental activities (Loschky et al, 2015). However, some film scholars are still insisting that semiology should be the research focus which represents an advanced level of the human mind. As all the aspects of film (making process, filmic techniques,

watching method) are changing, it is not hard to realize that the filmic performance mechanism cannot be easily obtained by copying the research from semiology (Mitry, 1987). These studies raise some questions: Do we really know the nature of film? If we are aware of film's exact nature, what should be the appropriate research position and method to conduct film perception and cognition research? The key to answering these questions is, whether the audiences capture the message that filmmakers want them to see and hear, how to test the audience's interpretation, and finally how to identify a primary unit of meaning in a film to explain the discrepancy of interpretation between filmmaker and audience.

Research Problem

There is a critical need to develop a more efficient method to study film cognition from both film research and psychological studies. From Münsterberg's discussion of film connecting with emotion, attention, movement, and memory (Münsterberg, 1916) to Bazin's film ontology (Bazin and Gray, 1967), from Bordwell and Carroll's post theory in film studies (Bordwell and Carroll, 2012) to Cutting's psychological explanation to the pattern of shot and transition usage (Cutting, Brunik, and DeLong, 2011), scholars try to clarify the nature of film and how to appraise it comprehensively. The film, labeled by Canudo as the seventh art (Abel, 1993), experienced a dramatic development from silence to sound, black-and-white to colorful 4D, and its existence status switched from the film reel to the digital format; everything about the film has been entirely changed compared with its original look. Hence, a film is displayed in diverse forms with much untapped value for human beings. Therefore, in this thesis, the author hopes to expand the broad vision of film analysis to other

relevant areas, construct a compatible research model, emancipate films from the general framework of art research.

The problem of this research study is whether *filmmakers and viewers have the same interpretation unit when they are watching the film. If they have different units, what caused the differences? Such understanding will help to develop a basic meaning unit for films in bridging between filmmakers and audiences because this author believes the unison of meaning between the filmmaker and the audience will achieve the optimum enjoyment of the film for effective communication by sharing of the meaning of the film story.*

Significance of This Study

The study proposes an alternative approach to traditional film narrative analysis of event segmentation and identifies new interpretive units and explores the significance of denoters on understanding a film from both the filmmakers and viewers' perspectives, and then applies them in analyzing and evaluating their roles in the establishment of endogenous logical narrative structure in human brains.

Since the mid-1980s, a broad research interest has emerged to explain the power of moving images from different disciplines. Scholars are turning their focus from film theory, history, and aesthetics to psychological explanation. For instance: why do films engage viewers into the stories? How do filmmakers' manipulations of film techniques stimulate our senses, guide our mental activity, control our attention, and arouse our emotions? What is the psychological principle of narrative, and what is the condition of applying it? From film history, each technology, creative idea, and other disciplines involved not only let the

unprecedented changes take place in the film industry, but also contribute to the variation of the way people view the world. Film technique creates some things that don't exist in our real life, and the changing narratives and shot combinations enrich filmmakers' creation means and narrative manners, and to a certain extent, they change the audience's reading of a film and watching abilities.

In 1997, the first international conference of cognitive studies in moving image was held by the Society for Cognitive Studies of Moving Image (SCSMI), resulting in binding like-minded scholars or individuals from adjacent disciplines such as communication, film, and psychology to discuss conceptions of cognition studies that are grounded in evolutionary factors.

Why begin this section of significance to film cognition research with an outline of the history of SCSMI? Apparently, film cognition research as an interdisciplinary study lags behind the curve on issues, methods, and trends found important by its adjacent disciplines, such as film, communication, and psychology. Four specific issues are pertinent for this discussion.

First, there are various existing resistances to the application of scientific approaches in the arts and humanities. It is no doubt that essential aspects of creativity in the arts cannot be quantified; they are emotional, complex, and vary with different individuals. In film studies, some scholars may not agree with using data to analyze film especially in empirically based cognitive science. Some scholars may debate that film is a single and specific art phenomenon; it does not have the universal attributes. Hence, they refuse to accept film analysis from scientific explanations. A closed research attitude keeps film studies away from

innovation; most film studies are still following ancient theories and methods.

Secondly, film cognition scholars neglect the importance of script and its structural function. Apart from their artistic appearance, the primary purpose of most films is to tell a story or several stories, which indicate the fundamental function of film. Therefore, narrative could not be separated from the process of making scripts and its relevant theories. As Herman (2009) concludes, script is a representation in terms of which an expected sequence of events was stored in memory, which was designed to explain how people (filmmakers) can be able to build up complex interpretations of stories based on textual or discourse cues. Herman's definition is from the filmmaker's perspective; however, most film cognition studies in narrative either ignored the process of the transition of textual expression (script) to visual and audio information in the silver screen or take a single opinion about script. Cutting is the only one in film cognition studies integrating the four acts script model (Cutting, Brunick, & DeLong, 2011). Most scholars attempt to equal viewers' segmentation to filmmakers' narrative segmentation which brings some questions such as how to explain the absent interpretation of filmmakers' hidden clues among different viewers? Why can we mix the filmmaker's discontinuity work (Cutting, 2014) in terms of segmenting the whole story into different pieces and allocating them into different parts of a story with viewers' continuity work of perceiving and interpreting information from the screen?

Thirdly, most film cognition scholars do not have film making experience (except Anderson, J.D., the author of the book *The Reality of Illusion: An Ecological Approach to Cognitive Film Theory* who used to be a filmmaker) which may prevent them from identifying all the variables when they are using film as stimuli. For example, the tone and

film setting as well as other relevant filmmaking factors can influence the reliability and validity of narrative analysis, especially in viewers' emotional engagement analysis.

The empirical study in this thesis attempts to provide alternative angles for exploring the fundamental analysis unit to evaluate the film's endogenous structure in narrative studies of film cognition. These angles will contribute to the study of film narrative in three substantial ways. It will first provide some important insights into the nature of film and the previous way of analyzing film and answer the question of why film cannot adopt the analysis methods from other types of art. Secondly, the findings will lead to the necessity combination of practice with film narrative and cognition theories. Finally, identifying an alternative interpretive unit to narrative studies will play an important role in conducting a more convincing interpretive comparison between filmmakers and viewers, thus finding out what contributes to the unsuccessful interpretation of film though the discrepancy between filmmakers and audiences. The results may have the further potential influence for filmmakers to make better films. As Bordwell says, film "presents cues, patterns, and gaps that shape the viewer's application of schemata and the testing of hypothesis" (Bordwell, 1985, p. 33). Broad and scientific ways to understand how film is constructed will assist scholars to develop their research and have more convincing results.

This thesis is not looking for fixed film interpretation rules, but trying an anatomic approach to explore the process of film interpretation. What is sought is a kind of common form that lasts in film interpretations of filmmakers and viewers. To be sure, there are thousands of ways to tell a story by different filmmakers, and audiences also can produce a lot of different subtle understandings and emotional responses when watching the same film.

However, a film has endless variations and potential expressions as well as reception principles, and the task of scholars is to discover these principles. No matter who is the director or actor, no matter what cultural context is and the characteristics of the filmic technique to construct the story are, filmmakers have to ensure their own artistic expression and imagination of life can be accurately interpreted by viewers because it is still a form of communication, and the audience's expected response develops in accordance with the story made by filmmakers. The artistic creation without audiences will lose all meaning because the inherent attributes of the film always have entertaining and commercial characteristics, and the goods without consumers have no circulation value. Furthermore, this thesis proposes that film has two attributes: psychological product and affordance. Both attributes reflect the truth that film cannot be isolated from audiences.

The film interpretation principle that we explore not only focuses on the analysis of filmic physical attributes from the perspective of filmmakers or viewers, but identifies the internal qualities of film, namely, human spirit and will. We explore the differences between filmmakers and viewers in visual-audio information processing from interpretation and construction of film, so as to obtain insights on the kind of value and meaning of life conveyed in a film. No matter whether the attention of scholars is the deep source or external language, symbols, and text of the story, they cannot ignore two realities: 1) Film tells a story and the story is a metaphor for life (McKee, 1997). 2) Film and story are created by people, and people have both unexpected potential and limitations in thinking and creativity, as well as reading ability. Although for "One thousand readers, there are one thousand Hamlets," each viewer will not have the same interpretation because of the same montage technique. It

is still having the common identification of narrative denoters are a linchpin for understanding the film, even though there are individual differences in other details. So it is necessary for scholars to consider how the film, the essential characteristics, and narrative principle (the narrative denoters) are combined with viewer's perception and interpretation when solving this conflict; and it is also one of the problems that this paper will solve.

CHAPTER II. LITERATURE REVIEW

In the development of the history of films, the advent of new theories or new technologies has changed films internally or externally, which not only brings more possibilities to the expression of films, but transforms the way in which people watch the world. For example, the exploration of the relationship between films and art, as well as the comparison between films and other forms of art, provides researchers with a new perspective for research, that is, the origin, development and essence of films. Then the exploration of film theories allows us to learn the focus and methods of film study in history. The discussion of film expressions and related technologies enables us to know how filmmakers create these imaginary things and how these fabulous things, in turn, bring subtle changes to filmmakers' ideas about how to create films. What bestows value on films? How can we discover the fundamental standpoint and core frame of film study among the complicated network of films?

Furthermore, films have been now widely accepted as an audience-driven art. More and more people paid attention on audience research. Over the past few decades, the stunning ticket sales of commercial blockbusters have not only reoriented the public interest but also brought huge profits for the world economy, from which we can see that the combination of films and contemporary productivity is an inevitable trend of historical development. Like a drop of water, films can reflect the historical background of the era. If combined with any art form and technology, films can not only show visible but also imaginary entities which are beyond the human being's perception and which embody the infinite potential of the human

mind. With the increasing demands of the audience for the form and content of films, filmmakers and scholars from various fields joined the ranks of film study. From the focus on the spiritual level of the human being to the visible exchange process between films and human beings, or from ‘what is ...’ of psychoanalysis, a classical film theory, to ‘how to...’ of cognitive psychology, the former focuses on the spiritual level, while the latter on the process. From this, we can see that the division between the content and the process exists in film study.

To establish a complete frame and appropriate position for research, this literature review will systematically search theories related to film narrative studies to spark new perspectives and methods for study. The literature review of this thesis will be divided into three parts. Part one discusses the relation between films and art as well as the difference between films and literature or language. It answers why films cannot be studied by following methods of other artistic forms. Part two discusses particular ways of film expression including the montage language as well as the effect of technology on narration and film industry, aiming to explore the difference of film from other artistic forms from the perspective of film expression. Part three introduces theories in cognitive psychology and demonstrates the new trends of film studies in the last 30 years. Through presenting the shift of focus and change of methods in film studies, this author contends that researchers should create a parallel passage linking the audience and filmmakers. Based on what is mentioned above, this thesis tries to adopt the method of the psychological experiment of narration interpretation between the audience and filmmakers so that meaningful units for film interpretation by different groups can be developed.

Art as a Type of Language

It was a common belief that art was regarded as a kind of language, while creative activities in the arts were regarded as a way of language expression. For instance, painting is an individual and creative way to express a painter's imagination, an image language, and painting techniques such as compositions, tones, and shades are manners which serve as the expression through which people can usually capture the emotion or ideas that the painter wants to express. Collingwood (1924) believed that art is the unity of theory, practice, and emotion. He claimed that art is inevitably a kind of language. Based on his opinion, art is the imaginative expression of emotion, not only deriving from consciousness and experience, but also including the emotion of the thinkers. Hence, based on the aesthetic theory of Collingwood, thought, emotion, and language are organically connected with each other. This belief is similar to the Italian philosopher and aesthetician Croce; Collingwood also defined art as pure imagination. However, in the early times, Collingwood did not agree with Croce's theory of "imagination is equal to intuition" (Croce, 1912). Collingwood argued that imagination was different from consciousness or inference (Collingwood, 1924). Artistic imagination was a kind of active activity, which insisted on beauty as its guiding principle. Different from inference, there was no true art or false art. Art only had expression. But Collingwood experienced a significant change of the philosophical idea, which to a large extent changed his own early aesthetic ideology. Besides, he accepted Croce's fundamental aesthetic proposition; namely, imagination and expression were unified, any expression activity was the generalized proposition of the language.

Croce clearly pointed out that the philosophy of language was the philosophy of art (Croce,

1912). Art could not do without aesthetics. Aesthetics and linguistics shared the same research object: expression. Furthermore, the essence expressed by art was the fact of the aesthetic while language was also a special expression. Obviously, Croce found the theoretical reference for his own aesthetic research from the perspective of linguistics, thus proving the identity between language and art. He then added that the essence of discussing art problems was to express some emotions from the language category. In his view, art and language could be identified in essence, because they not only shared the same research object, but also were creative. However, Croce opposed seeking a standardized language in linguistics research, which aimed to unify the use of language. He thought the essence of language was continuous creation and those ideas that had been expressed by language no longer needed to be replayed. In fact, this view still emphasized that art could not be studied in the form of language because the creation and expression of language had strict grammatical rules, including the choice of the words, syntax structure, and rhetorical strategies, but the expression of art had no such strict grammatical rules. As a result, instead of enhancing the identity of art and language, Croce's view emphasized the difference between their essences.

Kayser (1948) was the first art theorist who analyzed art as language and studied art theories as language theories. He proposed that every literary work in the broad sense was the combination of sentences fixed through symbols. In addition, such combination of sentences was a meaningful structure. The expression of the essence of language was achieved through the significance the words and sentences aimed to express. Kayser's view clearly delimited a boundary, distinguishing the literary works in art, such as novels and poetry, from the

non-literary works or works without words or sentences, such as sculpture and dance. He pointed out that literary works needed to be expressed through a special power of language. Therefore, the research of literary works became a part of the linguistic science. However, Kayser did not mention film, nor did he propose the differences between literary works and other art forms.

Film as an Art

In fact, whether film can become a form of art is an issue of the essence of art. If film is an art, it must obey the definition of the essence of art. Collingwood (Lu, 1988) points out that art has the universal essence and special essence. The universal essence means art is the unity of theory, practice, and emotion. Specifically, art is theoretical because spiritual expression does not rely on pure natural law or philosophical truth. Therefore, the activity expressing this object is a special kind of activity with the potential of forming the theory. Throughout film history and its research history, accompanied by various kinds of film and the occurrence of various photographic techniques directors created, film theory forms the theoretical study and system with characteristics of the times, historical background, and cultural significance.

Secondly, art is undeniably a process of spiritual activity attempting to understand the ideal, so as to make itself in a certain state. In this process, the practicality is reflected. Film is just the best expression of this characteristic. Due to the realistic effects, reproducibility and transmissibility, film is known as the optimal expression of human spiritual activity. The reason film is not regarded as a tool is that film may have tendency and sociality as

mentioned before. It also has a function of metaphor. The potential significance of film is greater than its direct significance. Hence, tools do not have all these characteristics.

At last, art contains emotion, because art is the activities of joy and sorrow, desire and disgust. These themes always exist in various kinds of art forms as the eternal propositions of art. In film, love and hate, lust and greed, justice and evil, these opposite topics are always the expression themes of films.

In fact, art also has special essences, and these essences just show the artistic dialectics of the film. According to Collingwood, art is the enjoyment of beauty in emotion (Lu, 1988). Beauty cannot be grasped by perception and thought, but is entirely penetrated in the emotion of the imagined object. In the film, the pictures and sounds presented by the shot together show the audiences a “film reality” in the nonrealistic world. Because the metaphor, under the effects of the composition, color and sound of the picture, symbolizes the aesthetic meaning, audiences are gradually immersed in the reality presented by the film and aroused to sympathy in emotion. Film has special expressions such as metaphoric characteristics and images with sounds, which contribute to its artistic dialectics. Through these special expressions, film brings a familiar but strange world different from real life to the audiences. The world presented in the film as well as the characters and scenes can be felt by the audiences, but the audiences cannot touch or experience them by themselves. Such strange and familiar, real and illusory contradiction is indeed the artistic dialectics presented by the film at the same time showing its special essences of art.

Film as a Communication

Hall has proposed the “encoding and decoding” theory (Hall, 1980). According to his understanding, activities of makers to gather images from real life and make symbolic operations combined with significance are television production, and this process is encoding. The process of audience’s viewing and interpreting is the TV consumption or decoding process. This theory has changed the linear understanding of information from the transmitter to the receiver by empirical research and has emphasized the studies on the initiative of the receivers. It has provided a new platform for the researches on receivers. In an era of diversified media forms, regardless of the spreading method of information, Hall’s model has shown its advantage in objectively digging conflicts (the information gap between transmitter and receiver due to factors such as different social background).

Encoding/decoding theory emphasizes the positive and active attitude of the audience on the information transmitted by the media (coder), and combines the communication process with Marxism commodity production outlook and proposes: dissemination is a complex structure of production, circulation, distribution/consumption and reproduction. Four sectors articulate with each other to form a temporarily integrated system, but they maintain their independence. Hall's interpretation of mass communication is based on Marx's economic structure and political culture, draws on Althusser, Gramsci, and other people who study various amendments to the Marxist tradition, and ethnography, linguistics, semiotics and other methods.

Encoding/Decoding theory contains some of Hall’s ideas on cultural research. Under the influence of semiotics, information is transmitted through the operation of code in his theory.

Language signs have their surface meaning and deep meaning. For example, the surface meaning of “rose” is a kind of flower or a kind of color while it means “love” or “affection” in some particular situations. Also, according to Hall, the hidden meanings of codes are mostly related to culture, politics, and ideology. When the code with rich meaning is sent by the encoder, whether the connotative meaning of the code can be accepted depends on the cultural identity, value and so on of the receiver. Undoubtedly, it is under the influence of semiotics and Marxism that Hall established a complete research platform from the creator of the message to the receiver of the message based on codes and production relations. In particular, the explanation of the surface meaning and deep meaning of codes also explains why “the comprehension of Hamlet varies from person to person”. The reason is that code is a space with various referents, when decoded by receivers, the difference in factors such as culture, environment, and politics will give them different possibilities of this decoding process. Just as Hall indicated that every one of us understood and explained the world in an individualized manner. However, we are able to communicate because we share many common concepts and we understand and explain the world in more or less similar ways (Hall, 2000).

Although Hall has criticized the linear transmission method in traditional mass communication researches (transmitter-information-receiver) and has emphasized the initiative of receiver, E/D theory has also its limitations. Hall only indicated the reproductive function of receivers on the media information and failed to explain the ways of reproducing and the various reasons behinds the reproduction process. For example, taking a film as the way in which the filmmaker tells a story when audience received the visual and audio

language information, they had to decode and explain the information collected. At the same time, they were required to establish the logical relation of the story. The process of setting up the relation is exactly what Hall called reproducing the process. However, he failed to explain how this process happens and what consequence it has, which indicates that Hall has limited his theory within the textual analysis. The core of Hall's encoding and decoding theory is its practical significance. Without convincing evidence on the role of the dominant consciousness of the author and audience as well as the social relations, Hall's theory might lose the original meaning. Apart from these, unlike text, a film is a direct art which may have implied meanings that requiring the audience to construct a mental model to interpret it. Hall's E/D theory could not represent this essential attributes which is the key point of film transmission; furthermore, audience's perception and cognition may not relate to their social relationship and background or even Maxims(Anderson, 1996), for example, there is no difference in the way a president identifies a car in the film and the way that a housewife does.

As a result, his theory is unsuitable for film analysis. However, eye tracking, MRI, and event segmentation in film cognition studies are good ways to analyze the reproducing process. These methods not only provide further evidence for the theory of Hall but also identify the factors influencing the receivers and the ways they establish a logical relation to understand the film (or the reproducing process). Furthermore, Film art is always an audience-driven art form which filmmaker expresses his imagination on life and art through audio-visual media, combined with the unique expression means of the film, to inspire the psychological resonance of the audience. Hall's encoding and decoding theory emphasizes

the active role of the audience in the dissemination process, but the lack of understanding of the audience results in the theory cannot ultimately show the communication process from the filmmaker to the audience. For example, filmmaker and audience have different social characteristics, background knowledge as well as a different interpretation of the world or a movie. According to Hall's theory, due to the different social characteristics and background knowledge, the audience's interpretation will be different when they watch a movie (decoding). But Hall does not realize that the film is a direct visual art, even if two people from different countries with the completely different social background can almost indifferently identify the person or thing on the film screen. For example, an American and a Chinese can both correctly identify a dog or a cat from film image. Furthermore, Hall also ignores the metaphorical role of the film due to the montage technique. Social characteristics and background knowledge are not the key factors resulting in a different interpretation of the film. Generally speaking, whether the audience can identify the implied meaning the filmmaker presents in the film is the key to studying viewers' perception and cognition. The encoding and decoding theory does not provide an explanation on this point.

