HORROR MOVIE AESTHETICS:

How color, time, space and sound elicit fear in an audience.

Thesis Presented
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Fear is one of the most basic and important human emotions. At very beginning of movie history in 1895, when the audience first saw the Lumieres Brothers’ *The Arrival of a Train at La Ciotat Station* on the big screen, almost the entire audience tried to escape from the theater. The image of the approaching train caused fear. To intensify feelings of fear in the audience, film artists use sound, lighting, timing, motion and other stylistic devices. Among the wide range of film genres, especially horror movies aim to trigger a physiological and psychological response of fear in the audience. Within the genre, horror films differ widely from each other based on their time period, sub-genre, and regional differences including religious and cultural motifs. There many different ways of investigating how horror movies accomplish to terrify and horrify an audience, for example, via an analysis of plots, characters, and dialogue. This thesis examines what constitutes the different cinematic styles of horror movies – color/lighting, time/motion, spatial relationships, and sound – in different horror movies. The result of my research is presented in an interactive visualization of cinematic aesthetics that enables a cinematic student to explore the patterns of how those elements are applied on the screen and can ultimately trigger and influence an audience’s mood.

**Keywords**

horror film, cinematic fear, cinematic techniques, time lag spatial relationship
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INTRODUCTION

The pervasiveness of digital media as a communication tool has increasingly important influences on people’s lives. We are in an age in which media have been transformed from a physical mode or print to virtual screens. The medium can be the message, so it shapes cognition of information. When the telecommunication system was dominated by print media, such as letters, posters, and newspapers, people heavily relied on this visual communication method to transmit information. Parents read about their children’s homesickness in letters; people learned about the news in places far from their homes through the text of daily newspapers edited by journalists. Since the late 20th century, new applications of digital techniques have taught people to perceive the world in a many different ways. Media act as extensions of man,¹ the development of electronic devices allow other body to serve as sensors, taking part in receiving information. Not only are individuals highly dependent on visual information but can make judgments based on information received via hearing, touch, and smell. Parents can hear their children’s trembling voice and other citizens’ opinions on local news through voice recordings and moving pictures. Content follows form, and these insurgent technologies give rise to new structures of feeling and thought.¹


The Model of Communication

Claude E. Shannon The Mathematical theory of communication
The medium is the message,\(^1\) Regardless of narrative words, the film as the medium can also be the message. Producing a film required the filmmaker applied the pervasive methodologies to encode the intended message via cinematographic techniques. Also the film’s audience would get accustomed to the aesthetics of the medium as they are watching the film – the movie adjusts the visual perception of the audience. Audience and film producers are connected through a feedback loop: the audience uses their aesthetic experience to judge other movies.

It is thus not difficult to understand why film students need to learn basic media aesthetic elements in their academic studies. They must learn how to apply existing filmmaking methods to their own movies. On the one hand, they need to make sure that their audience understands the objective within their film, given that an audience already has preconceived notions of horror movie aesthetics. On the other hand, film students also have a responsibility to teach audiences aesthetic, let them know what is a good movie should be, because audiences always receive the information what you give them via this medium.

According to Claude E. Shannon’s model of communication,\(^2\) a communication system consists of five parts: an information source which produces a message to be communicated to the receiving terminal, a transmitter which conveys the message in some way by producing a signal suitable for transmission over the channel, the channel which is the medium used to transmit the signal from the transmitter to the receiver, the receiver, and the destination. In the media industry, media producers act as information sources.

\(^{1}\text{Shannon, Claude}\)
\(^{2}\text{Shannon, Claude Elwood, and Warren Weaver.} \text{The mathematical theory of communication. University of Illinois Press, 1959.}\)
They use film and television as media to transmit their ideas to their audiences. In a communication system, the audience acts as the destination of information. However, there is one important element that Shannon did not clearly indicate in his model of communication. To ensure that the audience understands, for example, what information producers want to disseminate through their films, the audience needs to follow filmmakers’ thoughts by using the same code book to decode the message transmitted through the acting, plots, narrative words, and even those media aesthetic elements which filmmakers use, such as light, color, space, and time. Only after the audience learns the language of cinema can they appreciate films and understand directors’ implications portrayed in cinematic format.

In ancient Greece, many teachers of philosophy held that mimesis is a critical idea that has great influence on art. The form of a person’s life could be a model for understanding the beauty of art, which is the imitation of life. However, many people hold the view of anti-mimesis, which is the direct opposite of mimesis. As stated by playwright Oscar Wilde, “life imitates art far more than art imitates life.” Wilde believed that, without the artist to teach the loveliness of fog in London, others would not notice the beauty of that phenomena. No matter what viewpoint one tends to believe, life and art inspire each other. Taking horror movies as an example, comparing scenes from the news and fictional movies shows how Hollywood horror movie language and the contemporary semantics of real-life horror (e.g., news, political) influence each other. Among audiences tired of being horrified by slasher monsters, such as Freddy, Jason, and Michael,


5. Classical horror movie characters from *A Nightmare on Elm Street, Friday the 13th, Halloween*.

Silence of the Lambs achieved huge success and pushed horror films in new directions. The Silence of the Lambs brought the monster and the horror into the real world: a world filled out not only with horror but also with other issues, politics, and complexities. Therefore, film students can analyze horror movie aesthetics to perceive patterns and predict with reasonable accuracy how audiences will respond to specific aesthetic stimuli in different cultural, historical, and political contexts. This analysis can also help horror movie audiences better understand better what they fear in real life and how cinematic skills and tension capture their attention.

In Herbert Zettl’s book Sight, Sound, Motion: Applied Media Aesthetics, he points out the five based elements of the media: light and color, two-dimensional space, three-dimensional space, time and motion, and sound. I apply his analysis and theory of these five basic elements to examine several classical and modern horror movies. Following Herbert’s standards and using the deductive abstraction methodology, I apply Herbert’s theory of these fundamental elements (light, color, composition, time, and sound) to study how they are applied in horror movies and to understand how horror movie sub-genres use media aesthetics elements differently. As an information designer, I also conduct experimental research about how information visualization techniques can help students and audiences clearly understand media aesthetics elements.
CHAPTER 1
Fear in horror movies
Overview

The emotion of fear is common in everyone’s daily life. We fear natural disasters: tornadoes, tsunamis, earthquakes, and floods. People also experience danger and fear when they see gangsters, murderers, and carnivorous animals. The human body’s chemical and mechanical responses encourage people to flee or fight before real danger occurs. However, in the cinematic context, people who buy a ticket to a horror movie already know that they will be terrified and horrified by what they see on the screen. They will still sit in the dark to enjoy horror movies with others who have made the same choice. Horror movie audiences enjoy the movie-watching process. Enjoyment and fear, two opposite emotion responses, both arise when people sit in a theater to watch a horror film. In Sigmund Freud’s essay “The Uncanny,” he argues that mystery and fear emerge from something with which we are familiar but has always been oppressed.1 Freud’s uncanny theory proved to be influential and inspired much theoretical research on horror films. After the surprising success of the movie The Exorcist (1973), many researchers proposed theories about this phenomenon. Terry Heller, Robin Wood, Noel Carroll, Matt Hills, and many other scholars explored the question of why people love horror movies. In Noel Carroll’s book The Philosophy of Horror2, Carroll distinguishes between art-horror and natural horror. First, in real life, the actuality of situations renders individuals’ emotional responses of horror and terror physical; but during horror movies, such feelings are triggered by monsters in which people do not believe logically. These dramatic fictional stories create a safe distance for audiences, giving them opportunities to enjoy these feelings. Secondly, an audience might feel excitement over a sense of achievement due to the


successful or failed fight between human characters and monsters. These feelings explain the paradox of horror. Hills\(^3\) believed that some objective element could also influence audiences’ attitude toward horror movies. For instance, a foggy forest and a twisted castle match the expectations of gothic horror fans when watching horror films.

Many theories have been proposed to explain why audiences are attracted to horror movies, but none provide comprehensive answers to these research questions. Glenn D. Walters\(^4\) identified eight incomplete theories applied to explain this phenomenon: psychoanalysis, catharsis, excitation transfer, sensation seeking, societal concerns, dispositional alignment, gender role socialization, and curiosity and fascination.