Secondly, Hall believes that the thing itself does not make sense, but is presented through concepts and symbols. People actively use the symbol—encoding to incorporate things into the symbols—as well as rely on people at the other end to make interpretation or decoding to maintain. In the film production and playback, things presented in the picture have their original meaning, but it is changed because of the unique properties of the film. For example, the screen shows a hand in writing; according to Hall's interpretation, this “writing” action has no original meaning; only through the construction of the film can it have the meaning

and only relying on the audience's interpretation can it maintain its meaning. In fact, the "writing" action is of meaning for anyone who can write. The meaning does not rely on the constant interpretation of symbols related to "writing" to maintain. Of course, whether the practical meaning of "writing" is consistent with the meaning which is to be expressed in the film will depend on the filmmaker's creative intent. If at the end of "writing", it presents the development different from the audience's memory, then the meaning of "writing" is changed by the filmmaker. Finally, Hall believes that encoding only exists in the sender and decoding only exists in audience. This point is exactly against Hall's encoding view of point, that is, the process of dealing the material is the process of filmmaker decoding the world. This indicated that filmmaking involved two processes: filmmakers' decode the world and encode the material into film. We humans are not alone in the presence of the world. Our knowledge is received from the previous "encoding" fruits of labor. The filmmaker's processing of the film also includes the "decoding" of previous knowledge and concept. Therefore in summary, Hall's encoding and decoding theory cannot be applied to movies. No matter from the creation of film or from the audience's interpretation, Hall's theory ignored a number of key issues. Eventhough, E/D theory provides us a new way to study communication between audiences and filmmakers, the deficiency of understanding the audience might lead to some unproven issues and problems, thus finding a more comprehensive and practical research method is a key to study the essence of human watching behavior and reaction.

Film as a Psychological Product

What's the ontology of film? Ontology refers to the theory studying the nature or the origin of the world in philosophy. As to the ontology of film, Bazin (1967) proposed the film ontology theory that film demonstrates the integrity of the world, the authenticity of time and space, as well as the identity between the image and the subject in the objective world. He also pointed out that the appearance of film is a psychological product due to human being's natural need of reconstructing the world since the ancient times; namely "competing against the time". He explained that the development of photography skills, such as the full-length shot and deep focal length shot, all satisfy the psychological needs of the audiences through the complete representation of reality. Since film is a psychological product of human beings, the research on film cannot be divided into the single scope of linguistics or any single discipline. Then, which subjects can be involved with film research?

Film is a psychological product that can have "tendency" and other characteristics. Although a film may have "tendency", it has functions that language cannot realize. Langer (1953) pointed out that human beings can think, memorize, describe things, and reproduce relationships as well as the interaction rules between things via language. Through the exchange of language, human beings can communicate with each other, thus presenting concepts and the connections between various concepts. However, language is not all-purpose; some content and statements cannot be directly expressed by language, such as complex ambivalence and emotions, thoughts and impressions, and memory and re-memory. None of these can be fully and clearly expressed through language. As to this weakness of language, Langer thought it was an inner logic originated from language itself; namely the

language used must be consistent with the object that is described. The purpose of language is to express accurately the description as well as the relationship with it. Therefore, the reproduction of emotion may be excluded from this process, because human emotion is a complex contradiction. Langer also pointed out that art made up for language's deficiency in the aspect of emotional expression because art was metaphorical. Langer's view indirectly proved the metaphor of the film and provided another explanation of film as a psychological product. At the beginning of the last century, semiotics had a significant impact on research of film. But as the trendsetter of semiotics, Metz (1974) denied that film had a relatively large similarity with language. He said that a shot was not equivalent to a word. It had no double articulation in phonology and semantics, which were typical characteristics of these morphemes (Bordwell, 2009). Therefore, as the seventh art form, the film possesses a complex way of expression, which cannot simply be analyzed with the method of linguistics.

Secondly, due to modern technology development, film cannot adopt the analysis method as other art forms have, such as literary works and drawing (Benjamin, 1936). Benjamin pointed out that the application and influence of mechanical reproduction in film were different from other literary works such as painting. As to other art works apart from the film, mechanical reproduction is the external condition of its mass circulation, which has no impact on the internal structure and component of artwork. The mechanical reproduction of film directly originates from its production technology. Such expensive production technology forces the mass circulation of film and makes it a thing shared by the collective. Benjamin explained that people saw a special art form in film because for the first time, its artistic characteristics were completely determined by its reproducibility. At the same time, film was

also correctable. The mechanical reproduction makes the film abandon its eternal value (aura) as an art form.

The art of film has a variety of expression methods. Because film acts on the audiences' auditory sense and visual sense directly through the sound and image of the two-dimensional screen (or 3D illusion), film has strong intuition and authenticity. Instead of the indirect imagination similar to literary works, it directly presents things to the audiences. The shot also cannot be analyzed in accordance with the ways of linguistics. Moreover, the impact of film on the audiences via direct sound and image stimulation also cannot be analyzed through a single simple subject. However, through the discussion on the essence of art and the interpretation of the definition of film ontology, the interdisciplinary research focusing on psychology is needed in film analysis.

Film as a Special Expression of Language

Comparison between the Expression of Film and Language

Through the exploration on the previous research above, it is concluded that although the film has long been interpreted and analyzed with "film language," there are essential differences between the film and the text language. Then what are the exact differences between them? In fact, as to the exploration of this problem, scholars carry out research from various perspectives; some from the nonliterary expression of the film, some from the camera, and some from the film practice.

Balazs (1945) compared the film to a kind of language from the nonliterary perspective of film. He considered film as a sort of new situation and a new language, which had the

characteristic of arbitrarily changing the distance between the audience and the expression of the object on the screen. It can divide a complete scene into the different shots and change the shooting angles, shot depth and focus in the same scene. Also, with the use of the montage method, it can connect the shot together to form a time series of pictures. Although Balazs seems to have included film into the linguistics research, he opposed looking upon film with the similar and general law of art. In fact, film research is classified into the theoretical orientation of film itself.

Mitry (1997) thought that image had the function of the symbol. On a basis of copying the reality, images form pictures following certain rules of structure and could pass information and express ideas as time goes on. Therefore, film could be understood as the symbol with linguistic significance, which made the film a kind of language. As far as Mitry was concerned, language is our tool to understand and grasp the world, as well as the direct performance and external form of the thoughts. Thoughts are impossible to separate from the language which is used to express thoughts. Those scholars who do not regard film as a language have essentially narrowly defined language into the abstract symbol system. He further explained that language is a means to express thoughts and is related to the psychic structure organizing this expression; namely the working of the brain. Mitry's combination of expression, thought and emotion also indirectly prove the characteristics of the film as a psychological product.

As to the "rhetoric" in film, such as metaphor and ellipsis, Mitry did not believe that they are derived from literature; instead, he considered them as the performance of the way of thinking. At the same time, Mitry divided language into two forms: one is the scientific or

logical language while the other is the lyrical language. The former one focuses on the rational logic while the latter emphasizes emotion. Such division also embodies the two tendencies of expression in the working of the human brain. The theory of Mitry seems to be reasonable in some ways, but the filmic expression does not have such common laws as text language. First of all, the filmic expression is affected by many factors while the film seen by the audience is the result of multiple procedures, including the choice of the film camera, the innovation of the director, the editing of the montage, as well as the effects processing. According to the above analysis, when the film is presented to the audience, it has already digressed from the original “status” and “appearance”. As a result, its source is unknown and there are many possible explanations. The thought expressed by the film originates from the reality but is also divorced from the reality, becoming a contradiction on the screen. The perception of these elements is influenced by the thought, which is also a limitation. For example, regarding the expression of a story, different directors cooperating with different cameramen and editors may lead to millions of expressions. Also, the audience’s understanding of the film differs from each other due to the difference in their background and age. Therefore, for filmmakers and audience, both of them have their own expression and interpretation differences. In such a situation without unity, it is impossible for a film to express the thought as a language, because film has no strict rules and laws.

However, Mitry has added that the semiotic function of images is not still, it is of semiotic significance only when it forms the picture by the certain rules with the help of the relationship contained in its action. Furthermore, the “symbol” of a film image only has single or temporary significance. In other words, the film image is endowed with new

significance through a variety of methods, which are not divorced from the practical significance of the originally shot object. The expression and interpretation of the new significance not only draws support from the relationship between the plot before and after, but also depends on the overall background and the environment presented in the film. For example, a hand holding a knife may have many meanings. In a horror film, when a girl is running in the dark corridor with a knife in her hand, without knowing the plot before and after, the girl can be considered as a killer or a victim. Moreover, the running action of the girl can be understood as she is chasing someone or is escaping. At the same time, the audience may produce different emotional responses. If the audience thinks the girl is a killer, they may be nervous and produce the speculation of the victim, as well as the anxiety of not knowing what will happen. If the audience thinks the girl is a victim, they will be worried about her. These are all the additional effects which cannot be brought by the text narration “a girl is running in the dark corridor with a knife in her hand”. As a result, the expression of the film is more complicated than the language expression. As mentioned before, the film can make up for the complicated emotions that language cannot express because the significance implied in the film is far greater than the meaning of the direct expression of words.

Astruc (1987) believed that art is a form of expression identical to written language and put forward the theory of “camera-stylo.” He considered language as a form through which artists express the abstract thoughts and complex ideas, just as novels and essays. He explained that filmmakers are writing with cameras, as writers are writing with pens. However, he forgot, different from direct writing with a pen, the camera creates films indirectly. Without other film methods such as montage effects, a camera alone cannot

express the “thought” of the filmmaker completely forever. In fact, according to the narration of Benjamin (1936), the idea expressed in film is a thought complex which has been processed by various techniques, such as the performance of the actors, the camera shots, editing, and incidental music. In the course of the film production, the expression of the film has actually experienced a process from a practical person or thing to the image on the screen, and this process cannot be completed independently by the camera. Martin (1985) defined film language from the perspective of practice: as a “language”, film is a means to narrate stories and express thoughts. At the same time, many film scholars are committed to classifying film into the scope of linguistics for study, while ignoring the visual-audio essence of the film.

As mentioned above, film has the mirror image system with metaphorical meaning, which is composed of moving pictures. Its difference from the symbol language system composed of text language is not reflected on the subject or object, as considered by the film scholars. The fundamental difference between the expression of film and text are modalities and ways of expression. First, language expresses or writes with words while film expresses with the material object/people in the real society, or the “object resemble”/people created by the computer technology as the carrier. However, words in language are usually different from each other due to the different national cultural backgrounds; while films have fewer differences. For example, fire has many ways of expression in different languages, but in film shooting, it is almost the same. No matter which country you come from, and whether you can understand the film or not, as long as the image of fire appears on the screen, anyone can recognize this object. From this point, film has more universality and general principles than

language.

Secondly, the things and people presented in the film have direct performance; while language, as a non-expressive indirect meaning symbol, does not have direct performance. For example, when the film picture shows a ragged beggar, the audience can see the age, appearance, clothes, looks and sex through the direct presentation of the beggar by the shots. However, if there is a sentence describing the beggar, although vivid words of description are added, as to the readers, the image presented by the words is less direct than the one brought by the picture. Thirdly, the space-time processing of the film produces the second level significance to the audience. For example, when describing a person living alone in the forest, under a panoramic shot, a person is in a corner of the dense forest; while under a close shot, the half-body image of a person matches with the dense forest behind. These two are sure to produce different effects, especially on the psychological activity of the audience when understanding the film story. In the expression of literary words, such an example is only narrated as “a person living alone in the forest”, which does not have second level significance. Therefore, because of the nonliterary characteristics of film, the angle of the camera, and the film making process, the analysis of film cannot be purely established on the basis of literary analysis, nor can it be confused with linguistic. The visual-audio language used by film and the expression of shots are far more powerful than words. Film has achieved the things words fail to express, especially the description of the complex emotions and the attraction of the audience’s attention. These are all unachievable by words. Ironically, it seems like film has realized what the ruling class has always been longing for to certain degree, which has a unified impact on people at a certain time at a certain place, and catches

people's psychological activities.

Film is the most perfect mixture of science and art in the 20th century. As the essence of the presentation means, its visual-audio nature determines that the more developed its expression is, the higher and more real its image degree will be. Such art form stimulating "reality" becomes the optimal method of expression, so that the audiences can move from the modern form of language with words as the form, and return to the original state, in which they express thoughts and emotions and record events through the creation of pictures. As a result, different from words, film, to some extent, makes up for the gaps between culture and illiteracy from the perspective of intuitive understanding.

The Importance of Montage in Film Research.

At present, film research has entered into a stage of modern diversified theory. Montage may not be the focus of film theorists yet, but we still cannot abandon montage because the creation of film art is a process of continuous accumulation and expansion under the guidance of montage. Our understanding of montage may be only a tip of the iceberg. Every filmmaker or scholar carrying out practical creation and theoretical research of film discusses the essence and impact of film on the basis of montage to varying degrees.

Eisenstein (1985) proposed the montage theory. He thought that film does not statically reflect the specific events required by the theme. Montage has enough capacity to create new meaning through a combination (randomly or with purpose) of shots; however, what Eisenstein proposed is not an explicit way to capture and express the meaning but a technique to create film's vague expression (Beqin, 2006).

Eisenstein (1923) had compared film and drama and considers that there is a common basic material between them, namely the audience, as well as a common purpose, exerting some intentional pressure on the audience, so that they can accept its tendency. Such exploration of the film is essence, to certain extent, also proves that film is a kind of psychological product. At the same time, Eisenstein has concluded that no matter whether it is the social need (class struggle) or based on the expression form of the art, both of them take producing impact on the audience's consciousness and emotion (physical and spiritual satisfaction) as the purpose, and the dynamic imitation of the perception and the psychological "common experience" through virtual participation in the presented content as the result. However, what distinguishes film from drama lies in that they adopt different ways of expression, namely montage. Such a special method can have a certain impact on the audience's attention and emotion and gather the audiences through the combination of all the other properties. In other words, film can flexibly combine the random and independent shots. Such combination is of obvious purpose, namely reaching certain final subjective effects.

Obviously, Eisenstein does not advocate a way of constructing the shots and expression with plot as the center but, rather advocates constructing the film "shot language" and expression on basis of the theme. Eisenstein's central theory, the shots' interaction and their effect is the product of two numbers rather than the sum. This point is still firm and irrefutable after experiencing the impact of a variety of factors, such as the changing times and the technological development. Eisenstein's explanation of montage not only points out the differences between film and other art forms; in particular, it indicates the fundamental differences between film creation and drama and other arts. It also summarizes the essential

problem of film into three aspects: physiological-emotional-psychological. This is also the core problem of current film cognitive studies; namely what kind of information the audience can accept from the film, what is the effect, and what is the impact of these influences on the audience's understanding of the film. Although Eisenstein has not further differentiated montage's narrative impact on the film itself from the relationship accepted by the audience, which can also generate meanings; instead, he purely believes that montage is an absolute thing completed on its own rather than relying on the audience's response. However, his interpretation of montage has already become the part of film ontology theory mentioned above; namely film is the psychological product with metaphoric characteristics, which are created with images with visual and audio information as the carrier, with shooting as the first selection, and montage as the second significant psychological product.

At the same time, Eisenstein is not a pure theorist. His film practice activity also provides another argument for this paper, "the potential significance of the film is always greater than its direct significance." Eisenstein's first work *Strike* (1925) connects the shots of the Russian army massacring the workers and the shots of slaughtering the beef at the slaughterhouse, creating a metaphor for the tyranny of the Czar, who treats the people like animals. It deepens the description of the Czar's brutal nature and the slave position of the workers, as well as the presentation of the relationship between them. The artistic appeal shown by such connection will inevitably have a direct shock impact on the audience through the conveying of the film's images, thus reaching a resonance between the purposive creation of the film and the audience's psychological feeling.

Eisenstein also creates other montage technique, for example, segmenting an original

event into several events happening at different times, so that the time concept of the film is extended. Later filmmakers apply this technique in the segmentation of the scene, as well as the segmentation of actions such as fighting of the protagonists. Eisenstein has proposed the possible problems caused by such action. First is the filmmaker's logical thought. Second is the real logic of the spatial and temporal relationships presented in the film. And this problem is also mentioned in Bazin's explanation of the long shot.

Montage not only provides more ways of expression for the film, but also provides a more core topic for the discussion on the film's essence as a kind of psychological product, and, under the social, cultural and historical impact, how film establishes the relationship between the film's expression and audience's acceptance. Unlike Eisenstein's rule of unity of opposites, Pudovkin lays particular stress on the rule of universal connection. He (He,1985) has put forward that film is a comprehensive art integrating many factors such as painting, drama, music and literature, but the art form mentioned above cannot completely maintain its original artistic characteristics after being integrated by the film. On the basis of Eisenstein's film essence, Pudovkin's such "comprehensive" theory illustrates the differences between the artistic connotation of film and other art forms (He, 1985). At the same time, it indicates the difference of such art characteristic, leading to that the film cannot be analyzed with several other art analysis techniques.

Although Pudovkin promotes the central role of montage on film creation, he pointed out that montage is not a simple process of separating the shots and then making combination (He, 1985). Instead, it is a process of unifying the soul of the film art. Also he proposed the concept of "film language." In other words, Pudovkin compares the film to a kind of text

language with sentences and words. Different directors' use of montage leads to the difference in film styles, just as different writers using the words in various ways. Besides, he proposes that the expression way of film art is the closest to human thinking form. According to Pudovkin's view of film, language, thought and art is a logical sequence actually existing in the human history. A Film takes visual form as the way of expression, directly showing the "thought" to be expressed by the filmmaker to the audience, as well as how such thought is expressed with the technique of montage, thus achieving the art form of film which is full of expression means and artistic appeal. For Pudovkin, film is not only the thought expression of the filmmaker, but also the most direct way to reveal the inner link in the real life. Pudovkin has successfully connected the characteristics, essence and language issues in the traditional film research with the human thinking form. As a result, in Pudovkin's opinion, montage is the rule of thought expression rather than a rule of film creation.

In the 1940s, the "anti-montage" theory with Bazin as the leader has come to birth. It emphasizes to grasp the time continuity of the contents presented on the whole, and opposes to segment the scene into several shots and present through montage technique. In addition, it proposes to continuous shooting style focusing on the long shot to present the audience a complete action or event, thus returning to the core view of the film: film originates from psychology, and the psychological basis of film invention is the imagination of reproducing the complete reality. This argument about the expression way of the film is ended by Mitry, who believes that the reality of the film; namely showing the nature of the real world, does not lies in the technique of expression. No matter montage or long shot, neither of them is the core issue expressed by this art of film, because although film aims to present the most

realistic reality, in the whole creation process and when the audiences are enjoying the film, the so-called “reality” has already been digressed from the original state and become a reality-like imagination. This is the inherent characteristic of film. In other words, film is based on reality. However, through the choice of film shots and the cooperation of mise-en-scene and light, and after the second processing of montage or long shot, it has become a kind of metaphorical complex imagination product. This product is an art form always focuses on human thought and is projected on the two-dimensional screen with thought expression as the technique and sound picture form as the carrier, which has great potential significance and unified attraction but different impacts on the audiences. The analysis and research of such art form is continuous changing and developing along with all the possibilities of the human civilization. Such dynamic art development process requires scholars making analysis with a more tolerant research attitude and open mind, as well as a more flexible method.

The Impact of Technology

The rapid development of video art takes the shine off the original such as the novel, newspaper, magazine and radio. As an essential means supporting the development of the film, technology not only changes the essence of the video art, but also changes its mode of transmission, thus changing the public’s understanding and acceptance way of culture, in particular, the popular culture with entertainment as the core purpose. Benjamin thinks that the history of art describes the polar motion in the artworks; namely the cult value and exhibition value. Due to the diversification of the replication methods of artworks, the

exhibition value of artworks is enhanced in large scale, so that the quantitative change leads to the mutations in the quality of its nature; while film is the most perfect representative of this shift. The technology in modern society is the same as that in primitive society. They have the same social effects. But modern technology is not bounded and it changes the transmission mode of art. Accordingly, people's perception way of art is also changed. Especially for film, in Benjamin's opinion, the production mode of film cannot do without machinery, in particular, the continuous attention of the camera shots. This mechanical intermediary on one hand weakens the worship value of film (aura), and on the other hand forces the actors and audiences to take the identification of the camera shots as the premise. As far as Benjamin concerned, film is a totally new art combining photography art and other art forms, opening a daily living space and an unconscious experience world for us. Hereby, as the artistic dialectics proposed by Collingwood, familiar things glow exceptional brilliance, the shot gets involved with our so-called true core with a special technique, and reconstructs the "reality" of our daily life with an unconscious involvement and presents it on the screen. The shot is the most effective tool embedding the human imagination into the internal reality. For example, animals such as cat and dog presented in the film are almost the same as those in real life. A film is just like an active photography art while this active photography is, in most cases, regarded as a kind of recording tool and applied to use. From the film screen, the audience establishes a close relationship with the reality through film camera.