**Eight Popular Incomplete Theories to Explain the Enjoyment of Watching Scary Movies**

In Freud’s\(^1\) uncanny theory, he defines the uncanny is something that is familiar but incongruous and, due to this paradox, creates cognitive dissonance. Related theories are incorporated in many movies. For example, according to roboticist Masahiro Mori’s\(^6\) research, the uncanny valley is the almost human appearance of robots which evokes a negative emotional response. The uncanny valley (figure 1) appears in science fiction movies, such as *Terminator*, Ridley Scott’s *Blade Runner* (figure 2), and Stanley Kubrick’s *2001: A Space Odyssey* (figure 3). Watching famous directors’ masterpieces, audiences feel the fear caused by robots, which were created by human beings but have run out of control. This theory explains why some approaches to develop the realism of interactive cinema will decrease audiences’ enjoyment. During horror movies,
realism might prompt audiences to run away from the theater. Psychoanalysts Jung Carl⁵ argues that horror movies draw on primeval archetypes hidden deep in the subconscious; for example, shadows, the dark, and mothers often have important roles in horror movies. In Alfred Hitchcock’s *Psycho*, a mother plays the role of evil in the main character’s subconscious, and the early German horror movie Nosferatu features a famous, dramatic shadow screen scene. Although these films seem to support Jung’s theory, not all horror movies include these elements. The psychoanalysis of the uncanny and subconscious is difficult to test empirically and likely would be experienced differently by audiences.

Contemporary researchers have used a comment by Aristotle to help explain why people are attracted to scary movies and violent dramatic plays. Violent movies and plays gave audiences the opportunity to purge themselves of negative emotions formed in daily life, so they enjoy this process. Aristotle called this process catharsis⁷. However, some results from recent research indicate that watching violent movies and playing violent games tend to make people more dangerous. The movie Scream showed the ironic role that horror movies play in teenagers’ minds. Dolf Zillmann proposed the excitation transfer⁸ theory, which posits that the negative feelings that audiences suffer during horror movies intensifies the positive feelings when the hero finally triumphs. Indeed, I experienced release when I saw Cary Grant win against his enemies in Hitchcock’s *North by Northwest*, and I felt happy for Danny, who survived his crazy father in *The Shinning*. However, excitation transfer theory cannot explain the enjoyment of movies in which the hero

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does not succeed. For instance, I was extremely terrified during the last scenes when the evil child returns in James Mangold’s *Identity* (figure 4), but I cannot deny that I enjoyed these last few minutes of this movie, and that the plot twist is unexpected but reasonable. Usually, thrillers and horror movies attract me with their story and plots, not the protagonist’s fate in movies. Ultimately, they will have one of two endings: success or failure. Therefore, I have much more enjoyment while watching horror movies when I assume that what will happen to actors next is more exciting than knowing what has occurred.

Marvin Zukerman proposed the sensation seeking\(^9\) theory of horror films in 1979. He argues individuals are attracted to horror movies because they desire the sensation of experiences. For example, individuals engage in thrill seeking and participate in high-stimulus activities, such as bungee jumping, climbing, inhibition, experience seeking, and boredom susceptibility. However, Zukerman and other researchers (Tamborini, Stiff, & Zillman, 1987) observed that sensation seeking does not always have a significant relation to interest in horror movies. This theory cannot explain the many societal factors that influence reactions to films. DJ Skal\(^10\) contends that horror movies reflect societal fears. Building on this theory, Kendall R. Phillips\(^11\) published a book attempting to connect horror films with social issues. He speculated that the rise of yuppies, serial killers, and feminism made *The Silence of the Lambs* popular in the 1990s. The Vietnam War and other violence gave rise to an increase in Zombie movies, such as 1968’s *Night of the Living Dead* (figure 5). This time reflecting fears of a virus pandemic, zombie movies, most famously *Resident Evil* and *The Walking Dead*.

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were resurrected in the 2000s. Many horror cycles fit this theory, but still more do not. For example, Phillips demonstrates how certain these movies reflect certain American social horrors cannot explain the prevalence of Dracula moves throughout the world.