Due to the continuous improvement of the photography technology, the shooting and presentation of the film realize the realm unavailable by other arts. Griffith creates more possibilities of the shots, liberating the film photography from the static art state

(Sadoul,1982, translated by Xu and Hu). He creates the push, pull, follow, and shake as well as the changes in various types of scene. As a result, the camera is endowed with more functions, which can show the photographed object and scene from various angles and distances. At the same time, he also turns the early photoplay focusing on scene into a kind of art activity with shots as the center. Griffith distinguishes film with photography from the perspective of photography technology, and at the same time thoroughly separates the film from the drama. Film photography is already not a tool anymore, but the expression of the film soul. The development of the world film art proves that camera is not only a tool of recording and reflecting the world. In addition, it can give its performance object extraordinary connotations. There is a shot which can be seen in many films. The protagonist is located in the center of the screen and walks towards the distant, but the shot slowly pulls back. The movement of the protagonist and the shot not only pulls the protagonist away from the audience by distance, but also by psychological distance, thus producing the effect of alienation. Such transformation from the presentation in the external form of the inner world of human is what human culture has pursued with great efforts through various art forms for a long time. Therefore, the development of camera technology provides many expressions and spaces for the expression of the human's thought crystallization-culture.

If the camera and supporting photographic equipment are the external form of film technology, then montage is its internal form. Through the demonstration of the importance of montage in the above, it can be concluded that montage is not only the narrative means of the film, but also a kind of philosophy, as well as an expression of thought. Eisenstein overemphasizes the author's (director's) guidance on the audience. He points out that each

segment is not related and the ultimate overall thing itself is predetermined. Under this premise, various factors and the conditions between them are determined. Theme and thought lead the whole works, so as to ensure every part of the works have meaningful structure. The theme and thought controlled by the author (director) embody the essential attitude of the author on the phenomenon, and become the decision criteria of all the basic element of the result processing. But Eisenstein arbitrarily considers that montage includes the audience's emotion and rationality into the creation process, so that the audience can experience the process of the author's image creation. Through the analysis above, when the image is presented to the audience, it is digressed from its original source. The audience cannot judge whether the impact caused by a shot or a group of shots comes from the director, the editor or the actor. Secondly, according to the conclusion of Cutting (Cutting, 2014; Cutting and Iricinschi, 2015), the filmmaker and the audience are actually experiencing a different process (physical and psychological). As to the materials, the director carries out conscious discontinuous activity in accordance with the montage and other techniques, which is also in conformity with Loschky's "tyranny of film" theory (Loschky et al., 2015). In other words, filmmaker consciously breaks down the narrative into several events, and aims to generate awareness of these events within logical distribution (causal relationship). Eisenstein's assertive view is soon found by Mitry. In order to be approved by the censorship, some publishers in the Northern Europe place the beginning and end upside down, so as to reduce the revolutionary of the film. It indicates that the sequence of montage and montage itself is a kind of aesthetic phenomenon with obvious purpose (Mitry, 1980, translated by Cui). The theme can be controlled by human, and montage is the expression technique of such control.

As an aesthetic phenomenon, montage is closely related to and cannot be separated from culture and society.

The appearance of television and film makes people immersed in the image and delusion world instead of the material world. As to the research of film, the paradigm is a controversial issue. Scholars from different fields have an endless debate on whether the thinking and theoretical research of film should be included in the global, national, or transnational scope. Film brings direct visual presentation and stimulation to the mass people, and abandons the limitation of the language words. Such filmic features make film a mainstream art today, and bring the once lost “language” of common use and common understanding back to the human. Through reviewing the development of history and culture, we can see that the film has a great influence on the living way and production of human. And the development of technique not only brings film montage, various shots or special effect, from the perspective of aesthetics, technique brings a kind of harmony for film. It is the unification and distillation between the expression way of film and expression object, as well as the free transformation between the abstract idea and image.

CHAPTER III. RESEARCH METHOD AND HYPOTHESIS

Analytical Approaches and Research on the Narrative and Perception of Film

The Historical and Theoretical Background of Film Psychology

Cognition is the combination of affection and perception. People understand the form and meaning of artistic works through cognition of sound, shape, and color. Cognition is the start of aesthetic and rational activities of the brain. Viewers interest in a film originates in cognition, through emotional and imaginative responses, and results in an “untruthful thoughts”—a newly created reality—which the ultimate goal of filmmakers. Through the special audio-visual way of expression, filmmakers tell stories within a certain time by organizing and building shots with cameras and project them on the screen. Filmmakers use true stories or make up stories and apply a virtual way to present what is not really happening at that time. In other words, filmmakers make up virtual scenarios to make the stories seem to be true. The creative processes and products of filmmakers and interpretative processes of viewers had long been neglected till the appearance of cognitive science in the twenty century.

Cognitive Science arose in the mid-1950s and became mature in the 1970s, gradually influencing on many disciplines. For instance, cognitive science has made great changes in aesthetic research. Similar to aesthetic science, Cognitive science has significant interdisciplinary characteristics, but it emphasizes empirical studies of human mind and spirit. In short, cognitive science is a new approach to learning about an old issue—the relationship between the human mind and human spirit. Scholars of various disciplines have attempted to

provide a more profound and accurate interpretation of human cognition. However, cognitive science did not appear in the horizon of mainstream film research scholars until the 1980s. Since the middle and late 1980s, cognitive approaches were gradually introduced into the domain of film study by a series of books and papers, and stirred ripples among film scholars.

Bazin (1960) pointed out that film is the psychological production of humans' pursuit of vivid recovery of reality. He added that film appears because humans are born with a basic psychological need, namely "competing against time" (Bazin and Gray, 1960). Bordwell also recognized the obvious psychological and social effects of film (Bordwell, Staiger, and Thompson, 1985; Bordwell, 1997; Bordwell and Carroll, 2012). Even before Bazin, Münsterberg (1916) proposed in accordance with the limited viewing experience of his times, that the technological and social needs of film underlie its existence. If we want to understand through what means film moves the audience, we must turn to psychology. In particular, he points out the development of the internal and external conditions of film. Internal conditions refer to audience psychological reaction while external conditions refer to anything related to the filmmaking process. He believes that when the audiences are enjoying a film, they are stimulated by the visual information shown by the picture. For example, the movement seems to be real, but actually it is produced in the mind of the audience. In other words, the continuous pictures shown by the film are actually different from the continuous pictures and scenes in our daily life. But the psychological activity of the audience, as the internal condition of the film, unifies the audio-visual information segments presented on the screen, thus forming the continuous movement. The audience's own psychological activity, together with the audio-visual information of the film, creates the film's virtual space. Münsterberg

interprets that dynamic and influence of film images from the cognitive perspective.

As a psychologist, Münsterberg (1916) opened a new research area in which the audience's psychological process is used to investigate film. Regardless of what film portrays, Münsterberg always emphasized the decisive role of the subject (human), as well as the importance of humans' psychological feelings in aesthetic and cognitive activities. He proposed that the objects shot in the film are recreated through filming technique. With the film as the carrier, the events and characters are presented on the screen with aesthetic structure. This is a process of transferring the real object into imagination. Münsterberg's description of the process from actual shooting to showing actually supports the view that film is a psychological product. Münsterberg believes that people can rely on perception to simply understand something in the outside world. However, the production and interpretation of the significance are purely subjective. However, the conclusion of Münsterberg ignored the fact that there is more than one step involved in transferring the film's "reality" to audiences' recreation of it. The first step concerns the shot itself, it is manipulated by producer's intent and cinematographical choices. As the substitute for eyes, the shot selectively records the object and carries out logical arrangement based on the second step—montage rules. Filmmaker's ability to manipulate shots is the reason that many scholars consider film as a "shot art." Such "shot theory" actually ignores the important characteristics of film as a psychological product. Münsterberg's description of the film shooting and showing actually makes up for the deficiency of the shot theory. Although the main method of film is shooting the actual objects, the film formed deviates from the original reality. And the psychological product resulting from the audio-visual stimulation replaces the

actual objects with a new virtual reality. Then, according to Münsterberg's conclusion, through shooting and recording with the film, the narrative and characters presented on the screen are already not in the original state. The new state does not exist on the film or the screen, but exists through endowing some images with movement, imagination, emotion, memory and other high-level mental activities, thus achieving the psychological significance of the film. Early in 1916, Münsterberg's understanding of the essence of film had already surpassed that of his contemporaries. In particular, he consciously attracted the audience with the utilization of the movement rhythm, time change, scene transference, natural landscape, actor performance and light movement, and created an unconscious mental activity in the audience. Moreover, Münsterberg also adopted the principle of Gestalt psychology (Gestalt refers to the conception that any form or shape is not the combination of small parts; it is the result of reconstruction by the subject's perception (Koffka, 2013) in film analysis, which suggests that all phenomena, in terms of cognition, are decided by the complete psychological scenario instead of a single element. Münsterberg believes that the psychological effects of Gestalt lead audiences to accept the totality of the film, and this acceptance is a kind of self-deception. Münsterberg is the first person to link physical characteristics (Persistence of vision, refers to "the miracle by which the still-silver halide dust of photography is transformed into palpable, living motion (Anderson and Anderson, (1993).") with holistic psychological (Gestalt) interpretation, and to bring forward the idea that film is completed in the imagination of audiences instead of projection on the screen.

The French film critic Delluc (1920) proposed the concept of the "photogenie" (Film) and which emphasized the combination effect of the film and photography. He saw that the

development of the photographic technology and cinematographic skill provide more possibilities to lend film as aesthetic quality. This point of view was accepted by Benjamin (1936) 17 years later. According to Benjamin, technical replication is more independent of the original objects photographed. For example, in photography, technical replication can highlight the parts of original part which cannot be seen by the eyes but can be captured by the shots. Replication technology can liberate the photographic objects from the original state. Both Münsterberg and Barthes ideas concur that the objects in the shots are digressions from the original states. In this way, replication technology can liberate the photographic objects from their original state and offering them a new life. Delluc's theory of photogenie is regarded as the core of the avant-garde film theory, but it is also considered as a vague theory because it advocates classifying film into the scope of psychology research without offering scientific evidence from psychology.

In 1921, Eisenstein proposed “the attraction of montage” combining the specific, technical, and ideological potentials of montage with film aesthetic. Juxtaposing images/clips in the editing process shows the greatest power of film, creating a “third meaning” that as a whole, exceeds the meaning of the sum of its parts. In fact, Eisenstein’s interpretation of montage elucidates the perfect combination of the contents of consciousness and art’s form. The combination of two images is no longer the actual meaning of the two sequential images, and instead, it has produced some new concept. Eisenstein opened the door to increasingly innovative filmmaking approaches and techniques, creating new challenges for both filmmakers and audiences. For example, in *The Battleship Potemkin* (1925), he cuts one event in a period of time into several separated events occurring in several different time

spans to create the feeling that the massacre is going on endlessly. The actual time of the event is extended by montage to become the time presented in the film. By means of these approaches, “Odessa Steps” sequence turns into acceptable psychological scenes for the audiences.

Pudovkin also advocated the application of montage in films (Taylor, 2007), objecting the view of montage as a method of cutting. However, Pudovkin paid attention to the links between shots which represent the fluency of montage. The consistent montage would link a series of shots into a line to promote the development of plots. Secondly, while Eisenstein regards montage as a minor to produce metaphor and deep thought. Pudovkin believes that montage is a dialectical thinking process which reveals the internal connection with real life. Montage could clearly demonstrate the meaning of the film and promote the plots of a story. As for Pudovkin, film is a medium for filmmakers to transmit their own thoughts and ideas to the audiences and reveal a realistic view of the nature of life. Montage is the essential tool. Language, thoughts and montage are the core concepts of Pudovkin’s theory. It’s easy to figure out that montage is no longer a means of creation in his mind; instead, it is a way of linking, making it possible for filmmakers to transmit their thoughts and psychological activities to the viewers. This organic link between montage and reality makes films to be one part of human thoughts.

Epstein (1963) expanded with the concept of Delluc’s “photogenic” and proposed that films are the production of psychology. He believes that the images viewers see on the screen are the selection of the cameras and editing choices. While watching a film, the viewers extract and refine the certain essence from the characteristics of the film. The concepts that

viewers get from the screen is the derivation from the concept of camera selections. The first layer of conception has come into being, while the camera shoots the objects. Epstein pointed out that what viewers see is the product of camera selection and editorial manipulation of reality—in other words, a reflection of it. While in this way, films are real while the stories are deceitful. Therefore, the tale of films reflecting real world is shattered.

Arnheim (1957) was the first psychologist of Gestalt school to study systematically the audio-visual expression approaches of films. He proposed partial illusion theory regarding the relationship between images and reality. Arnheim assumed that we are satisfied with learning about the most essential aspects of real life and selectively only what we consider important. Therefore, to represent these most essential parts in films could satisfy the audiences who could then have a complete and artist impression on the film. Furthermore, Arnheim believed that the artists could have enough space for creation only if the reality is inconsistent with expression approaches. From his theories, we can find that he objects artworks to imitate and copy real life. Besides, Arnheim also doubt with the physicality of viewing film images, he proposed that what viewer see is neither entirely 2-dimensional (refers to the screen) nor entirely 3-dimensional (refers to visual scene in real life), but is something in between. From this, Arnheim's work has interpreted film from the physical and psychological perspectives, offering space for creation as viewers accept the reality presented on the screen and respond to it.

At the source of the evolution of films as a psychological product is the fundamental human desire to replicate reality, according to Bazin, who challenged the psychological theories supported by Epstein and Pudovkin. Bazin (1967) brought up with a core proposition

about film which is the unity of images and the filmed objective reality. He saw that films as the duplicates of psychology in reality as a phenomenon of idealism. Bazin insisted on the psychological foundation of all arts including photography and film, which means that humans pursue irrational desires which have extended from primitive society. Theories alone do not suffice to help us distinguish those desires from reality and illusion. Bazin's notion that objects in the film are consistent with their existence in reality was a novel idea in film psychology theory.

Mitry's film conception reconciled montage and the long shot, and in his view, the conflict between montage and the long shot is just conflict of rhetoric instead of aesthetics (Mitry, 1997). He attempting to integrate the studies of Eisenstein, Arnheim, Bazin, and Balaz, he established the three layers of theoretical cognition of film aesthetics—image, symbol, and art. The first layer is the vision which is a concrete object, a fraction of reality. The second layer is the signal, which means that visions are formed into images according to specific structures producing the meaning of signals. The first and second layers make film a language, and filmmakers bring this language to the level of art through imagination. To find scientific evidence for his film aesthetics, Mitry attempts to find an interpretation in psychology, especially cognitive science. Mitry thought that the reason that a film seemed real was that it represented a story. In another word, the imagination is created in moving images with actual meaning. The particularity of films (derived from reality, yet higher than reality) makes it possible to represent the semiotic of the story and also concentrate all the underlying meanings. Regarding montage, Mitry believed that viewers could not notice the discontinuity of the things in the film, and that disconnected objectives are linked together

through visual and audio information to form a complete story. To gain completeness in the scattered appearance is the eccentric nature of films.

As the representative of Semiotics, Metz further developed the linguistics approaches of Saussure and established the systematic study of film semiotics (Metz, 1982). He suggested that films imitate human mind and the world, and that films could produce pleasure and illusion in audiences. The intense emotions expressed in the film would resonate with the audiences as they combine their imagination with the film (Metz, 1982). In another word, audiences are attracted to the world built with audio-visual information by filmmakers, and have entered in a seemingly real but virtual world. In the virtual world created in films, the unconscious psychological processes make it possible for viewers to create the connection between the world created by filmmakers and themselves. Meanwhile, Metz emphasized that film screen is just like a mirror which reflects everything but the viewers themselves. Thus, the viewers perceive the audio-visual information on the screen thus viewers play an active role when they emotionally connect with characters on the screen and ultimately recognize themselves in them. This emotional identification can be achieved only by an “agreement” between the audience and the camera. However, Metz’s work is defined as psychoanalysis instead of cognitive psychology, and there is no interpretation of the viewers’ psychological perception processes.

Deleuze (1986) found a practical application of film theory with the help of the theory of substance. Deleuze improved the ambiguous concept-image-movement of Bergson (1988) by giving the film the “subjectivity.” The image is a subject in itself, separate from human intuition. The subjectivity is decided by a very special mobility (effect de mobilite, translated

by the writer). In fact, using film as a carrier, Deleuze makes time, movement, and integral life into theory. Deleuze provides a new thinking method for us to study film; it distinguishes two film movements in details: movement (le mouvement) vs (travel space) l'espace parcouru (translated by the writer). The former one cannot be divided or reappear, while the latter can. The movement cannot take position changes of space and time as reconstruction and decomposition (reconstitution ou decomposition). This difference reflects Deleuze's a very complicated point of view: the substance without changing can't be divided. Deleuze opposed Bergson's statement that film is a mirage (illusion cinématographique). Also, he points out montage is the most important feature of image movement, namely from natural perception (perception naturelle) to cinematic perception (perception cinématographique). In natural intuition, we think film is a projection and replica of illusion. However, in cinematic perception, we hold that illusion may be influenced by the intuition of a subject and changed (image movement). According to Deleuze, film is a perceived event that exceeds the image on the screen, creating another world, one between the real world and that of imagination. The world that viewers see from film is not a world of substance but a world that can be felt. Film simulates the intuition of viewers in daily life, linking different image flows into a whole of both order and conflict. While watching, viewers unconsciously integrate the image flow into the time flow in the real world. However, the viewing experience also provides more possibilities of perceiving "reality," which cannot be replicated in real life. Film does not build an image in light of daily experience. It breaks the experience, frees viewers from a fixed and single angle of view. For example, through discontinuous visual image, a film can create one whole meaning. Viewers rarely notice that discrepancy. In this sense, viewers are

liberated from a single way of observing the world. According to Deleuze, film subjectivity is generativity, which makes viewers not just think about singular images but combine them into a whole.

Hochberg examined viewers' perception of art work, such as paintings. In this viewing process, viewers interpret pieces of visual information based on their own experience. Such "visual clues" may be obvious to some but maybe not readily recognized or accessible to others. Hochberg explained this phenomenon by citing classic perception theory (experimentalism and Gestalt) (Gombrich, Hochberg, and Balck, 1973). Daily experience teaches people to use what kind of rules to judge two dimensional images. The viewers can recognize "hidden clues" in personality priorhistory. Gestalt holds that people's reaction to an image is not decided by stimuli themselves but by the modular structure and coding method of our brain. Hochberg also pointed out Gestalt theory ignores a very crucial matter. When viewers are watching a film, they acquire the information through multiple scans and build relations among these pieces of information. It proves that viewer's interpretation is selective and subjective. The Viewers do not perceive all information on two dimensions; they chose what they want to see. Hochberg applies the whole explanation to film analysis. After discussing the psychological process of viewers watching different shots of the same scene, he concluded that the viewers' understanding of film is decided by eye movement.

Bordwell (1985) applied cognitive theory in filmology explicitly for the first time. He believed that the narrative principle is the basis of film analysis, and essentially responsible for specific audience response, for example, a classic Hollywood film has fixed plots and structures, including a goal that needs to be achieved. The constructive process of the film is

similar to the cognitive process. Viewers are not passive receivers. They use all sensing ability to find clues in film and deduct it. Finally, they can build a story with ordered reasoning (Bordwell, 1989). Although Bordwell is trying to put forward a new method for film research, he does not completely deny psychoanalysis. On methodology, he avoids the linguistics analysis model and adopts perception theory/reasoning theories to understand how viewers can understand the cause and effect narration as well as time and space relationship in the film.

Increasingly, the film research is relying on scientific methods. It is abandoning the abstract and philosophical approaches replacing them with quantifiable data. In the late 1980's, Carroll voiced strong criticism of psychoanalysis. He holds that scholars must abandon the theories that impede the pursuing of research and urge for a new method for film research (Carroll, 1988). Later on, Carroll and Bordwell made another amazing contribution. They criticized the grand theory research (structuralism, semiotics, post-structuralist theory, psychoanalysis, Marxism) which had occupied film research for many years and discussed the situation that film research may face when the grand theory ends (Bordwell and Carroll, 2012). Although there are many problems in cognition research, Bordwell and Carroll work with many other scholars and suggest other possibilities and theory directions of film theory forms. Since grand theory had long dominated film research, some scholars believed that without it, film research would lose meaning. They worry that the nature of film and viewers response would lose attention. Scholars pay much attention to finding the corresponding relation between film work and grand theory, which causes the separation of film research from the nature of film, the audience, and the filmmaker. Furthermore, Carroll pointed out

that it is impossible for scholars to compare the expression of a film with the expression of language. The essential issue is that an adult can understand the expression in the film without any training (Carroll, 2011). Carroll provided more possibilities for studying film expression in the area of human perception and cognition. Furthermore, Bordwell (1989) pointed out that most of researchers may consider film studies as a hermeneutic discipline whose primary mission is to interpret texts; however, he indicated that cognitive studies provide film studies more clear and convincing research methods, which requires scholars to conduct comprehensive research about condition, phenomenon, and impact that film brings to audience.