Zillmann and Paulus\(^\text{12}\) point out that enjoyment of violence in horror movies occurs when audiences see characters on the screen given the punishment they deserve. This observation gave rise to dispositional alignment theory, “which hypothesized that a person’s emotional reactions to events described in horror film can be traced back to the dispositional feelings they have for the person involved.” The same objection as excitation transfer theory can be raised to dispositional alignment theory: what if the hero does not triumph in the movie? What if the bad guy is not punished? In addition, this theory cannot fully explain instead why violence and horror are popular in the first place. Another interesting theory is suggested by gender role socialization.\(^\text{13}\) Gender studies research shows out that some young males enjoy horror movies when their female companions are scared by the movies. The opposite was also true: young females feel less enjoyment when the film frightens their male companions.

Carroll\(^\text{2}\) believes that psychoanalysis can explain what fear, but not horror, is. It cannot explain why, for example, gore is a basic element of horror movie scenes. He maintains that horror films succeed because they stimulate audiences’ positive emotions, such as curiosity and fascination.\(^\text{14}\) Carroll stresses the paradox of horror: we can enjoy being in a state of horror, but horror itself looks like an unpleasant state in which to be. He believes that horror exists outside the everyday, normal behavior.

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Horror is a compound of at least two other feelings: fear and disgusted. We are attracted by the unknown of monsters and tolerate the disgust of monsters. If this statement is true, how can it be explain that those who suffer from phobias also enjoy some horror films? I interviewed a man named Tony, whose wife has emetophobia, or fear of vomit. Tony screens every film before his wife watches it. Upon realizing that millions of people suffered like Tony’s wife, the couple decided to help as many people as they could enjoy movies without stress and anxiety. They built a website to help people filter movie scenes which might make them uncomfortable. The emotion of disgust does not seem to be triggered in everyone when they watch horror movies. Emotions, such as curiosity and fascination, are incomplete explanations of why violence and other violations for norms from daily life, such as drug use, the addiction of adolescence children to premarital sex, are shown on the big screen, even when audiences respond favorably to the punishment of the violators of norms.

None of these traditional theories are wrong, but all are incomplete. Audience members do not watch horror films for the same reasons. Even an individual could hold different perspectives when watching a movie at different times. It is also hard to convince people to believe one particular theory, especially when all are based on empirical research. Deirdre D. Johnston published research in 1995 on the motivations for high school students to watch a slasher movie. Based on a series of tests with a group of 220 high school students, Johnston identified four categories of motives: gore watching, an interest in violence characterized by low empathy and high sensation seeking; thrill watching, a desire for suspense characterized by high empathy and

high sensation seeking; independent watching, a desire to overcome fear characterized by strong identification with and empathy for the victim; problem watching, a desire to feel helpless, a negative effect characterized by high empathy for the victims. Though limited to a small sample and a focus on slasher movies, the results of Johnston’s research identify patterns of reasons why people want to watch slasher movies. However, motivations likely are more complicated when the research object is the whole genre of horror movies. In this scenario, one universal explanation likely does not work to explain all horror films.

Three Aspects of Horror Films’ Allure
Fear is a common emotion among many different creatures. Animals feel fear at threats of death. Human beings, who are more complicated creatures, have various clinical responses to different triggering events. Christof Koch\(^ {16} \) demonstrates that the right amygdala, an area in the brain, helps people realize danger and feel fear. Research show that the right amygdala responds more strongly to pictures of dangerous animals than images of people and objects. These results might explain why makers of some horror films use monsters, such as snakes, sharks, and spiders, to terrify people. However, a brain scan experiment by Thomas Straube\(^ {17} \) found that, instead of the amygdala, cooperation between the visual cortex (which controls processing of visual information), insular cortex (self-awareness), right thalamus, and dorsal-medial prefrontal cortex (responsiveness, problem solving). If the amygdala is not activity when a person watches horror movies, what then happens?

16. Mormann, Florian

17. Straube, Thomas
According to Walters, four primary factors play roles when a person enjoys a horror film. First, filmmakers need to grab their audiences’ attention by creating tension, possibly “through mystery, suspense, gore, terror, and shock” or filmmaking techniques, such as dramatic lighting, production design, and incongruous sounds. For instance, jump scenes are a standard sound design technique, and sound designers use science to create tension before a big moment. Filmmakers also edit time to create tension, for example, using multiple camera angles to portray a character’s nervousness and multiple camera angles to prolong the sensation of time, increasing the tension felt by audiences.