Gibson (1979) criticized the “New Looks” and behaviorism and proposes the concept of “Affordance.” He defined the affordances of the environment are “what it offers the animal, what it provides or furnishes, either for good and ill (Gibson, 1979, P119)”. According to this definition, “Affordance” can be measured only when it is connected with animals. It is not the abstract physical property. It is the specificity of animals and relevant to animals’ gestures. Unlike the subjectivity of value, Affordance is subject as well as object. It is not changing with human will. However, it is subject. Without animal, “walk-on-able” will lose logic of existence due to having no target. Gibson thinks affordance is a dichotomy that goes beyond subjective and objective. It is physical and psychological, or neither of the both. It points to the environment and observer at the same time. In the film, when filmmakers are designing a story plot, they use each shot as the carrier to express audio-visual information. The plot designed by filmmakers need to be clearly known by viewers. Viewers should be aware the logical relation of former and latter, namely who did it, what happened, what made

it change, and how it will change. Thus, no matter statement or flashback, this design is a narrative affordance. We should call it sensible affordance. In fact, though viewers miss several shots, they can generally guess the development of the story. The word affordance hides an important content-resonance. For example, on a hard, wide and smooth surface, compared to the sloping surface, a flat one can make people feel “walk-on-able”. When viewers are watching films, they do not need professional training to understanding films and write down notes. Just like the conditional reflex, they can receive the information in film and are free to imagine anything they want and may react exactly that filmmaker intended. That is the film with strong affordance. Animal consciousness provides the basis (the sense of place, event, useful information and dangerous recognition) of ecological psychology, it also explains how animals control and organize their actions, which resulting in their sense of satisfaction (Gibson, 1979). It is an unfortunate that Gibson’s theory is more about philosophy, not the real evidence. For example, the explanation of affordance lies on abstract notion which are difficult to valid through experiments. However, Gibson’s research is meaningful, using cognition; Gibson complimented research in neuroscience by using cognitive approaches.

As the earliest supporter of cognitive film studies, Anderson conducts his research position from “an ecological perspective”, claiming that “ultimately, the utility, the adaptive value of any sensory system, is its capacity to gain information about the environment, information that an organism can act upon to increase its chances of surviving (Anderson, 1996, p.24).” As for the film, he pointed out that the illusion of film may have no connections with culture and advanced level brain activities (such as induction or deduction). Each

individual has the ability of processing information acquired from the environment around them through their internal visual and audio systems (Anderson, 1996). However, those visual and audio systems have not evolved for human beings to watch film; instead, films have evolved to allow us to watch it (Cutting, 2005; from Anderson and Anderson's book *Moving Image Theory: Ecological Considerations*), human beings instinctly compensate for the incomplete psychical world in the films (Anderson, 1996).

Like Bordwell, Currie (1997) provided a naturalistic explanation to the film phenomenon, namely, the way we understand the film in many aspects, the same way we understand the real world. This explanation of the film requires us to further explore audio - visual level, use the continuous images presented by the film to illustrate coherent meaning, and extract the story from the order of events. In most cases, the human beings interpret film effortlessly, because we are not only born with the cognitive ability to describe the vision object, but we also have the ability to recognize intention. Furthermore, Currie argued "film images have no grammatical structure, no 'atoms' or minimal semantic parts out of which they are composed (Currie, 1997, p.56);" thus it is impossible to break up a film into the sentences. Currie thought that a film does not contain cognitive illusion, because viewers believe what they are watching on the big screen. The switch from language study to "visually presented narratives" requires scholars to "devise ways of isolating narrative elements without recourse to language (Currie, 1997, p.56);" however, how to achieve this goal is uncertain. Currie suggested that the psychology of film and most comprehensive psychological theories have the same origin and should be consistent with each other. Empirical psychology is the most efficient research method to interpret the effect of imagination on visual representation and other parts in a

film.

Scholars did not uphold Anderson's ecological approach to explore cognitive film research; in contrast, some scholars begin to explore the relationship between film interpretation and emotion. Different from intention and imitation stressed by Currie, Tan (1996) considered film as an emotional machine, and he emphasized that filmmakers use the narrative that is filmic technique to make us produce the emotional response, and continue to control the change of the reaction. To some extent, Tan (1996) also supported illusion theory, thinking that the viewers accept film as the authentic reality to some extent but will not be deceived. The audience has multiple coding abilities, and they know the world shown by the film is the "constructed reality." In other words, the film makes a kind of illusion rather than the delusion. The complex film expression system manipulates a particular vision of the characters, to create a kind of witness emotions in the viewers, who focus on specific characters structure with empathy and interest. Smith (1995) proposed that viewers give film an emotion through "engagement" and sympathy which is a process comprising three parts: recognition, alignment, and allegiance. Recognition refers to the viewers' process of building characters; alignment refers to viewers' establishing a consistent relationship with characters that relies on the shared vision and knowledge; and allegiance describes viewers' moral evaluation of characters, resulting in a cognitive and emotional relationship with them. Smith's theory provided an intuitive display of an emotional process produced by viewers when watching the film, allowing narrative and emotion to become an important topic in cognitive theory. However, Smith did not integrate film technique into his own theory, making it impossible to differentiate viewers' emotional experience through film from their emotional

in reality. It is multiple effects of visual and audio expression of films, including color, characters, movement, music, and dialogue, that create the viewers emotional reaction.

It is worth noting that the common point of film cognition research is based on the audiences' reaction to film, but for the research object, there are three aspects: 1) film experience – How audience perceive and understand film; 2) The interaction between film and social culture, which integrates with humanistic research. 3) Narrative and aesthetics – is the analysis of how the psychical attributes of film collaborate with the story to create the viewers' reaction.

After Cutting and his students analyzed the brightness, movement of different types of film and measured the shot length (the samples were 150 Hollywood films since 1930), Cutting found that the shorter the shot is, the faster the movement in the picture is. In addition, to explore function analysis of the action and depth perception as well as perceptual stimuli, Cutting used modern perception research tools to analyze and film rhythm. He speculated that the golden ratio found in art, nature, and mathematics might play a role in explaining why people would focus on film. The mathematical theory may not be a fixed formula of aesthetic expression, but a $1/f$ concept from chaos theory. The $1/f$ proportion is a regular rhythm found in all of nature and a constant in the universe (Cutting, DeLong, & Nothelfer, 2010). Cutting respectively compared the shot duration length and the average shots length of the entire film, namely rhythm. It is found modern films (shot after 1980) are closer to the universal ratio $1/f$, so the modern films can increase our attention. That is to say, when the director, photography, and editor select film shots composition, they should achieve synchronization with the human nature focus mode.

Event Theory and Event-Indexing Model

Among all the research of film experience explorations, scholars with the event-indexing model as the core concept who use event theory to interpret and unscramble viewer's perceptual activities when they are watching a film. The Event-indexing model is seen as the principal theory of the situation model (Zwaan, 1999). The model argues that readers will actively process all current information to construct the situation model. The event is the core unit to build mental representation in the situation model, and generally reader will trace the change of events in the narrative from five dimensions, including time, space, protagonist, causality, and intentionality (Zwaan, Langston, and Graesser, 1995). When one of these dimensions changes, readers will update the situation model and build a new model. Zacks and his colleagues used the paradigm of event segmentation to explore the role of the event in reading comprehension and memory (Kurby and Zacks, 2007; Zacks and Swallow, 2007). According to this paradigm, readers will decompose the received information into some meaningful units when reading or watching videos, dividing them into temporal segments. And the factors influencing this segmentation are also five elements in the event-indexing model. From the above statement, it can be seen that scholars advocating the event theory (especially event-indexing model) clarify the film viewing process as a heuristic process, and the experienced viewers tend to like predicting what will happen according to their understanding of the plot and the understanding of the real world.

The combination of cognitive theories and film studies is an important milestone in the history of film research. Its rapid development not only provides an unprecedented critical choice- interdisciplinary empirical research for the film theory, but also makes up for the

problems ignored in the film study-the audience's conscious and preconscious work (Bordwell, 1985). For the solution to cognitive science for the audience emotion, the research on the viewer's brain cognitive and emotional reactions in the process of watching a film should be placed before psychoanalysis, because the ultimate goal of cognitive theory is to help scholars to understand perception, cognition, inference, judgment, memory and imagination, and other human psychological activities. Different from previous film theories and psychoanalysis, cognitive theory emphasizes scientific method, by discussing related physiological processes to answer unanswerable questions about the previous film theories, for example, how the viewer's emotion and cognition cooperate. The development of cognitive film research has many problems that have not been solved. "What is an exactly cognitive theory in film and media studies?" What marks the boundaries of a cognitive theory that we would have today? What topics does it investigate, what sorts of questions does it ask? What research methods does it employ? How does it understand its place within the field of film and media studies" the collaboration with the scientific knowledge also requires scholars to have "meta-theoretical reflection"- the explicit distinction about what kinds of questions can be answered by applying the scientific models and what cannot be (Nannicelli and Taberham, 2014)."

To sum up, that the cognitive approach is used in the film studies causes a reflection on a fixed/old pattern in film research; with the aid of the cognitive approach, there are some primary explanations or answers to how film is interpreted and what kind of impact it produces. It is worth noting that cognitive scholars never refute that cognitivists would never deny the interaction effect between viewer's mental model and their social-cultural

background (Nannicelli and Taberham, 2014). Film psychology is interdisciplinary research with both natural science and social science, and a new subject born in the crossing field of film and psychology; it aims to reveal psychological law of the artistic activity of film (creation and appreciation), explore the common perception principle of the human on visual-audio language. Its marginality can not only make up for research deficiencies of the theoretical system of the film, but also provide more scientific audience research for film creators. But film is not only a kind of artistic expression, but also a kind of social phenomenon and a kind of artist group activity. A film is a dynamic modern social activity in which film creator, appreciator, and researcher participate together. These three participants relate with each other in 2- ways or more complex ways. If the psychology is removed from film research, researchers and filmmakers cannot accurately understand and control these connections. Film is a fascinating psychological phenomenon; film is not only a filmmaker's reflection of the objective world, but also a kind of dynamic subjective image; this kind of subjective initiative is reflected in the perception, emotion and will processing and cohesion of artists on the objective world. To be sure, no matter how complex and subtle the psychological processes of filmmakers' creation are, they are all not completely explained. The scientific explanation of film creation and interpretation is exactly the first task that we want to achieve.

The Position of Film Perception Scholars

During the past century, film industry and research have experienced various changes in all their artistic expression and techniques. In the past twenty years, scholars turn their focus

from “cold cognition (information-driven mental) process as the inferential and computational models” to “hot cognition (affect-driven mental process)” over the past (Nannicelli and Taberham, 2014). According to David Bordwell (2009), the film has an obvious psychological and social impact. So some scholars inevitably study the film theories with some new cognitive approaches. From the perspective of the research history related to the film, philosophers, psychologists, film researchers, and social researchers are all studying the relationship between the film and human reaction with the theories in their own fields.

As researchers, we should not just focus on the work of filmmakers or the interpretation of audiences, but also on the relationship between them. First, the film/story that the audience can perceive from the screen has lost its original status. Barthes' literary theory exceeded structuralism and post-structuralism, evident in his famous argument “the author is dead”. He opposed to put the author in the primary position of text interpretation in traditional research. In other words, he strongly criticizes the opinion of regarding the personal experience and creation intention of the author as the origin of the explanation of the meaning. This is of considerable influence on the later transference of works interpretation from the author to text, and even to the reader. Barthes took the description and evaluation of a woman in Balzac's *Sarrasine* as an example, and points out many possibilities of the source of this description. As to the real cause of this description, as objective existence, we can never get the answer, because writing is the destruction of the origin of any sound or view with a source. Writing is a neutral and reserved space. In this space, the original meaning could not be preserved.

Although Barthes has exaggerated the view of the author is dead, to a certain extent, when a fact is narrated, it no longer provides the original meaning with direct impact on

reality, but has an indirect impact. In other words, the narrated fact becomes another form of existence, which departs from the previous form. In the film, no one can distinguish whether the production of a shot is the result of the director, or the photographing, or editing, or the actors. As to the meaning of a shot, no one can clearly point out its source. In contrast, all information and objects with unclear sources are projected to the eyes of the audiences through film techniques and images with sounds. They form function in the minds of the audiences and produce memory creation and recreation. It is an analysis and explanation process of the memory. But in this process, the audiences don't know the particular historical background and real scenes of the shooting of the film. Instead, they only explain the stories formed by the characters and actions through the method of montage. Therefore, all the film researches focusing on the author, and attempting to analyze purely through the director background, the historical and social culture of the film, as well as all the ways explaining the film focusing on the audiences are risky.

The film is the psychological product weaved by multiple art and technique. This psychological product is not purely defined from the particular audiences but is from the perspective of the whole human. The interpretation of the film may need the support of many other disciplines and knowledge, so there is not a unified meaning. In case the meaning reflected by the film and the filmmaker is not determined, nor is the interpretation has a unified answer, the analysis of an understanding of the film is impossible to derive purely from the filmmaker or purely from the audience. The same as the meaning contained in the view the author is dead proposed by Barthes, when a film is created, it is separated from the original creator. The audiences do not know how the film was created, nor by whom, nor by

which processes. As a result, as researchers, we should position ourselves and the research between the filmmaker and the audience. This position can help to solve those issues. However, we need to ask what method should be used?

Since the birth of films, the human being has never ceased their exploration and innovation of films internally and externally. From the relationship between films and human minds or from the film expression methods in the literature review, it can be seen that the exploration of the film content and film information transmission process have been isolated. Film theory actually has proposed a direction opposite to itself. Taking film phenomena as the starting point of research, film theory aims to seek guidelines generally applicable to film art.

Film theories such as ontology (Balaz, 1970), montage (Eisenstein, 1985; Pudovkin, 1985, translated by He; Bazin and Gray, 1967), and structuralist semiotics (Metz, 1974) seem to ignore the influence of films on personal experience. Film is not an isolated entity. Instead, it has a particular attribute 'affordance' (Gibson, 1979). Films are both watchable and perceivable, which means the single film study is only the rewriting of a single aspect of films. Without the study on the interpretation of the audience and their emotional reactions, neither can the generally applicable guidelines for films be found, nor can the special attributes of films 'affordance' be completely embodied, which can be reflected only when associated with the audience. For example, the sorrow and happiness expressed in films will never make sense until the audience receives relevant information and makes corresponding responses. Therefore, despite studying the relationship between films and minds in the macro context, traditional film theories, in fact, putting films in a vacuum and trying to draw a non-subjective conclusion through a subjective method, violates the original intention of

seeking universally applicable guidelines.

The process of film cognition is the focus of film cognition study. Cognition includes perception, thinking, feeling, memory, and learning. What is worth mentioning is that information received and things seen in films are not exactly what we perceive in real life although the receivers are the same human beings. In essence, films aim to create a seemingly real but imaginary two-dimensional world, which allows the audience to produce a psychological reaction to films. Thus, film watching experience is not only controlled by the perception (the visual-audio language information that can be seen immediately) but by factors not always visible or perceivable (such as montage, story design).

While studying the cognitive process, film cognition scholars use their theories and isolate themselves from the audience and filmmakers, which may result in the isolation from the methods for exploring the cognitive process. Scholars believe in their theoretical knowledge which may, in turn limit their study. Psychology focusing on statistical analysis was introduced into film cognition study, providing scientific methods of analysis. Without a correct angle for study, the study will become one that gets subjective judgment through a non-subjective method. Undoubtedly, as film watching is a very complicated process, it will be extremely difficult to analyze and locate it.

To solve the problems mentioned above, this thesis tries to find a middle position between the audience and filmmakers by combining both the content analysis in film study and process analysis in cognition study and striking a balance between them. Additionally, this thesis aims to compare the difference in perception between the audiences and filmmakers and find perception units smaller than the event as well as perception of narrative

denoter serving as the basis for further study. Below is a review of existent concepts that have been used to analyze the narrative structure and interpretive units in film.

Existent Concepts for Narrative Structure and Interpretive Units in Films

1. Event: “a segment of time at a given location that is perceived by an observer to have a beginning and an end”(Zacks and Tversky,2001). While Cutting believes that scene as the medium size chunk of story which is broken by most of narrative art work should consider as the synonym for event (Cutting, 2014). Zwaan et his college define it as “Events are the focal points of situations conveyed in narratives and are connected in memory along five dimensions: time, space, protagonist, causality, and intentionality (Zwaan, Langston, and Graesser, 1995).

2. Event segmentation: the process of spontaneously segmenting larger activities into smaller events called event segmentation (Swallowet all, 2011).

3. Event structure perception: the process of perceiving discrete units from a stream of continuous information (Zacks, Speer, and Reynolds, 2009))

4. Syuzhet: Bal pointed out that there are two layers of interpreting narrative: fabula and syuzhet (Bal, 1988). “The syuzhet (sometime translated as “plot”) is subset of the fabula that is presented via narration to the audience “(Riedl and Young, 2010)) Bordwell indicates that syuzhet is the “actual arrangement and presentation of the fabula in the film (Bordwell, 1985)”

5. Plot: is the synopsis of main incidents in a story which is a process of change and dynamic metaphors (Tilley, 1992)

6. Fabula: the term is coined by Formalists which “embodies the action as chronological, cause-and-effect chain of events occurring within a given duration and a spatial field.” it translated as “story” that “never materially on the screen or soundtrack (David Bordwell, 1986).”

7. Story: “from a narratological perspective, a story consists of a complete conceptualization of the world in which the narrative is set, which including all the characters, locations, conditions and actions or events that take place during the story’s temporal extent (Chatman, 1980).

8. Frame: the minimal psychological unit in film display. Normally 1 second of film consists by 24 frames.

9. Shot: is a series of frames which runs for an uninterrupted period of time. (Hou et al, 2015)

10. Scene: is the duration of time that includes two or more camera shots and presents spatial and temporal continuous actions within it (Metz, 1974).

Based on the conceptions related to film and narration listed above, it can be seen that most of them serve to form psychological units for film expression or technique. The frame is the minimal psychological unit in film recording and showing, and it composes the shot as the editing unit by filmmakers; a series of related shots produce scenes which may or may not include the same time period, characters, and locations. The story (Fabula) contains the plot (syuzhet) which is composed of scenes, shots, and frames. However, these units only can serve as the film expression analysis instead of demonstrating how audiences interpret the audio-visual information. First, the audience may not be aware of the changing of frames and shots; some

shots or frames are too short to be noticed or identified. A modern film has approximately 1500- 2000 shots, the average of each shot has become shorter thus the pace of the film is becoming faster (Cutting et al, 2011). Due to the restriction of brain mechanism, the audience cannot remember all the shots or scenes, the human being can perceive the information and capture them in the buffers as the short memory and will forget them soon if they cannot be used by the central processor (Reisberg, 1997). Furthermore, the brain can process one task at one time, which means if people are watching the film, it is impossible for them to be aware of the shot or scene changes (Reisberg, 1997). Understanding and interpreting the film is a complex process which involves semantic analysis, visual perception, memory, emotion, and complex information cognition; at the same time, audiences are not passively receiving the information on the silver screen even though the story is carefully designed by filmmakers trying to manipulate audiences' mind and attract their attention. The audience is actively perceiving and interpreting the film and segmenting a film to a series of events, both bottom-up (data-driven) and top-down (inference or using context in pattern cognition) processes may be interacting during the watching behaviors, thus it is hard to use shot or other filmic expression units to conduct the studies, because top-down process may not be fully reflected by analyzing filmic features. Secondly, the audience does not necessary interpret each shot in order to understand the story. Shots and frames or even scenes are actually regarded as the information carriers which convey the visual and audio information. Currently there is no study to compare these research methods, which are all based on particular filmic units, we do not know which method is preferable or more accurate in the process of analyzing the audiences' interpretation.

Event and event segmentation are defined within psychological discipline; however, they have relied solely on real life perception not film perception. In addition, event segmentation demonstrates only the process of audience's interpretation from memory and judgment and ignoring the connections of filmic factors and memory and inference. The nature of this research indirectly proves that there are differences between filmmakers and audiences' interpretation since watching film is a dynamical information transmission involving both filmmakers and audiences. There may be a smaller unit than event assisting audience's interpretation. One may argue that audience's interpretations are different due to their personal experience or knowledge. However, filmic characteristics, such as direct image representation and reality imitation, also create perceptions and interpretations of film that are universal to all human beings. In order to identify the common and different perceptual and cognitive units of filmmaker and audience and scientifically quantify the film, the thesis proposes that distinguishing filmmakers and audiences' perceptual and interpretive units on film cognition is important to quantify film and tries to identify the smaller interpretive units of audience's cognition such as the narrative denoter. This idea is largely based on film attributes and event theories and may be a basis for future experiments.

Event and Minimal Unit in Narrative Studies

It is undeniable that film is an art form with its own characteristic. It is not a secondary form of literature, nor is it the image form of theatre. Its flexibility and complexity have brought many difficulties and possibilities for scholars to study human mind. Through literature review, scholars have begun to understand the uniqueness of film in its own way.

Therefore, we study it on a basis of the film creation and film expression way rather than putting it into a cyclic and dynamic state. As a result, the film research, or even the film cognitive studies in the early times has experienced the process from the exploration of the film ontology to the research of the viewer perception and cognition. However, regardless of the content of the study, it will be challenged from various aspects. For example, film theory scholars think that social scientists diminish the philosophy of film through the form of data; while psychological scholars consider that the analysis of social science on the viewer is not logical enough, or cannot explain the core of the film phenomenon. Scholars from different disciplines accuse each other that their actual work is to impose their own doctrine on the possibility of another kind of thinking (Colebrook, 2003). From the essence of the film, they propose the method of combining film research and cognitive science, putting the film research between filmmaker and viewer. They also propose new concepts of film analysis units. It is the trend of future research on cognitive film analysis to focus on the psychology and assist with the interpretation of film and other disciplines.

Based on Deleuze (1986), a film has both universality and uniqueness. This prohibits that cognitive research of film be analyzed through the directly perceived information obtained from fixed means, such as shot/scene, and so on. It has been mentioned above that the situation of scholars in different fields opposing each other is just the disputes brought by the analysis through such single fixed means. In order to liberate film from doctrine and bias, we need to reinterpret the universality and uniqueness of film.

The understanding of the universality of a film should be different from the past studies. We may need a new innovative approach to define it. It may not be the state should exist if

understood from the normal circumstances, but it shows how it guides the scholars' creation of the marked differences or the film life subjectivity through a kind of radical thinking. Therefore, the film universality in this study refers to all aspects of film production. Film production offers more freedom to observe the world that we have in our real life. This freedom is created by two filmic features, the use of shots and the rules of montage. In combination these two parts create a virtual world that everybody can understand. The film does not attempt to duplicate the daily scene or recreate a new novel in the way of literature, or start a narration with sound and pictures. Instead, film captures these images existing or not existing in the reality through the switches of the non-human eye angle and the human eye angle of the shots. This creates a kind of third perspective after the editing of the time and space with the combination of sound and effects. Connect these images into paragraphs and each paragraph plays its special role in the whole narration of film. Finally through the hierarchical cooperation of all these, creates the overall theme of the story. As a result, from this point of view, film liberates the moving image from the fragment of the image of any single observer, so that film has an "arbitrary angle" presentation with more flexible and abundant significance. Similarly, in film chunking and event, such independence and arbitrariness also exist. As Cutting's concludes, the edited film event and its role in the film are more complex and typically isolate one event within the multiple streams of narrative. (Cutting, Brunick, and Candan, 2012)

Furthermore, in daily observation, we usually observe from our interested view. The information we've captured is organized from the cognition perspective, thus forming an intermediate world between virtual and reality. This is the explanation of Deleuze (1986) on

how film technique starts from the realism attempting to reproduce the life and finally develops to the possibility of changing life perception. When film is like daily perception and connects different streams of images into an ordered entirety, this process pulls us away from the real object and entirety and puts the human into the streams of images. In other words, according to Deleuze, film has the ability to liberate us from the shared external world tendency formed by the image organization. This is the production process of film, but different directors' expression means of film narration have caused viewers' various understandings of the narration. This is the uniqueness of film.

Various scholars believe that film is a narrative means after time and spatial recombination in the way of sound and image. Therefore, they show the narrative structure and the impact on the viewer through analysis of the shot time and spatial transformation (Zacks, Speer, and Reynolds, 2009, Cutting, Brunick, and Candan, 2012). But the problem is that, before being presented to the viewer, film has experienced a series of changes (it digresses from the original shooting object and the reality, but creates the third meaning through montage technique, leading to the result of failure to identify the origin of the camera or the shooting object). The narrative structure judged by the scholars may not be what filmmakers pretend to present. Undeniably, film is indeed shot through the camera angle, namely the so-called fundamental edit unit of meaning. The camera completes the view finding on a basis of the script of the cinematographer. But in this process, the camera is actually separated from the two states of watching and perception, so that what presented to the viewers is not the single world observed by human eyes, nor the perceptible world from the camera angle; it is a series of complex two-dimensional coordinate axis of numerous

actions of time spatialization with time as the horizontal coordinate, which focuses on narrative. And the vertical axis is just the trajectory of these actions' role in the narrative. The biggest difference between film and other art forms is that film gives the viewers the direct and indirect images with audio-visual as the carrier and a series of actions as the perception subjects. In other words, the most advanced actions in the film are not the actions of the characters, the conversion of background or the mobile changes of the shot, or the so-called montage technique. Instead, it is the actions and meanings derived from the viewers' mental model of the action presented in the pictures. The analysis of the viewer's mental model involves psychology study, in particular, a cognitive film studies. The relationship between the film and psychology is not symbiotic rather than derivative. Small (1992) argued that a cognitive film theory employs a given work as the means to answer larger problems of human perception and cognition, and the endeavor must remain open to scientific corroboration or rejection(Small, 1992). He also pointed out that cognitivism promoted the derivation of film theory rather than its contribution. However, film/video research can actually offer more to cognitive research than the other way around.

As to the determination of the influence and derived meaning of the connotative action created by the filmmakers on the viewers' mental model, its production requires scholars to combine three layers of action. The first layer, motion refers to the mobile changes of the actor/thing directly perceived. This layer is the most intuitive perception. Most viewers can perceive the action. The second layer refers to the changes of shot and transitions of shot (cut, dissolve, fade) . The actions in this layer may not be completely and clearly perceived by the viewers. The third layer advanced action is commonly completed by the filmmaker in the

process of interpreting the cues hidden in the narrative. The advanced action layer is the best embodiment of the film subjectivity. As to the analysis of this layer, the problems brought by the analysis of shot, scene, event, and editing strategy can be also avoided. The universality and specialty of film determine that film cannot be analyzed based on shot, scene, and edits as the analysis units. In shot analysis center theory, the most common approach is to analyze film semantically. The semiotic scholars believe the shot in film narrative can equal to the sentence in linguistics (Monaco, 1977, Carroll and Bever, 1976) which was the unit of carrying information for film narrative structure. It had discrete beginnings and ends.

Event Denoter as a Possible Important Interpretation Unit

Based on the discussion above, in order to generate a broader psychological and filmic analysis in film narrative studies, an alternative level of event is proposed and examined in the experiment. The event denoter is used as the important element to differentiate filmmaker's interpretation unit from viewers'. Denoter refers to the objects, or the core actions, or symbols which can help viewers quickly understand the current situation or the nature of the story. A story can have one or more narrative denoters. For example, in the film *Déjà vu* (2006), a note on the refrigerator serves as a narrative denoter. It appears near the beginning of the film in the scene where the detective is watching the surveillance video. He sees the words "You can save her" on the refrigerator but does not know who wrote them. From the victim's diary, we know that she felt monitored by someone. The audience may interpret the message on the refrigerator as the killer's work and the killer is the one who has been monitoring her. However, at the end, when the detective has travel to the past by time

machine and writes down the note on the refrigerator to remind him in the future to help her, then the audiences realize that the note was written by the detective and not the killer and he is also the one watching the victim. It is the message on the refrigerator serves as the narrative denoter to help the audience to understand the story.

Narrative denoter is inspired by the denoter in event research. Denoter is defined as the word which triggers event and expresses what happened in text (Tian, Ma, and Wen, 2012). Denoter types are the types of events that denoter has triggered. For example, the denoter type of the word tornado is “emergency” and that of the word death is “state of change.” Furthermore, based on the author’s statistical result, event denoters (also called event trigger word) are normally nouns, verbs, and gerunds. In this study, the author proposed narrative denoter by combining event denoter and the attributes of film (psychological product, metaphor, and discontinuity work carried by shots). Narrative denoter in this study refers to the objects, shots, core actions or symbols which contribute to the quick understanding of the current situation or the nature of the story by the viewers.

Based on the attributes of films, firstly, films are psychological products. Through films, the directors tell complete stories through individualized shots so as to sympathize with the viewers or to trigger certain response from them. As a result, it is impossible for filmmakers to express the whole story at once. They typically tell the story chronically based on the combinations of shots after re-organizing and dividing the stories, leading viewers to enter the situation they have devised so as to achieve the purpose of arousing the psychological response from them. Narrative denoter is exactly an important element for filmmaker to tell and to construct stories. Identifying correctly the narrative denoter will help scholars in

analyzing the original construction of films so as to judge that whether the intention conveyed by the filmmaker is accepted based on the understanding of viewers. In many times of communication with this researcher, the scriptwriter emphasized repeatedly the importance of understanding “surprise” (in the film, it refers to the fact that the middle-aged man called the young lady to promise her a surprise, which was misunderstood by her as a message for divorce. The dissatisfaction of the young lady about their love and the appearance of a young man have caused the divorce of the lady and the middle-aged man). The logical relation the scriptwriter has devised determined that the reading of surprise is critical for understanding the whole story. Only by grasping the details of surprise can the viewers correctly understand the overall story. Otherwise, it is difficult for them to understand why the young lady has been always asking about the ring and why she chose Ben rather than the middle-aged man.

Secondly, the most obvious advantage of film is that it has remedied the disadvantage of language. It expresses the emotions of human not only in explicit ways but also in implicit manner, which words or languages are unable to do. For example, at the end of the film, narrative denoters are the photos and the voices of the girl. Ben left the café angrily and kicked the postbox, from which the photos of the girl he had put in dropped out. Ben picked them up and looked at them in a puzzle. Through these two shots, the scriptwriter indicated that the relation between Ben and the young lady has not come to an end. In the next shot, the voice “Ben, wait up” from the girl demonstrated the decision of her to choose Ben rather than the middle-aged man. Although it is possible to express the plot through words, the artistic and psychological effect achieved would be much weaker than through shots. The viewers were led by the shots to the ending devised by the filmmaker step by step and to understand

the logical relation in the story.

Thirdly, film is a processed artistic way of storytelling. Therefore, it is quite different from the events happened or witnessed in daily life. The story in the film will not happen chronically as in real life and the shots will not express things or situations based on what we see in life. As a result, the construction and the understanding of story depend on the arrangement of shots and development of implicit narrative evidence by the filmmaker. Narrative denoters not only help filmmakers in constructing stories but also help viewers in understanding the story, making clear the expressing intention of the filmmaker and the logical relation between events and characters. For example, in the film, when the young lady told the middle-aged man that Ben found her mobile phone, the middle-aged man stood to express gratitude for him through shaking hands. The act indicated that “the middle-aged man stole the wallet of Ben in order to teach him a lesson” and its result can be seen in several minutes later when Ben tried to pay the bill and leave the bar due to the humiliation from the middle-aged man.

This alternative unit may or may not be continuous in time or scene event shot and arc. Generally, it is taking the responsibility of indication the cue or importance of narrative by demonstrating the actions of protagonists and objects in films. Sometimes, it may focus on implying and repeating the previous actions that allows viewers to perceive the cue of narrative and connect them in their mental model in order to interpret plot. In this case, the term applies to analyzing endogenous narrative structure and can be an appropriate approach offering a less biased explanation and a clear map of film from psychology. As the Gibson’s “affordance” feature, it has dichotomy between subjective and objective. This feature allows

it to be off limits of purely statistical analysis shot and scene or change of character, it provides the fundamental explanation of the skeleton of narrative with the important details, and why filmmakers use a long or close-up shot in film as well as the shift of scene and character. It also can represent how viewers construct a mental model to interpret audio-visual information from film. In other words, it is finding a balance between the dynamic processes of constructing narrative structure from filmmaker's stance and interpreting film from viewer's stance. From reviewing the development of film, it can be found that filmmaker has never stopped designing and manipulating every single part of film, from shot, scene, special effect, characters, to commercial model and promotion. Particularly in narrative, filmmakers tend to adopt a type higher type of manipulation by hiding clues within small piece of information and allowing the audience to detect them and make the inferences upon them. From another point of view, Cutting (2005) argued that films had evolved to exploit human beings' perceptual and cognitive ability. Hence, proposing a new angle of analysis from film narrative is more important, at the same time, the stable status of human nature can guide the scholars and their research. That is another motivation for this thesis.

The goal raised of defining an alternative item, is not to create a universal formula and to apply it to all the film analysis. The purpose of the narrative denoter is to find the principle of film construction and deconstruction, While Bordwell (1989) pointed out that the application of event or alternative item is to better understand the narrative construction of film by conducting the research beyond its disadvantage of hermeneutic discipline and answering the question such as what must be the conditions of producing given certain properties of film

phenomenon and looking for the causal and teleological explanations of these conditions (Small, 1992). That is to say, film narrative studies should integrate filmic explication of endogenous structure with psychological explanation; using narrative denoter, smaller than event, seems to be the appropriate approach.

Event as a Measurement in Studying Film Perception

By reviewing cognitive research history, it is found that for film ontology, semiology, empirical studies, or culture and aesthetic study, scholars provide broader platform and possibilities for cognitive film studies. Particularly, event theory and event segmentation provides the inspiration for the narrative denoter on film cognition in this paper, especially for distinguishing filmmakers and viewers' the perception and understanding of audio-visual information.

Event is defined as the segment of time in a certain place which can be perceived from the beginning and the end (Zacks et al., 2007). People will spontaneously make perceived continuous actions divided into one single event (Zacks, Tversky, & Iyer, 2001). In this process, the first perceived thing is the physical characteristics, and people will build up an event scheme according to integration of the characteristics. For example, when people get up, they need a series of actions, including opening eyes, sitting up, getting off the bed, washing face among others, and people do not have to state the series of actions, but use event "get up" to imply all of them. Zacks believed event segmentation is conducted with perceptive processing at the same time and is automatic, constructing a foundation for the future learning and memory. When people define event boundary, usually there are two

simultaneous processes: bottom-up processing of sensory features and top-down processing of conceptual features (Zacks and Swallow, 2007). Zacks and Swallow found that the length of time in events are various; some last long time, such as writing novels; some last a short duration, such as checking time. Normally, in the description of a longer complex event, people tend to split it up into several independent sub-events. This continuous movement is divided into big events to become a coarse boundary, and divided into small events to become fine boundary. Event boundary can promote memory for events, and fine boundary can promote memory for details. Both fine and coarse classification depend on the people's previously stored knowledge, goals, and features of the actions. Furthermore, the viewer mainly conducts fine segmentation according to the physical characteristics of the event, and makes coarse segmentation according to the intention of actors. The physical features used to judge event boundary include the change of time and action. Event perception is also influenced by previously stored knowledge; people tend to segment the unfamiliar into fine segmentation, while using coarse segmentation for familiar events. Cutting (2014) proposed that film consists of several chunks, and the scene as a medium-size chunk can consider as an event in film construction in order to maintain the continuity of the story. Then he tested 7 types of segmentation elements including: 111 shifts in location, characters, and time, 110 shifts in location and characters but not time, 101 shifts in location and time but not characters, 100 shifts in location but not character or time, 011 shifts in characters and time but not location, 010 shifts in characters, but not location or time, and 001 shifts in time, but not characters or location. He also examined the impact of editing and non-editing in 24 movies and found out that the more time, location, and characters change, the more

consistently viewers segment. Furthermore, film editing techniques such as dissolves, fades, and wipes seem to play a less important role in viewers' segment. Thus, he suggested that the "perceptual elision" between scenes contributes to the viewer's sense of continuity (Cutting, 2014)".

In other word, since research objects and purposes are different, scholars make different definitions of event. In this paper, the experiment method is used to explore whether event segmentation made by people with filmmaking background and without filmmaking background is the same. If it is not the same, what is the reason for it. And also this paper tries to identify the narrative unit/interpretive unit participants use to understand the story.

The Deviation of Event and Other Possibilities

Event not only reflects behavior, movement, and change in the real world, but also is the basic unit of human knowledge. It has always been the focus of academic research. In such fields as cognitive science, philosophy, linguistic, AI, the related research on event can be seen everywhere. Scholars explore how people perceive the world, how they react to various audio and visual stimulation in media, how they built a mental model through which they define and interpret the event.

Event in the film is different from event in real life, although superficially it refers to an act or a changeable state composed of a series of behaviors, but in fact, with the support of filmic technique, event has been superior to the logical order of time, place, characters and even viewing angle. From different points of view, viewers can see actions related to the story in the description of the characters in the film/ the non-human created in film in the limited

time. Many presentations are unable to be captured in our daily life; for example, in the scene that Matrix evades bullets, audience can see the bullets moving through the air slowly which is impossible to see in real life.

In reality, what we see in fact is the permutation and combination of light-waves and sound-waves rather than colors and sounds. Therefore, scholars have to stick to the point that the only eternal truth is “the change” in obtaining new knowledge from the objective world. Then there is a problem in the research on event segmentation, which refers to the fact that the segmentation of film episodes or videos recording daily life may be different from that of the whole film. Firstly, a film episode is unable to represent the whole story. Because the missing episode probably fails to trigger a comprehensive perception of the whole story, the audience can only get the whole story after segmenting and linking the perceived information. Secondly, the perception and cognition of audience for a complete film is a complex and untraceable process. At present, no research has been able to show explicitly the details of the psychology of audience while watching the film. Based on the above-mentioned ideas, the event segmentation in films is unable to be defined according the concept of Zacks. Due to the narrative, artistic design and montage, not all events in the films have a clear and perceptible beginning and end. In addition, as mentioned above, the metaphor attribute is often used in films; as a result, filmmakers will inevitably include some fragments about the implied lines, or narrative denoters, in the film. Only by catching these denoters (such as the “surprise” in stimulus) and by understanding other information, will relationships between pieces of information be established and the film be understood.

Finally, through literature review, scholars combine a variety of disciplines to explore a

cognitive approach to film study and related research, especially event-related research. But most scholars start with the viewer's perspective to explore how an event is classified and constructed when people watch the film. However, this neglects the important role of filmmakers in the process. Filmmakers use not only the unique expression means of film to control and manipulate the event, but also use their own ways to interpret the story and events, in addition to combining chunks gained by dividing the story in their logical order and expression. In other words, the filmmaker is the first audience of the story, who determines how the story develops from beginning to end. This leads to the question whether the event segmentation of the filmmaker in a film is the same as viewer's. Which aspects are similar and which aspects are different? If they are different, what are the influencing factors? Does the difference represent a failure of the filmmaker in guiding the viewer's mind? Do filmmakers build and viewers interpret the story only through events? Is there a smaller meaningful unit? These questions will be answered in the experiment. In addition such contrastive research can enable filmmakers to better understand the viewer's processing of films and their demands and expectations when watching a film.

Research Hypotheses

Based on the literature review of both film theories and film cognition theories, it can be seen that film theories are dealing with the questions such as "What is the universal principle of film?" "What is the filmic expression?" "What is the aesthetic and philosophic significance of film?" while film cognition theories are dealing with the questions "how is film information perceived and interpreted by the audience?" and "how does film information

impact the audience's memory, emotion, and inference?" Clearly, both of those studies are seemingly convincing without considering the attributes of film (psychological product and affordance) and the impact of the filmmaker. In fact, film and audience compose a dynamic and organic association which cannot be separated from each other. For film studies, it isolates film analysis from its reaction- audience, and film cognition studies focus on the audience but overlook the sender – film. Thus, any single-side research will lead to “vacuum studies” which may cause issues if the scholars want to apply them to practical reality, especially if film is to be considered a communication process between the filmmakers and the audiences. In order to overcome this problem, it is important to find an appropriate research position and analysis unit.

Hence, this thesis integrates film theories with cognition theories, and conducts an empirical study to identify the basic interpretive units of filmmakers and audience. The hypotheses are proposed as below:

H1. Filmmakers and the general audience differ in their identification of an interpreting unit in a film.

H2. Filmmakers and the general audience differ in their identification of the narrative denoter units.

H3. Identification of the narrative denoter is positively correlated with the overall accuracy score in understanding the film.

Research Questions for Event Segmentation and Effective Communication

In addition to these hypotheses, this study will explore the reasons for such differences. The watching behavior occurs in viewers' clear conscious state--activities and feelings are displayed on the screen through the audio-visual information and filmic techniques, which can be perceived by viewers. Whether the viewer is unconscious or conscious in their processing of films has been a topic that scholars have debated for a long time. Does the viewer actively interpret or passively accept messages and hints expressed by filmmaker through the silver screen? The marriage of film studies and cognitive science may solve some problems that a single discipline cannot; however, more questions arise. Through literature review, it is known that people can complete perception and event segmentation at the same time. When this segmentation is conducted, people will make fine and coarse segmentation for large story chunks according to psychical attributes, previously stored knowledge, and familiarity influence. After that, people take memory of the divided events and find that event boundary memory is the best (Schwan and Garsoffky, 2004). So, do filmmakers and viewers go through the same process? Is it true that both filmmakers and viewers interpret film only by segmenting it into several events? What is the role of narrative denoter in film perception and cognition? Those questions inspire the research question below.