The second factor is relevance, which can be classified into four types. Universal relevance refers to widespread fears, such as the fear of death or the unknown unknown. Cultural relevance relates to societal issues, such as religious issues and regional differences. For instance, in Chinese cultural and history, creatures such as vampires do not exist, so they have little cultural relevance to Chinese individuals. In subgroup relevance, the themes of some movies target particular communities; for example, teenagers or a group guilty of some transgression are a staple of horror movies. Personal relevance is also effective in horror movies. The last factor is realism: the audience understands that what they watch on the screen is not real. Some filmmaking techniques, such as multiple camera angles, sound tracks, and after-effects, emphasize the unreality of what happens on the screen is not real because these elements do not happen when danger occurs in real life. Filmmaking techniques at once create tension in an audience, letting them be terrified by the movie and make movies unrealistic, make it possible for audiences
to appreciate scary movies. This paradox of filmmaking techniques prompts critical thinking on the development of interactive theater in the future. If all the elements were like actual situations in real life, a movie would have high realism but lose its entertainment value. That does not seem to be positive development, at least in horror movies.

**Horror and Imaginations**

Although some horror movies might be inspired by actual events, they are usually fictional. In most cases, when horror and terrible creatures or events suddenly enter people’s lives, they panic and leave almost no room for people to consider why the situation happened and how they can face the danger immediately. Readers might not be alarmed by horror in the news because serious media seek to ensure the objectivity of the news. Horror movies are different because films, as an artistic medium, allow artists to grossly exaggerate and express personal subjective views. *The Day After Tomorrow* (although not a horror movie) portrays extremely adverse weather events from the perspective of a director who seeks to convince audiences that the earth’s weather will become uncontrollable if we do not protect the environment. Directors use film as a medium to convey images in their minds to their audiences, who, in turn, change directors’ images into their own dreams in their brains according to their personal experiences. Horror movie directors try to create tension to capture audiences’ attention. Given the nature of curiosity, the unknown and mystery can easily grab audiences’ attention. For example, when I see a dark, empty room – a classical hint of danger in a horror movie – I might start to imagine what will happen in next few minutes.

“Where there is no imagination there is no horror.”

*Arthur Conan Doyle*
Will Cesare sneak into the room to try to stab Jane during her sleep? (The Cabinet of Dr. Caligari) I assume that something terrible will happen in the next few shots, so when I see the dark room on the screen, I feel horror before anything terrible even occurs. Scenery shots are a technique directors commonly use to prompt audiences to think. For instance, in The Silence of the Lambs, a 10-second-long scenery shot is inserted between the time base story and when the protagonist Starling steps into the serial killer Buffalo Bill’s house. A blank screen provides audiences with the opportunity to imagine a dangerous situation in minds. That is the moment when the imagination creates horror. I later analyze in detail how directors would use multiple cinematic techniques to impel audiences to imagine horror.

Conclusions

Although people do not like anxiety and are afraid of being frightened in real life, many audiences love and are even obsessed with horror movies. Many empirical theories have been proposed to clarify this paradox, but none are applicable to every horror genre. Some horror movie researchers believe that the horror movie can be a safe place for audiences to experience dangers which they might not suffer and seek to avoid in real life. In this safe place, audiences can also learn and practice survival skills to protect themselves from everyday threats. The feeling of horror in movies arises from tensions, and directors create a tense atmosphere, using a variety of cinematic techniques to grab the audience’s attention. Relevance and unreality also induce the sensation of horror in audiences. Horror is always accompanied by imagination. Unlike animals which choose to flee or fight when facing fear, human beings
have other choices. For instance, choosing to sit down and watch a horror film might provide an opportunity for human beings to overcome their fears.

Theatre functions as an experimental place allowing artists to test whether their thoughts and methodologies work for audiences. Life and art should be inspired by each other. A successful horror movie helps audiences better understand their life and culture; some fears are temporary and limited to a certain situation, while others are everlasting. An influential horror movie always projects speaks to popular culture, social issues, or the mystery of life. Film combines storytelling, photography, acting, motion, editing, music, and many other artistic mediums. The combination of different sensory experiences from these media makes film a platform for the audience to explore different lives.
CHAPTER 2

Cinematic techniques used in horror movies
Overview

I compared movies to a platform because each basic technique used in movies can work separately. For instance, a person can enjoy the macabre in Edgar Allan Poe's gothic horror stories, be terrified by chilly music, and, when alone in a dark space, imagine being attacked. As a mixture of various media, a movie can combine these elements together to intensify the audience's emotional response. Just like Amazon.com, whose design as a platform for retailers made it a huge success, movies, as an artistic platform, provide a stage for many artists who focus on different fields to together create a new art performance.