RQ1 If filmmakers have different event segmentation from the audiences, what cause the different event segmentation?

RQ2 Has the film effectively communicated the message that the screenwriter intended to convey?

Method

Based on the film cognition theories discussed above and event segmentation, a 2-group comparison design will be used based on assumptions that filmmaking knowledge and experience will impact people's perception and cognition. The premise of this author is that the discrepancy between the filmmaker's presentation and the audience's interpretation of meaning in the film is the main reason why some films are unsuccessful in winning the hearts of their audience.

Most film cognition studies employed only clips or single shots as the stimuli to test the audience's interpretation, memory, and attention (Smith and Henderson, 2008, Zacks and Swallow, 2007, Loschky et al., 2015). But this study will use a film segment with a complete story as stimulus to understand the narrative structure. The stimulus was shown in a class, a collective setting similar to a real watching environment for viewers to trigger their psychological and emotional reactions.

Although the lab environment is considered low in external validity compared with the real watching situation in the cinema, the method is appropriate and most similar to cinema watching than individual watching. The lab also allows the researcher to be in full control of the variables.

Participants

After receiving the approval from the BGSU Human Subjects Review Board, 70 senior college students were recruited as participants. 32 students were recruited from film and telecommunication majors in Bowling Green State University to constitute a group with filmmaking background. Senior students were used because they presumably have acquired

sufficient training in films to simulate the filmmakers' perspective for the study. Another group was composed of 38 participants recruited from students in classes unrelated to arts and humanities or media entertainment, including psychology, communication, computer science, and other majors. For the non-filmmaking background group, screening will be conducted in order to eliminate those who have filmmaking background or watched the film stimulus before. The reason of selecting filmmaking background and the non-filmmaking background is that the hypothesis believes the previously stored knowledge and film production training will influence the way how people perceive and interpret the information. In addition, these filmmaking students' and non-filmmaking students' interpretations were compared with the screenwriter's original design. The messages and narrative denoter examined in the study were based on the original screenwriter of a professionally made film, unlike other film cognition studies which were based either on the researchers' own understanding of the film or on a film made for an experiment which is not of professional quality. Incentives such as cash ranging from \$5 to \$25 and pizza were used to motivate students to participate.

Stimulus

The thesis assumes when the filmmaker fails to produce a story where the audience can understand the filmmaker's original meaning, the film will not be liked by the audience. Thus, it is important to use a complete story as the stimuli.

The film *New York, I love You (2008)* was used as the experiment film stimulus. The film is composed of 12 short independent films. Each short film is a separate story. Every story is filmed by different directors with different actors. The main idea of the entire film is to show

the meaning of love through capturing the segments of people living in New York. The study only used the first story in the film because the author interviewed the screenwriter and acquired the idea of how story had been constructed and unfolded. Details of narrative design and logical connections in the story plot serve as the foundation to design the questions. The screenwriter was a Chinese and the researcher's interview with her was in Chinese. The film director is also Chinese. But the film was made in the U.S. furthermore, all the actors and staff involved in the film production were American, that is to say that Chinese thinking was transferred by American actors. This film gathered a number of famous directors and actors, such as Wen Jiang, Fatih Akin, Allen Hughes, Natalie Portman, Shunji Iwai, Hayden Christensen, Orlando Bloom. Unlike its successful predecessor, *Paris, I Love you* (2006), however, it failed. According to IMDB, *Paris, I Love you* (2006) received a rating of 7.3/10 and had a gross of box-office profit of \$4,857,376 (USA) (3 August 2007). In contrast, *New York I Love you* (2008) had low rating (6.3/10) and a gross of box-office profit of \$1,588,015 (USA) (18 December 2009). This purpose of this study is to find out the reason what caused the difference in reception. And how to solve the problems that cause the poor reception of *New York I Love you* (2008). According to the research position this study proposed, the filmmaker's original idea is the basis of conducting comparison research; thus this study selected the first story of the film because it is the only one that the author could obtain the whole narrative construction.

The first story basically tells that a young thief steals a middle-aged man's wallet in the street, then runs into a girl and follows the girl to a bar, and with his thieving skills and his own tragic life, he tries to flirt with the girl. But after discovering that the girl is the girlfriend

of the middle-aged man whose wallet he has stolen, he tries to escape, and finds out that the middle-aged man is a thief whose skill is superior to his. After failing to escape, he has to fight with the middle-aged thief, and in the end, he is defeated and flees.

Experiment Design

The study is a between group comparison factorial experiment design based on the assumption that participants with filmmaking background have different event segmentation and interpretive unit who are also sensitive to narrative event denoters (denoter refers to the objects, the core action, or symbols which can help viewers quickly understand the current situation or the nature of the story) compared with those without filmmaking background. The independent variable is filmmaking background. Dependent variables are: overall accuracy score (right answer gets 1 point, and wrong answer loses 1 point), overall score weighted (the sum of each score * confidence level), overall score (wrong answer does not lose 1 point), denoter identification accuracy rate, and rating of the movie.

Survey Instrument Development

Before the actual experiment, a pre-test was conducted in October, 2015 among 10 Chinese students (5 students were film majors, 5 were accounting majors). The first version of the questionnaire had 15 questions; all the questions were in Chinese and designed based on the screenwriter's internal logical connections between each piece of node shows as below:

Cellphone, middle-aged man is on the cellphone with his girlfriend.

Surprise, middle-aged man mentions a “surprise.”

Wallet, because the middle-aged man is on the phone, he does not notice that his wallet has

been stolen by the young man.

Photo, the young man finds the girl's photo from the wallet.

Encounter, the young man recognizes the girl on the street is the one in the picture.

Cellphone, the young man steals the girl's phone and returns it to the girl in order to start a conversation.

Gift, the young man says he is the gift from his mom to his dad.

Lyric, the middle-aged man shows up again, interrupting the young man and girl's conversation about the song, and says some Chinese words to show off.

Occupation, the middle-aged man asks about the young man's job; the audience can see that the middle-aged man is having affair with the girl.

Wallet, the middle-aged man wants to teach the young man a lesson, so he steals the young man's wallet.

Cash, the middle-aged man gives the young man some cash; at the same time, the young man steals the middle-aged man's wallet.

Photo, the girl asks if the middle-aged man has lost her photo; the screenwriter implies that the girl really cares about her photo and the middle-aged man's wedding ring.

Key and ring, the girl finds the middle-aged man does not wear his wedding ring, so the middle-aged man realizes that young man has stolen it from him.

Photo, the girl's photo shows up again and implies that the young man and girl's relationship has not ended.

The original version of questionnaire was designed based on the 10 nodes mentioned above, for example, "how many times can you recall the ring in the film?" "The young man

steals a ___'s wallet.” In order to ensure the reflections of the interpretation of the film, the questionnaire consisted of 12 closed-ended questions and added four open-ended questions to explore the participants' understanding and appreciation of the film, including 1. Can you describe in your own words (50-100) about the film that you were asked to watch? 2. Can you recall the middle-aged man mentioning “surprise” on the phone? If you select “Yes”, Can you write down your interpretation about surprise? 3. What do you like most in the film? 4. What don't you like in the film?

The final version of the questionnaire also measured four confidence levels for each question. If subjects have the right answer, he/she will receive 1 point; if he/she is very sure about his/her answer, the score weighted result is $1 \times 4 = 4$. Conversely, if his/her score weighted result is $-1 \times 4 = -4$. So the more confident the answer, the higher or lower the score the participant received apart from the accuracy of the score.

The research design, consent form, and questionnaire received approval from the Human Subjects Review Board at Bowling Green State University in April, 2016.

Experimental Procedure

The implementation of the experiment took two weeks to collect 70 responses ($n_{\text{film}}=32$, $n_{\text{non-film}}=38$), from April 12- 23, 2016. The experimenter selected several classes with computer projectors in the class room to show the stimulus and contacted the instructor to receive the approval for the experiment. And then the experimenter went to the classroom before the class to introduce the experiment; after the class, the potential participants stayed for the experiment if they volunteered to participate. The instructor forwarded the Qualtrics link to the participants while the experimenter checked the projection and tested audio and

visual equipment. The participants read the consent form first and decided whether or not they would like to participate. After signing the consent form, they were asked to fill out the first 6 questions about basic information, including gender, major, previous filmmaking experience, watching habit, and favorite genre. When everyone had finished, the film was shown on the projection screen. The film is about 6 minutes 40 seconds long. The participants completed the rest of the questionnaire right after the film. The average time it took to complete the questionnaire, including watching the film, was 23 minutes.

Operation of variables

Independent Variable- Filmmaking Background.

Film making experience was operationalized as participants were trained by professional film professor on shooting, lights, and directing. All the participants are senior students, which meanw that they had required sufficient training for at least 3 years or more. The experimenter asked the instructor to check each participant to ensure their qualification.

Dependent Variables.

The interpretations of the film were operationalized as recognition of the correct narrative nodes from similar choices in a multiple choice format question. For the single response selection questions, there are 6 selections for each question, including 1 right answer, 2 answers similar to the right answer but wrong selections, 2 obviously wrong or irrelevant answers, and a “don’t know” selection. There were only two multiple selection questions, each one having 3 right answers, 2 confusing selections, 1 “don’t know” selection. Each

question was followed by an additional question about the confidence level on their answer scale from 1-4, ranging from 1 being “not at all sure” to 4 “very sure.” The right answer was given 1 point, an incorrect answer was given -1 point. The final score weight was the product of score and confidence level. Not only the correct rate was shown based on score, but confidence levels were attached in order to differentiate the individual’s responses.

For multiple selection questions, there are three right answers for each question; each right answer was given 0.33 points and those who answered all 3 correctly received 1 full point. Thus, each person’s final score equals the sum of all scores, including positive and negative scores.

The researcher also used another way to calculate the score for comparison by only including correct score and by excluding the negative score. The final score only relied on the correct score as well as the score weighted.

Statistical Analysis.

To detect the effect of the independent variables on the depending variables in the of experiment, an independent sample T-Test and correlation were performed: major and overall score sum (positive and negative), major and overall score sum (positive), major and overall score weighted (positive and negative), and major and overall score weighted (positive only) were tested by independent-sample T test. Correlation was conducted to check relationships among major, overall score sum (positive and negative), overall score sum (positive only), overall score weighted (positive and negative), overall score weighted (positive only), film liking, likelihood of film recommendation, and film quality.

CHAPTER IV. RESULTS

Descriptive Data

The Participants' Profile

70 subjects were recruited from different majors at Bowling Green State University, which represented 26 subjects from film production; 17 subjects from psychology; 8 subjects from computer science; 6 subjects from communication; 6 subjects from telecommunication (including 1 major is psychology minor telecommunication); 7 subjects from other majors. The demographic profile of the subjects is shown in Table 1.

Among all the participants, there were more females (51%) than males (49%), within film major group, there were more males (56%) than females (44%), while within non-film major group, and there are more females (58%) than male (42%). The gender inequality may contribute to the null result because the stimulus is a love story which contains some characters' emotional performance as the cues to trigger the unfolding plot. Females are considered as the fans of love stories and are perhaps more sensitive to the emotional arousal in the film. However, according to the Pearson correlation test, there were no correlation between gender and overall unweighted score (positive and negative) ($r=.068$, $n=70$, $p=.577$), gender and overall unweighted score (positive) ($r=.113$, $n=70$, $p=.353$), gender and overall weighted score (positive and negative) ($r=.009$, $n=70$, $p=.938$), gender and overall weighted score (positive) ($r=.187$, $n=70$, $p=.120$). The result suggested that the gender difference does not impact the overall performance in the experiment.

More than half of the participants (64%) including all the film major students and some of

the non-film major students (34%) had video making experience with a script, . Based on the result of the Pearson correlation test, there was positive correlation between the filmmaking experience and major ($r=-.684$, $n=70$, $p=.000$), in contrast, there were no correlation between the filmmaking experience and overall unweighted score (positive and negative) ($r=-.119$, $n=70$, $p=.325$), the filmmaking experience and overall unweighted score (positive) ($r=-.125$, $n=70$, $p=.303$), the filmmaking experience and overall weighted score (positive and negative) ($r=-.067$, $n=70$, $p=.582$), the filmmaking experience and overall weighted score (positive) ($r=-.019$, $n=70$, $p=.877$). The result indicated that most film major students had filmmaking experience, and it also showed that some student in the non- film major group had filmmaking experience. The amount of filmmaking experience had no impact on both overall unweighted score and overall weighted score.

Regarding watching frequency, most of the participants (59%) watched film each day; film major students (66%) watched slightly more than non-film major students (53%). Conversely, more non-film major students (21%) watched film 2 or 3 time a week than film major students (16%). Surprisingly, more film major students (12%) watched film 2 or 3 times a month compared to non-film major students (5%). Some non-film major students (8%) only watched film once a year which decreased the whole group's watching frequency. Within the film major group, a majority of participants preferred comedy (22%) while non-film major group students primarily preferred Action/Adventure (32%). Notably, there were 0% film major students who liked romance and 19% without preference; this also created a bias towards to non-film major students because the stimulus was a romance story. Film major students may not have liked it and may have paid less attention to it. Film major

students (22%) were holding a neutral rating on the film compared with non-film major students (19%). 50% of the students liked the film and would like to watch it again; 9% students did not like it, including 3% of film major students and 16% of non-film majors students. The T Test result showed that there was no statistical difference in film major ($M=2.03$, $SD=.782$) and non-film major ($M=2.21$, $SD=.935$); $t(68) = .860$, $p=.208$. This result indicated that the major does not impact the subject's preference.

Table 1.

The demographic profile of the subjects(n=72)

		Film Major	Non-film Major	Total
		n=32	n=38	N=70
1. Gender	Male	56%	42%	49%
	Female	44%	58%	51%
2. Major		46%	54%	
3. Video Making Experience	Yes	100%	34%	64%
	No	0	66%	36%
4. Film Watching Frequency	Never	0	0	0
	Once a Year	0	8%	4%
	2-3times a Year	3%	5%	4%
	Once a Month	3%	3%	3%
	2-3times a Month	12%	5%	9%
	Once a Week	0	5%	3%
	2-3times a Week	16%	21%	19%
Movie Genre Preference	Daily	66%	53%	59%
	Comedy	22%	29%	26%
	Romance	0	5%	3%
	Action/Adventure	16%	32%	24%
	Horror	16%	8%	11%
	Mystery	9%	5%	7%
	Sci-Fi	6%	8%	7%
Cartoon/Animation	6%	8%	7%	

	Other	6%	5%	6%
	No Preference	19%	0	9%
Film Liking	Like it very much & watch again	25%	25%	23%
	Like it somewhat	50%	59%	50%
	Neither like or dislike	22%	19%	19%
	Don't like	3%	16%	9%
	One of the worst	0	0	0

Time Usage and Major

The consent form was attached as the first page of the questionnaire on the Qualtrics. The Qualtrics system started to count the time as soon as the participants clicked “Yes, I would like to participate the experiment.” The participants were asked to fill out the first 5 questions, including gender, major, video making experience, watching habit, and movie genre preference. Upon completion of the basic information, participants raised their hand. When everyone was ready, the experimenter started to show the film on the screen. The participants completed the rest 12 questions after watching the film. Thus, the time usage included three parts: the basic information completion, watching film, and answering 12 questions on the questionnaire. The time usage distribution is shown in table 2 below.

The table shows that a majority of participants (42%) from both groups took 20 minutes to 24 minutes to complete the experiment; the average of the total completion time for two groups was 23.3 minutes. The average time for film major and non-film major groups was 23.7 minutes and 23 minutes respectively. It seemed like the average completion times were almost the same, but film major students' completion time was between 17 minutes to 26 minutes, non-film major students was from 17 minutes to 27 minutes. This may indicate that there was less difference in time usage among students. Both two groups had extreme low

and high time usage situations. For low time usage, there were 6% of participants (n=2) in the film major group and 3% of participants (n=1) in non-film major group who completed the experiment in a short time. Their overall performance was also low (of overall 10 questions, the correct-answers rates were 3.99 and 2.33 for film major group, compared to 3.33 for the non-film major group). Their correct recall rate of narrative denoter was 0. However, excluding the extreme low and high time usage situation does not impact the result that there is no statistical significance between overall performances of film major and non-film major groups.

Missing Data

The original design of Q12 was to distinguish the impact of filmmaking experience on event segmentation. In order to be coherent, character form was selected in Q12 to describe the overall story based on the shots and combining with the events. It was hoped that after watching the movie, participants would be able to divide these pieces into several events, which have their own themes, based on their understanding of the story. The description and presentation of the statements are chronologically conducted based on the film.

Due to the display and set limitations of Qualtrics, the original design had statements on the left and the blank squares on the right. Participants can place the statements they believe to be in the same group into the same squares. However, after data collection for the first time (n=6), it was found based on the feedback that the statements form a long sequence after being put together, being unable to be placed into the squares on the right. As a result, all 6 participants failed in the task. After adjustment, the square on the right was changed into 7

numbered options. The subject was corrected and the detailed statement was provided. The participants were required first to consider the number of segments they will divide the story into. Then they should place the statements into the corresponding segments. For example, if the participants held that the first five statements belong to the same segment, they should choose segment 1 after the five statements. The rest can be done in the same manner.

Unfortunately, examining the final results showed that the adjustment failed to achieve the expected effect because the participants had not answered correctly. Firstly, some participants failed to divide the statements chronologically. For example, N.1 statement was placed into segment 2, and N.2 statement was placed into segment 7. Secondly, cross-segmentation existed. It was emphasized many times in the question that both segments and statements should be divided chronologically. For example, after placing N.4-10 to seg 4, participants have to divide the remaining statements into seg 5 to seg 7. However, they divided the remaining statements wrongly into seg 2. As a result, the researcher had to discard the invalid Q12 data and did not use Q12 to analyze the event segmentation but used other open-ended questions to explore their understanding of the film.

Overall Performance of Correct Answer and Frequency Analysis

There were 18 questions in the questionnaire. Q1, Q14, and Q15 questions were open-ended questions. Only Q2 to Q11 were selection questions including 8 single selection questions and 2 multiple selection questions (Q8 and Q10). The rest of the three questions were about rating the film. As mentioned before, this study adopted two ways to calculate the overall score of 10 questions; the first method was to give participants -1 point if they

selected a wrong answer, the second method was to count only correct answers. These two calculation methods were performed for all tests in order to differentiate two groups' performance and identify potential factors influencing film interpretation. Based on the T test, the two calculation methods created no difference in the result that film making experience would not influence the film interpretation. Unweighted rate represents the correct rate of each question within the group. Weighted rate represents the rate of the correct rate with its confidence within the group's total score with confidence levels. There were four confidence levels, including 1) Not at all sure (1); 2) Slightly sure (2); 3) Moderately sure (3); 4) Very sure (4). If a participant selected the right answer and was very sure about it, then his/her weighted score was $1 \times 4 = 4$. The comparison of the correct answer rate for the two groups is shown in Table 2 below.

Table 2.

Comparison of Correct Rate between Film Major and Non-film Major (correct answer only)

	Film Major		Non-film Major	
	Unweighted	Weighted	Unweighted	Weighted
Question2	0.38	0.37	0.32	0.34
Question3	0.31	0.30	0.5	0.52
Question4	0.97	0.98	0.95	0.96
Question5	0.34	0.37	0.32	0.34
Question6	0.69	0.70	0.61	0.59
Question7	0	0	0.13	0.14
Question8				
One right	0.41	0.25	0.29	0.16
Two right	0.44	0.68	0.39	0.47
Three right	0.03	0.07	0.18	0.37
Question9	0.09	0.14	0.24	0.20
Question10				
One right	0.56	0.44	0.45	0.33
Two right	0.25	0.32	0.42	0.57
Three right	0.09	0.24	0.05	0.11

Question11	0.88	0.89	0.82	0.88
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Question 8 and 10 are multiple selections.

From the table, most questions showed consistency on unweighted score and weighted score with confidence level between two groups, for example, Q2 had 0.38 correct rate (Unweighted score rate) and 0.37 weighted score rate (weighted score = correct answer x confident level) in film group, 0.32 correct rate and 0.34 weighted score rate in non-film major group. This indicated participants confident level reconciled with their answers.

For Q8, in film major group, participants who had one right answer rate (0.41) showed lower weighted confident rate (0.25) with their answer. The non-film major participants had 0.29 of single one answer correct rate with 0.16 of weighted confident rate. For both groups, participants had one correct answer were not confident with it, which reflected the situation that they may not understand the story or failed to connect the context. The table also showed that for multiple selections questions, the increasing trend between correct rate and confident level for both groups, the more right answers the participants had, the more confident they were.

The design of Q9 is to test whether participants could capture the function of the ring as the director implied: the ring was stolen by the young man when the middle-aged man tried to teach a lesson to him. If the audience could not recall the last time to see the ring, they may not connect it with the following plot – the middle-aged man’s ring was stolen by the young man, the girl found the middle-aged man did not wear the ring and misunderstood he divorced with his wife.

It can be seen from the table that only 3 participants from film major group had right answers, they were confident with their answers (1 moderately sure, 2 very sure). In non-film

group, there were 9 participants had right answer, but most of them were not confident with their answers. 3 participants were not at all sure with their answers, 4 were slightly sure, only 2 selected moderately sure and very sure. This indicated that some participants from non-film major group were less confident for recalling the ring in the film; they may just guess or happen to select the right answer. There were slight differences between unweighted rate and weighted rate of two groups for question 9 (see Table 3).

Table3.

Weighted Score of Question 9

		Non film major	Film major	Total
Q9final score	-4	7	7	14
weighted	-3	8	4	12
	-2	5	8	13
	-1	9	10	19
	1	3	0	3
	2	4	0	4
	3	1	1	2
	4	1	2	3
Total		38	32	70

Note, the negative value represent the incorrect answer with its confident level

1) Not at all sure; 2) Slightly sure; 3) Moderately sure; 4) Very sure

The same as Q9, Q8 showed the same situations. Q8 is inference question. Participants need to infer the information according to the context. For Q8, participants would obtain the information from the conversation among three characters: 1) the middle-aged man is a professor at NYU (The middle-aged man said); 2) the middle-aged man is having affair with the girl (the girl said “I am a thief trying to steal you from your wife but it does not work so far”); 3) the girl was not satisfied her relationship with the middle-aged man (the girl’s disappointed look after she said “I am thief.....”).

Q10 is another inference question to test some most important details in the climax part

of the stimulus. The participants had to integrate two previous plots: 1) the middle-aged man mentioned “surprise” on the phone with the girl. 2) The middle-aged man found the young man was the one stole his wallet, so he stood up to shake his hand with the young man and stole the young man’s wallet. According to these, participants who understand the story could infer that the young man wanted to pay the bill and leave, but found that his wallet had been stolen by the middle-aged man; the middle-aged man wanted to teach the young man a lesson so he give the young man some cash meanwhile the young man stole the middle-aged man’s ring. The girl noticed that the middle-aged man did not wear the ring which failed to interpret this sign as the surprise – the middle-aged man divorced his wife.

T Test and Correlation

Filmmaking Experience and Film Interpretation

To investigate the influence of film-making experience on film interpretation, this study conducted several independent-sample tests separately with major and overall score as well as with overall correct weighted score. This study anticipated the variables in the experiment to be the significance predictors to explore the relationship between filmmaking experience and the degree of film interpretation. Based on the data collected from Qualtrics survey (Appendix A), three hypotheses were tested by independent-sample tests.

In the H1, the relationship between major, overall score, overall correct score, weighted positive score, and weighted score (positive and negative) were examined. As shown in Table 5, the results of the analysis indicated that there was no statistical significant difference in the overall unweighted correct score ($p < .05$) of the film major students ($M=4.55$, $SD=1.45$) and

non-film major students ($M=4.88$, $SD=1.22$) conditions; $t(68) = -1.038$, $p=.303$; also there was no significant difference of the overall weighted score ($p<.05$) of the film major students ($M=14.37$, $SD=4.93$) and non-film major students ($M=14.54$, $SD=4.24$) conditions; $t(68) = -.156$, $p=.877$. These results suggest that film making experience does not have an effect on film perception and cognition, thus H1 was rejected.

Filmmaking Experience and Identification of Narrative Denoter

H2 was to examine whether film major students were more sensitive to the narrative denoter. The narrative denoter was the key to understand the whole story and failed to interpret it may lead the low score in the questionnaire. In the film, the narrative denoter was the “surprise” mentioned by the middle-aged man on the phone. His girlfriend failed to interpret the surprise as the divorce news, she felt despair on the relationship with the middle-aged man so she decided to break up with him and start another relationship with the young man. Only 50% students from film major group and 47% from non-film major could identify what the surprise was. According to the original design of the screenwriter, the middle-aged man’s surprise referred to a gift for the girl. Only half of students (50%) who could recall the surprise correctly interpreted the surprise as it should be a gift for the girl, as shown in the Table 4.

Table 4

Comparison of recall rate and correct recall rate

	Film major	Non-film major
Recall rate	50%	47%
Accuracy in the recall	50%	50%

Note, the number of accuracy in recall surprise for film major group and non-film major

group were 16 and 18 respectively.

Another independent-sample test was conducted to determine if significant differences existed between correct recall rates of “the surprise” in two groups. According to the analysis of the result, there was no statistically significant difference ($p < .05$) in the correct recall rate of film major group ($M = .26$, $SD = .445$) and non-film major students ($M = .24$, $SD = .431$) conditions; $t(67) = .201$, $p = .842$. These results indicate that filmmaking experience had no effect on narrative denoter identification; thus H2 also was rejected.

Identification of Narrative Denoter and Film Cognition

Hypothesis 3 examined the relationship between identification of narrative denoter and the overall score as well as the overall weighted score. To investigate the recall the relationship between correct recall rate, overall score, and overall weighted score a Person correlation was computed to assess the relationship between denoter recall correct rate, overall score (positive & negative), overall score (positive), overall weighted score (positive & negative), and overall weighted score (positive). There was a positive correlation between correct recall rate and overall score (positive) $r = .236$, $n = 69$, $p = .051$, correct recall rate and overall correct weighted score (positive & negative) $r = .259$, $n = 69$, $p = .032$; correct recall rate and overall weighted score (positive) $r = .245$, $n = 69$, $p = .043$. The T test result (Table 8) indicated that there was a statistically significant difference ($p < .05$) in correct recall rate ($M = 5.3$, $SD = .99$) and incorrect recall rate ($M = 4.6$, $SD = 1.4$) on the overall performance, $t(67) = 1.99$, $p = .051$. However in the t-test, if both correct (positive) and incorrect (negative) answers unweighted scores were used, the difference between correct identification denoter was not significant. Overall, there was a positive correlation between correct recall rate and

overall score. Increases in the recall rate were related with increases in film interpretation. Hypothesis 3 was supported. The correlation and T test result of narrative denoter recall rate and overall accuracy were shown in the Table 5 and Table 6.

Table 5

Correlation of Denoter Recall and Overall Accuracy in Film Cognition Score

Measure		1	2	3	4	5
1.Q13Recall Correct Rate	Pearson Correlation Sig. (2-tailed)	1				
2.OverA11scoreSum(positive&negative)	Pearson Correlation Sig. (2-tailed)	.194	1			
3.OverA11scoreSum(Positive)	Pearson Correlation Sig. (2-tailed)	.236	.988**	1		
4.OverA11ScoreWeighted(positive&negative)	Pearson Correlation Sig. (2-tailed)	.259*	.943**	.935**	1	
5.OverAscoreWeightedPositive	Pearson Correlation Sig. (2-tailed)	.245*	.843**	.849**	.874*	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6

T Test Result for Correct Recall Narrative Denoter and Overall Performance

	t	df	Sig(2-tailed)	Mean Difference	Std.Error Difference
OverallAscore(positive & negative)	1.62	67	.109	1.13961	.70231
OverallAscore (positive)	1.99	67	.051	.72021	.36168
OverallscoreWeighted (positive & negative)	2.19	67	.032	4.34884	1.98469
OverallscoreWeighted (positive)	2.06	67	.043	2.5683	1.24408

Note. Equal variance were assumed

Preference Rating and Overall Performance

The audience's preference is an eternal topic for filmmakers and companies. The film industry is eager to open that Pandora's box to find out how to attract the audience's attention and win the audience's heart. There are many ways to impact the audience's preference. The success of Netflix opened a data-driven way to achieve this goal. However, due to the complexity of film and audience, it is hard to establish a perfect way to explore the viewers' preference. In this study, a Pearson correlation test was performed to test the relationship between major, overall weighted score, rating film, rating the quality of the film, and possibility of recommendation. There were no significant correlations between majors, understanding of films and the preference variables (Table 7). The only significant correlation is between overall accuracy and likelihood to recommend the film to others.

Table 7
Correlation of rating with other variables

		1	2	3	4	5	6
1.Major	Pearson Correlation Sig. (2-tailed)	1					
2.Over Ascore Weighted Positive	Pearson Correlation Sig. (2-tailed)	-.019	1				
3.Q16Rate Film	Pearson Correlation Sig. (2-tailed)	-.104	-.207	1			
4.Q17Recommend Film	Pearson Correlation Sig. (2-tailed)	-.169	-.209	.716**	1		
5.Q18Rate Quality Film	Pearson Correlation Sig. (2-tailed)	.128	.221	-.652**	-.608**	1	

Obviously it was set in New York, but many films are set in New York but don't give off a New York vibe.”

In contrast, non-film major just described the story.

“The film was about the thief stealing money from a random wallet that he placed in the mailbox. He meets the girl from the photo and chatting about where they're from and who they are. The girl is having an affair with an older man who's in the tangle of his own relationship.”

“A pickpocket, Ben, steals a wallet of a man. He throws the wallet and a picture into a mailbox and then follows a woman into a bar. After stealing her phone from her purse he pretends that he found it so he could have reason to talk to her. A man walks into the bar and greets the woman and we are told that he is married and having an affair with the woman. He steals Ben's wallet and takes the money from the wallet. He then hints to Ben that it was his wallet that Ben stole. He then shows some slight-of-hand style pickpocket tricks. Ben leaves and finds an enlarged version of the picture in the mailbox.”

It is obvious that film major students would like to use professional terms and add their own opinions to describe the story. This researcher could see that they were influenced by their film training, which leads them to pay more attention to the shot, cut, and other filmic techniques. It makes sense to believe that their background would impact their event segmentation if appropriate research technique was employed. Further research will be conducted to explore this issue.

Effectiveness of Message Communication

RQ2 examined effective information conveyed from the film to the audience. Given the previous analysis of overall correct rate (Table 3), overall correct rate weighted (Table 3), low correct questions' frequency analysis (Table 4), and recall correct rate (Table 6), we can conclude that this film, especially the narrative denote, failed to convey the important information to help viewers to understand the story. Even the film major group, with profession training on the narrative and production, showed a low correct rate compared with non-film major group in Q3 (0.31 vs 0.5), Q7(0 vs 0.13), Q8 (three right answers 0.03 vs 0.18), Q9 (0.09 vs 0.24), Q10 (two right answers 0.25 vs 0.42). In general, most participants did not perceive the information in the film and failed to detect the narrative denoter the screenwriter intended to employ.

The first explanation for the failure of the message communication is unreasonable arrangement of shots distribution. There are 150 shots in the film; the average shot duration is 66.82 frames (25 frames/second). The story was divided into four parts according to the screenwriter, as shown in Figure 3. The first part is the beginning from shot 1 to shot 15 describing how the young man stole from the middle-aged man; the development part is from shot 16 to shot 62 describing how the young man met the girl and followed her into a bar; the climax has the strongest conflict, which was also the more important part of the film, mainly describing the competition between two thieves. Its time duration is from shot 63 to shot 141. The last part is from shot 142 to the end implying the girl broke up with the middle-aged man and started another relationship with the young man. It can be seen from figure 3 that the development part has a large number of shots with a long time duration. The longest shot of

the film was shown in this part, with 298 frames and just portraying both girl and young man entered the bar. However, before that shot, the audience already required the information that the young man was following the girl. It is unnecessary to add this long shot here. Secondly, the shots in the climax part were shorter compared with the shorts in the other three parts. It is true that the climax part contained an appropriate amount of conversation which is needed to create the shots' switching pattern. According to the low correct rate on Q8 (three right answers 3% for film major group vs 18% for non-film major group) and Q10 (three right answers 9% for film major group vs 11% for non-film major group), the audience could not perceive and interpret the information in the film due to rapid cutting. Open-ended responses from the subjects showed the factors, including the pace and shots, that contributed to the failure in communication

Non Film Major

“I think that the film could have gone a little bit more for a plot.”

“I was a bit confused about what was happening between all of the switching of the scenes and the meaning behind the film.”

“Lack of information”

“Pacing was a little off.”

“I don't like the way the film began, I didn't know what I should be paying attention for”

“Was a bit too fast paced in the beginning and cut back and forth between characters a lot. I felt a bit confused and was very unsure about what had happened in the beginning.”

“The cinematography seems uninterested in telling the story beyond making sure the action occurred within the frame.

Film Major Group

“Hard to follow the dialogue at times.”

“The confusing shot structure, at least during the early half.”

“I had a little bit of a difficult time understanding what they were saying some of the time.”

Finally, the narrative denoter “surprise” appeared at the very beginning of the film as the man said on the phone with one. Some participants failed to interpret that the middle-aged man was talking with his wife; the surprise was for his wife, such as someone wrote that

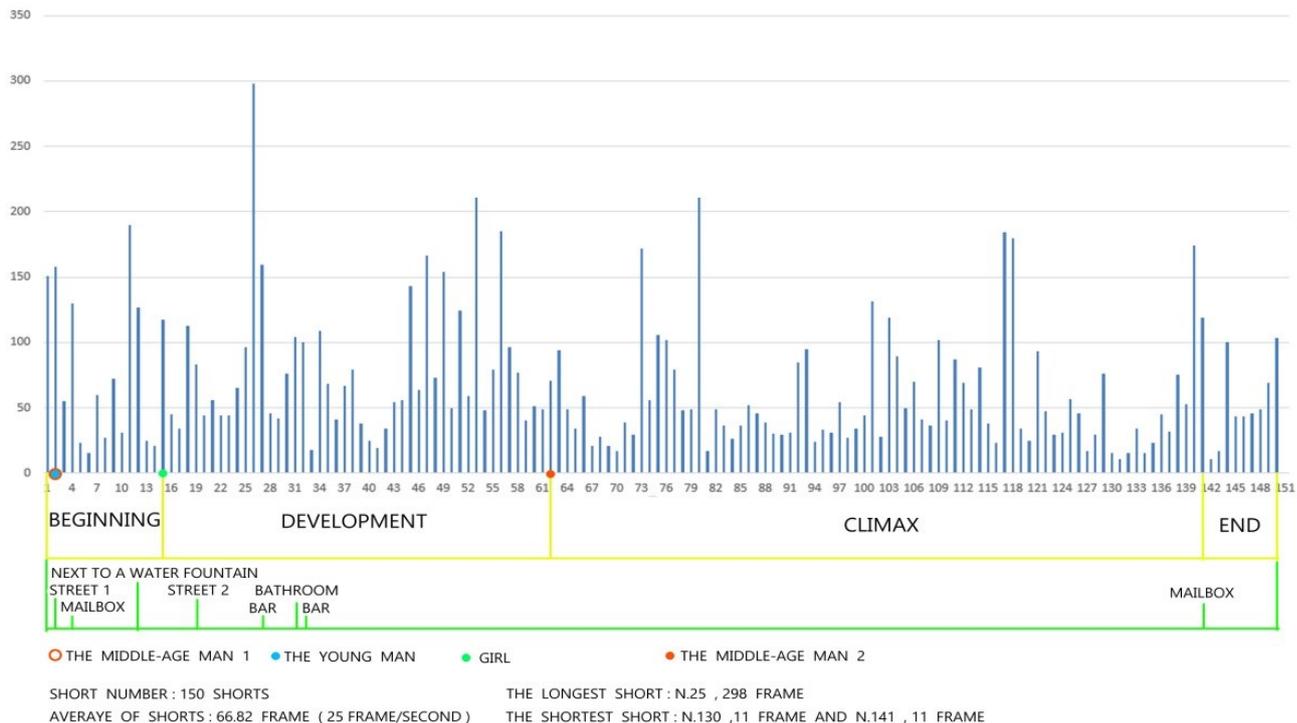
“He was going to surprise his wife, not his girlfriend”

“He may have been talking to his wife about a surprise, something nice he bought for her or something he wanted to do for her when he returned, ie. possibly a date night?”

These responses serves as evidence that the filmmaker failed to arrange the shots to convey the meaning of the story, so that most of participants could not correctly interpret it.

Figure 3

Shots Duration distribution of the film



SHORT NUMBER : 150 SHORTS

THE LONGEST SHORT : N.25 , 298 FRAME

AVERAYE OF SHORTS : 66.82 FRAME (25 FRAME/SECOND)

THE SHORTEST SHORT : N.130 , 11 FRAME AND N.141 , 11 FRAME

CHAPTER V. DISSCUSSION AND CONCLUSION

Film as Communication between Filmmakers and Audiences

Film is a special kind of communication. The film dissemination process is an “invisible vision,” including three processes: the form of communication, motivation, and interpretation. First, scholars and filmmakers can witness the external form of film communication, which is the creative process of films (documentaries, photos and other image data as a reference) and the screening process. But they cannot see its internal form, which is the filmmaker’s and the audience’s reception and interpretation of the audio-visual image. The external form needs the coordination of the characteristics of the audience’s physiology (Persistence of vision) and psychology (resonation), but also is influenced by many known and unknown factors such as language and culture. This raises several questions, including, why has this film failed to communicate effectively to the audience? And why did neither film students nor ordinary students do well in the perception accuracy and identification of denoters? The director and the scriptwriter who create the film are Chinese but the actors are Americans. A Chinese thinking constructed story is performed by foreigners, which will increase the chance of audience misinterpretation. In the pre-test, 10 Chinese participants watched the film and answered the same questionnaire. Through the comparison of the answers, it is found that the correct rate among Chinese film major students is higher than that of Chinese non-film major students. However, in the formal test, all the participants were Americans and there was no statistical significance between major and accuracy. From the open-ended questions, it is found that many

participants were confused about the film plot. The reason for this discrepancy may be that Chinese people better understand Chinese people's thinking, so there are fewer problems in the film interpretation. However, due to the limitations of time and data collection, this study selected American senior students as subjects.

Second, all actions of individuals are caused by motivation of the filmmaker to create and realize artistic expression as well as the audience to actively see a film to meet the desires and needs. Throughout the film communication, whether the creative motivation of the film may not match the viewing motivation or expectation of the audience. In addition to these two kinds of surface motivation, deep motivation is a hidden attribute, such as the underlying causes of artistic expression or the reasons of the audience to have different emotional response with their different interests and background. According to interviews with scriptwriter, this researcher was told that the original story is set to be a story between two policemen and a girl, and later the scriptwriter and the director think it will be more interesting to set the story on two thieves. Young thief Ben is a young romantic. The girl has an affair with the middle-aged thief and begins to be disappointed with their relationship. Middle-aged man who is a professor in NYU and an experienced thief has emotional entanglements with the girl and does not want a divorce. When the young man steals from the middle-aged man, the latter is calling the girl to tell her that he will give her a surprise. The girl makes a wrong interpretation of the surprise as the divorce, which is the underlying reasons resulting in the girl decides to leave the middle-aged man and pursue Ben. Throughout the story, the young girl complains that "if I was a thief, I am going to steal you from you wife, but it does not work so far," and the girl is concerned with her photos and

the wedding ring on the middle-aged man's hand, which are the scriptwriter want to imply the girl has been desperate for this feeling and the emergence of Ben accelerates the break up.

It can be learned from the result that these creative motivations of the filmmaker are not effectively perceived by the audience. This may be the reason of the second layer, that the film is not effectively interpreted. Third, the interpretation process occurs in the mind of the audience and is related to the film at all times. As to how it happens, when it happens and what response happens, we cannot know. Currently, there is no research offering conclusive evidence to know what brain activities the audience carries out, what information the audience responds to, and what response the audience has in the viewing process. Therefore the scriptwriter and the director base their creation on their own imagination, which is the fundamental reason for a film not to have an effective interpretation.

As mentioned before, in this film, the "surprise" that the middle-aged man has mentioned on the phone is the key to interpreting the whole story,--the narrative denoter. Only by making a correct interpretation of the "surprise" can we know why the girl is lost when she is so concerned with her photos and the man's ring, as well as why she decides to break up with the middle-aged man and pursue the young man. The duration of the film is 6'40". The middle-aged man mentioning a "surprise" appeared in the 18thsecond, lasting less than half a second. In the last second of the film, the girl called the young man's name, implying that the girl broke up with the middle-aged man and decided to started another relationship with the young man. So the audience needs to perceive this detail in the beginning, retain this memory to the end and link it with all the other clues to construct a complete story. It is found from the result that there is a positively correlation between the overall accuracy score in

understanding the film and the film denoter of “surprise;” however, only 47% of film majors and 50% of non-film majors could recall the “surprise” denoter; the correct recall rate is only 0.5 and 0.5 respectively. This means only half of the people in every group could recall the detail, and only half of these people were able to correctly establish the story connection.

Relationship between Denoters and Overall Understanding of the Film

There are many possible reasons that can account for the poor performance of the two groups. One explanation may be that the denoter appears at the beginning of the film, and very briefly. If one does not concentrate, one can easily miss it. Another explanation may be that while the “surprise” may have been perceived, it was not recognized as crucial information. It is also possible that the denoters (the surprise, the photo, the ring) were simply wrongly interpreted. The inherent logic of the whole film is based on the significance of the photo in the wallet stolen by the young man—the young man recognizes the girl is the one in the photo and follows her to the bar to flirt—the girl makes a wrong interpretation of the “surprise” mentioned by the middle-aged man and she thinks what he wants to say is something about his divorce. After the girl asks the middle-aged man about the photo and the ring, she is completely desperate for the middle-aged man and finally leaves. According to the scriptwriter, the surprise that the middle-aged man mentions on the phone is just a gift, but it is wrongly interpreted by the girl as good news of the divorce, ending her feeling of frustration. So the surprise, photo and ring are related. Some people wrongly interpreted the middle-aged man’s phone call as a call his wife to give her a surprise (“He was going to surprise his wife, not his girlfriend,” “He may have been talking to his wife about a surprise,

something nice he bought for her or something he wanted to do for her when he returned, ie. possibly a date night?”). Some people wrongly interpreted it as a sexual suggestion (“Perhaps sex,” “I thought it was a "sexual" surprise”). These interpretations of the surprise are actually the viewers’, and their determination of its role in the story results in their inability to correctly link it to the beginning. They conclude that the plot setting is unreasonable and lacks information (“the very confusing plot,” “The fact that this conflict is surrounding this female character that doesn't really have any say in what is occurring.” “The confusing shot structure, at least during the early half.”).

Fourth, the film duration challenged interpretive ability for the audience. Because the movie time is short and but included many twists in the plot, the audience did not manage to make effective connections to interpret the story (“I had a little bit of a difficult time understanding what they were saying some of the time.” “I thought the dialogue was pretty simple.” “No connection to the characters- there's no reason to like or care for any of them.”).

Based on the discussion above, participants who could correctly interpret the surprise had a higher score and were more confident in their answer. In contrast, failure to interpret the narrative denoter lead to misunderstanding the story. Thus, it is believed that correct denote interpretation can assist viewers in understanding the movie better. It appears that the film denoter can serve as an indicator of whether or not the film effectively conveys the filmmaker’s message.

Why Effectiveness of Film Communication is not Related to Liking of the Film

Audience preferences have been the most troublesome problem for the filmmaker. Identifying audience preference is crucial for film companies and their success. But identifying audience preferences is complex and controversial. With advanced equipment such as MRI and eye tracking techniques, film perception and cognition research offers various scientific approaches to exploring the factors involved in the way a film is received by its audience. . Currently, scholars from different areas are conducting research on it. Due to film's complex and specific artistic attributes (affordance and psychological product); there is no perfect way to determine and demonstrate audience preference. In this study, a Pearson correlation test was computed to link the variable "liking of film" with other variables. The result shows that the audience's liking the film had no correlation with major, gender, video making experience, recall rate, overall score for story interpretation, and the rating the quality of film. However, there is a positive correlation between understanding the film and recommending it, which indicates that the more people understand a film, the more likely they will recommend it to others We could not find a totally conclusive answer from this study, because the stimulus used in this study failed to effectively convey the information from filmmaker to audience. This raises a question, if a film can effectively communicate with its audience, will the audience like the film better? For example, the film *Inception* (2010) has an abstract and complex narrative strategy that makes it hard to understand, but this film has a surprisingly high rating score (8.8 on the IMDB). So understanding a film may not be a cause of liking a film. Other factors may play a more significant role in the liking of the film. The question of what ultimately creates audience preference is still in need of

future exploration. Narrowing our research focus to effective communication between filmmakers and the audiences, rather than on the relationship between “liking a film” and the film’s general success may lead to more insight.

How Filmmakers Can Communicate More Effectively

The film is an audio-visual type of art, rich in implied metaphor. Although it visually represents people and things on the silver screen, its special attributes (psychological product and affordance) and techniques of expression (montage) will generate implied meaning through the complex cognitive and psychological processes viewers engage in while watching a film. The viewers either clearly experience the various changes in the film story, or understand the story but cannot tell. In any case, the film is not a copy of reality, but a filmmaker’s recreation through such means as metaphor and psychological resonance. This process is more complex than Hall’s encoding process. The audience’s effective reception of information is affected by many aspects such as attention, ability to interpret, personal preferences and mood. In the case of being unable to predict these, what the filmmaker can do is to construct a work in which the clue logic is clear and metaphorical meaning (narrative denoter) is effectively connected with expressed information. First, it is important to ensure a reasonable narrative time distribution and shots length distribution. According to the effective communication analysis of Research Question 2 (Figure 3), the stimulus had an unreasonable arrangement on shot, which caused the viewers to fail to perceive and interpret the cues in the film. Second, the control of the time interval between the denoter and other relevant information is important. Third, filmmakers have to design logical connections

between various pieces of information in the plot, paying special attention to linking the denoter with other auxiliary information.

Limitations of the Study and Suggestions for Future Research

Because of the complexity of research on film perception and cognition and the limitation of facilities, this study had some problems which should be further discussed. It is hoped that these problems will provide some implications for future research.

Firstly, the subjects in this study chose to watch a film for a variety of reasons. However, all these reasons can be classified into psychological desire and psychological demand. Certain audiences may decide to see a film in the cinema after watching the trailer on the Internet or they may decide to watch it through digital device or cable at home under the recommendation of friends. These influences on film-watching cannot be replicated in experiments. In some sense, the participants in the experiment were required to watch the film rather than wanting to do it. The difference in motivation may result in difference in attention and ultimately in the understanding of the film.

Current research suggest that film, as a highly comprehensive audio-visual art form, comprises such a vast amount and variety of meaningful components that despite thorough research many factors influencing audience experience in watching films are stilled unknown. Research studies on film perception and cognition target film and how human process information, paying attention not only to the interaction between these two aspects but also the influence of their respective characteristics. These points were included in this study but the results were not satisfactory.

In the experiment, in order to measure the narrative cues, the important nodes according to the scriptwriter were selected to design the questions in the questionnaire. However, the role of director was ignored because it was the director who shortened the original 11-minute-length film into that of 6'40" due to the limitation of the whole film according to the screenwriter. As a result, the director's role in the final editing was ignored. The narrative logic designed by the scriptwriter may have been changed by the director. The missing information may have caused difficulty for participants in understanding the film and therefore influencing the overall effect. This illustrates that film production is a collective product, making it difficult to determine who the author is and whose message is being conveyed. Because the film director is person with the ultimate authority to determine the final product, the original meaning of the film may be better obtained from the director than the screenwriter. But this researcher could only find the second best- the screenwriter as the film director was not available to provide the director's perspective on the film.

Due to the limitations in terms of time and space, this study selected participants from the researcher's university. According to the requirements of experimental design, the participants were required to have at least 3 years of professional experience in filmmaking background. As a result, only senior students were qualified for this experiment. However, because many senior students had left school for an internship at the end of the term, only 32 film senior students were chosen. The small sample size may be lack of statistical power. In order to have more participants, the experiment was conducted soon after the class. As a result, some individual factors such as sleepiness, hunger, thirst, time-limitations and other conditions may have affected the attention and performance of the

senior students.

Finally, according to the result analysis, the audience's preference showed no relation with their understanding of the story. The Narrative denoter was a critical element in judging whether viewers fully understood the story. As a result, some implications are provided for future research. First, this experiment should be re-conducted to validate the relation between audience's preference and their understanding of the story; Secondly, the narrative denoter can serve as the indicator of the efficiency of information transmission from filmmaker to audience; thirdly, combining the ideas of the producers of stimuli is helpful in reducing the limits and bias of researchers. Gaining a deeper understanding of the role film plays in its success requires a continuous cycle, beginning with the original ideas of filmmaker and ending with the final understanding of audience.

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APPENDIX A. SURVEY FOR STUDY DATA

BOWLING GREEN STATE UNIVERSITY

BGSU

INFORMED CONSENT FOR COLLEGE STUDENTS' FILM INTERPRETATION

● **INTRODUCTION:** You are invited to participate in a master thesis research by Lingfei Luan, a master student from the School of Media and Communication at Bowling Green State University. The study is exploring human beings' film perception and cognition and the reason leads to the discrepancy of film interpretation between filmmaker and audience. Your participation will contribute to understand the fundamental interpretation of film and how filmmaking experience impacts people's interpret the visual and audio information

● **PURPOSE OF THE STUDY:** The purpose of this study is to identify the basic interpretive unit for understanding a film and the reasons that lead to misinterpretation.

● **PROCEDURES AND ACTIVITIES:** With your voluntary participation by clicking "Yes, I want to participate the experiment", you will be directly taken to a Qualtrics on-line survey. You will first watch a film about 6'40" long about a love story, and then fill out the questions. The survey will take about 15 minutes to complete.

● **POTENTIAL RISKS AND DISCOMFORTS:** The risks to you are no greater than those normally found in daily life. There will be no discomforts in the study. Your participant is completely voluntary and survey responses are anonymous. You are free to withdraw at any time without penalty, you may also decide to skip some questions or discontinue participation at any time without penalty or punishment. Deciding to participate or not will not impact any relationship you may have with BGSU.

● POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

1. You will be benefit from this study by being able to voice your own interpretation of film and your predilection towards the stimuli. This study will use your response and reflection of the story to identify how people construction the story based on the information they perceive from film.
2. Your response and contribution will be used as reference to understand the process of people's interpretation with/without filmmaking experience, and how filmmaking experience impacts people's interpretation.
3. Your participation will be contributing to the future filmmaking in order to have better film.
4. You have chance to receive a gift card or the same value of cash from \$5 to \$25. After finishing the experiment, you can choose gift card or cash, all the gift cards and cash will be sealed in the separated envelopes, each participants have equal chance to receive them. There are 55 gift cards value \$5 and 5 gift cards value \$25, accordingly, 55 envelopes have \$5 cash and 5 envelopes have \$25.

● **CONFIDENTIALITY:** You will not being asked any personal information such as name and email. Your questionnaire answer won't be tracked and identified by name. Only the author and thesis committee members will have access to the data and data will be stored in a password protected computer.

● **CONTACT INFORMATION OF INVESTIGATOR AND ADVISER:** If you have any questions or concerns about the research, please feel free to contact Lingfei Luan at lluan@bgsu.edu or reach the number 970-347-7659, you can also contact her supervisor Dr. Louisa Ha at louisah@bgsu.edu or 1-419-372-9103.

● **CONTACT INFORMATION OF REVIEW BOARD:** If you have other concerns or questions about participant rights, please contact the chair of the Human Subjects Review Board at Bowling Green State University at 1-419-372-7716 or hsrb@bgsu.edu. Copies of the consent form can be provided by Contacting Lingfei Luan at lluan@bgsu.edu or printing out this page"

● CONSENT OF THE RESEARCH PARTICIPANT

I have been informed the purposes, procedures, risks, and benefits of this study. I have had the opportunity to have all my questions answered and I have been informed that my participation is completely voluntary.

By clicking "Yes, I agree to participate the experiment," and "Next" I have indicated that I have been informed of the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study.

Note: the consent form will be on Qualtrics website, you can also contact me to have the digital document.

- Yes, I agree to participate the experiment
- No, I don't agree

Next

Film Perception and Cognition Study

Gender:

- Male
 Female

What is your major?

Do you have any experience of making films or video (with a script, not home videos) and posting them to a website (such as You-Tube or other video website)?

- Yes
 No

Do you have any experience of making films or video (with a script, not home videos) and posting them to a website (such as You-Tube or other video website)?

- Yes
 No

In the past year, how often have you viewed any films or videos?

- Never
 Once a Year
 2-3 Times a Year
 Once a Month
 2-3 Times a Month
 Once a Week
 2-3 Times a Week
 Daily

Next

What is your favorite film genre?

- Comedy
- Romance
- Action/Adventure
- Horror
- Mystery
- Sci-Fi
- Cartoon/animation
- If Other (Please specify)
- No preference

Next

Can you describe in your own words (50-100) about the film that you were asked to watch?

Next

How did the young man in a hat find the girl's photo?

- The young man picked it up by the trash can The young man found it in his wallet
- The young man found it in his cash in his wallet The young man found it from the wallet he had stolen
- The young man found it in the cash in the wallet he had stolen Don't know
-

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

Why did the young man follow the girl?

- Because he encountered the girl in the street and fell in love with her at the first sight Because he wanted to steal the girl's wallet
- Because he just found the girl was the one on the photo and was interested in her Because he recognized the girl was the one whom he just saw on the photo
- Because the girl looked like his younger sister Don't know
-

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

How did the young man start a conversation with the girl?

- The young man hit the girl and asked if he could buy her a drink as an apology
- The young man talked with the girl in French
- The young man pretended to unintentionally hit the girl and stole the girl's wallet
- The young man used his expertise to steal the girl's cell phone and started a conversation with the girl by the excuse of returning the phone
- The young man sang for the girl
- Don't know

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

When the middle-aged man appeared again, the young man explained to him that he was talking about the lyric. What did the middle-aged man ask?

- The middle-aged man asked what country the poetry was from
- The middle-aged man asked the young man what country the lyric was from
- The middle-aged man asked the young man to leave
- The middle-aged man borrowed a cigarette from the young man
- The middle-aged man asked the young man to introduce himself
- Don't know

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

Why did the middle-aged man stand up and shake hands with the young man?

- The middle-aged man wanted to steal the young man's wallet
- The middle-aged man wanted to observe the young man
- The middle-aged man wanted the young man to leave because he can tell the young man wanted to flirt with his girlfriend
- The middle-aged man wanted to compete with the young man
- The middle-aged man wanted to express his appreciation for finding his girlfriend's wallet
- Don't know

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

Why did the young man want to leave but chose to stay?

- The young man feared the middle-aged man because he was young man's teacher
- The young man thought he had no way to win the girl's heart, but he did not want to give up the girl
- The young man recognized the middle-aged man was the one he just stole from and was afraid the middle-aged man would call the police
- The young man wanted to give up but he did not admit defeat
- The young man did not want to give up the girl because he really liked her
- Don't know

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

Which of the following statements below are correct about the scene the middle-aged man asked the young man what his job was? - The selection may be more than one

- | | |
|---|---|
| <input type="checkbox"/> The middle-age man is having an affair with the girl | <input type="checkbox"/> The girl was not satisfied her relationship with the middle-aged man |
| <input type="checkbox"/> The middle-age man is a professor at NYU | <input type="checkbox"/> The young man and the middle-aged man had met each other before |
| <input type="checkbox"/> The middle-aged man was the professor of the young man | <input type="checkbox"/> None |

How sure are you that your answer (above) is correct?

- Not at all sure
 Slightly sure
 Moderately sure
 Very sure

Next

Please select the last scene in which you noticed the middle-aged man was wearing a ring

- | | |
|--|--|
| <input type="radio"/> The middle-aged man put the money in the young man's pocket | <input type="radio"/> The middle-aged man snuffed a cigarette in the ashtray |
| <input type="radio"/> The middle-aged man threw the wallet to the young man | <input type="radio"/> The middle-aged man held a cigarette in his hand |
| <input type="radio"/> The girl's hands and the middle-aged man's hands were on the table | <input type="radio"/> Can't recall any details |

How sure are you that your answer (above) is correct?

- Not at all sure
 Slightly sure
 Moderately sure
 Very sure

Next

Please select which of the statements about the film below is correct based on your viewing of the film? - The selection may be more than one

- The girl felt sad when the middle-aged man didn't surprise her with divorcing his wife
- The bartender found that the young man was a thief
- The girl knew that the middle-aged man was a thief
- The young man used the money given by the middle-aged man to pay the bill
- The middle-aged man's ring was stolen by the young man while he was teaching a lesson to the young man
- None

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

What did it mean when the young man found the girl's photo a second time when he kicked a trash can?

- The young man and the girl were not meant to be together because he lost to the middle-aged man
- It showed that the young man could not bear to leave the girl but could do nothing
- The young man did not win the girl's heart, so he left a photo as a souvenir
- It implied that the director wanted to give the young man a souvenir
- It indicated that the fate between the young man and the girl was not over, especially since the girl called his name later
- Don't know

How sure are you that your answer (above) is correct?

- Not at all sure
- Slightly sure
- Moderately sure
- Very sure

Next

●The young man recognized his own wallet.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The middle-aged man said he also lost his wallet recently but the money was found.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The middle-aged man approached the young man to put some money in his pocket and told him a young should never be without money.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The girl asked the middle-aged man if he lost her photo since he lost his wallet.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The middle-aged man pulled out the photo from his pocket and gave it to the girl and the girl surprisingly said she just took the photo and asked the man how he got it.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The young man took away the change and left.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The girl asked the middle-aged man where his ring was.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The middle-aged man turned around and called the young man's name and incidentally threw the key to the young man at the same time a ring was slipped from the young man's hand and rolled on the floor.	<input type="radio"/>
●The middle-aged man picked the ring up and smiled.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The young man opened the door and left.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The middle-aged man showed the ring to the girl and wore it. The girl was disappointed.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The young man walked in the street and kicked the trash can angrily after he kicked away a stone.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The girl's photo popped out from the trash can.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The young man hesitated and picked the photo up to look at carefully.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The girl called the young man's name.	<input type="radio"/>
	S1 S2 S3 S4 S5 S6 S7
●The young man turned around.	<input type="radio"/>

Next

Can you recall the middle-age man mentioned about "surprise" on the phone?

- Yes
 No

Next

What you like most in the film

What you don't like in the film

How would you rate this film?

- I like it very much and would like to watch it again
 I like it somewhat
 Neither like or dislike the film
 I don't like the film
 One of the worst films I watched

Will you recommend your friend to watch this film?

- Very likely
 Quite likely
 Not sure
 Quite unlikely
 Definitely not

On a scale from 0 to 10 with 10 being the best, 0 being the worst, how would you rate the quality of the film?

Worst											Best
0	1	2	3	4	5	6	7	8	9	10	
<input type="radio"/>											

Submit

APPENDIX B. HSRB APPROVAL



DATE: April 19, 2016

TO: lingfei Luan, master
FROM: Bowling Green State University Human Subjects Review Board

PROJECT TITLE: [889157-2] Finding A Basic Interpretive Unit Through the Human Visual Perception and Cognition
SUBMISSION TYPE: Revision

ACTION: APPROVED
APPROVAL DATE: April 19, 2016
EXPIRATION DATE: April 17, 2017
REVIEW TYPE: Expedited Review

REVIEW CATEGORY: Expedited review category # 7

Thank you for your submission of Revision materials for this project. The Bowling Green State University Human Subjects Review Board has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

The final approved version of the consent document(s) is available as a published Board Document in the Review Details page. You must use the approved version of the consent document when obtaining consent from participants. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that you are responsible to conduct the study as approved by the HSRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

You have been approved to enroll 80 participants. If you wish to enroll additional participants you must seek approval from the HSRB.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. All NON-COMPLIANCE issues or COMPLAINTS regarding this project must also be reported promptly to this office.

This approval expires on April 17, 2017. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.

Good luck with your work. If you have any questions, please contact the Office of Research Compliance at 419-372-7716 or hsrb@bgsu.edu. Please include your project title and reference number in all correspondence regarding this project.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Bowling Green State University Human Subjects Review Board's records.

INFORMED CONSENT FOR COLLEGE STUDENTS' FILM INTERPRETATION

- **INTRODUCTION:** You are invited to participate in a master thesis research by Lingfei Luan, a master student from the School of Media and Communication at Bowling Green State University. The study is exploring human beings' film perception and cognition and the reason leads to the discrepancy of film interpretation between filmmaker and audience. Your participation will contribute to understand the fundamental interpretation of film and how filmmaking experience impacts people's interpret the visual and audio information
- **PURPOSE OF THE STUDY:** The purpose of this study is to identify the basic interpretive unit for understanding a film and the reasons that lead to misinterpretation.
- **PROCEDURES AND ACTIVITIES:** With your voluntary participation by clicking "Yes, I want to participate the experiment", you will be directly taken to a Qualtrics online survey. You will first watch a film about 6 minutes 40 seconds long, and then fill out the questions. The participation time will take about 20 minutes to complete including watching the film. The author will be present with the participants in case they have any questions. The participants do not need to sign their name in order to receive the gift card when they finish the survey, the author will give the participants the gift card in person.
- **POTENTIAL RISKS AND DISCOMFORTS:** The risks to you are no greater than those normally found in daily life. There will be no discomforts in the study. Your participant is completely voluntary and survey responses are anonymous. You are free to withdraw at any time without penalty, you may also decide to skip some questions or discontinue participation at any time without penalty or punishment. Deciding to participate or not will not impact any relationship you may have with BGSU.
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- **CONSENT OF THE RESEARCH PARTICIPANT**
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