In this paper, I briefly review how screenplays work in movies. The aim of a movie as a commercial production is to make money. The investors and producers care most about how their money is spent on a movie. Of course, the screenplay is a critical, initial step for a movie; without a good story, a movie usually will not achieve success at the box office. However, the budget for the screenplay is more fixed than for other aspects of filmmaking, which are related to the process of production. For example, bad weather might delay photography work, and many such expected things might happen during the making of a movie, which is a work of experimental practice.

As productions, films are also influenced by many movie industries which have already earned great triumphs, such as the Hollywood, Bollywood, and Hong Kong movie industries. Audiences can easily identify the typical patterns in films by different movie companies. In traditional Hollywood movies, the protagonist generally wins a fight with the antagonist. In generally, movies made with large investments from Hollywood
must follow certain rules. Based on audiences’ previous reactions, producers and investors can make a judgment about what makes money and tend to follow those steps. Consequently, during the financial constraints after World War II, horror films were usually made as B movies or independent movies. Particularly, in the late 1970s, horror movies, such as *Halloween* and *The Texas Chainsaw Massacre*, did not have big budgets compared to some A-movies, like *Avatar*, but remained popular among teens who wanted to experience thrills, even if some of the plots were ridiculous. In addition to the reasons previously discussed about why audiences love horror movies, one reason why filmmakers shoot horror film is that as long as these B movies have a good story, filmmakers can ignore refined production designs and exquisite cinematography and, relative to the budget, get enormous returns. Unsurprisingly then, many horror films are filled with gore, torture, and sex scenes which easily trigger emotional responses and do not need large budgets for special effects, as in *Transformers*, *Titanic*, and Marvel’s superheroes movies.

However, this discussion of narrative screenplay and storytelling does not mean that they are unimportant to movie. To the contrary, they are important enough to be addressed as a separate topic. Here, I explore how cinematic aesthetics (light and color, spatial relationships, time and motion, sound) work together in horror movies to scare audiences. I do not analyze B-level horror movies, not because I underestimate their importance in the development of horror movies, but because I chose to focus on films with more artistic ambitions to help cinema students interested in horror films as a medium understand how to create suspense in their movies.

Light and Color

Light is essential to all aspects of lives. Light performs two main functions in art: it can help orient viewers in space and time and affect their emotions. “The control of light is paramount to the aesthetics of television and film. Lighting then is the deliberate manipulation of light and shadows for specific communication purpose... It can also establish an aesthetic context for our experiences, a framework that tells us how we should feel about a certain event.” Before Becky Sharp was released in 1935, movies were shot in black and white, except for movies painted with color on the film, such as Sergei Eisenstein’s 1925 Battleship Potemkin. (figure 6)

In the black-and-white movies, filmmakers relied heavily on lighting to shape not only the external environment: the nature of space and time, but also shape viewers’ internal environment: their emotional response to events which happen on the screen. In horror movies, photographers commonly used cast shadow to make scenes more dramatic. The scene showing the shadow of Count Orlok climbing a staircase in the 1920 move Nosferatu (figure 7) still terrifies me whenever I saw it on the screen. Even in 1960, when color movies were widespread throughout the world, Hitchcock still used black-and-white techniques to shoot his Psycho. In the famous shower scene, Hitchcock used light to outline the murder’s body but hide the murder’s face. Audiences were startled by an apparent murder, but, at the same time, were terrified by the unclear danger: Who is that? Why is she raising a knife? What is she trying to do, and why is she doing that? The unusual lighting creates tension in the audience.

Color is another fundamental element that shapes perceptions of objects and performs almost the same...
function as light in television and film. Unlike in the age of black-and-white movies, filmmakers shooting in color tend to use combinations of color and light to influence audiences’ mood. Hong Kong director Wong Kar-wai is a master at using mixtures of color and light to influence mood. In his movies 2046, In the Mood for Love, and Happy Together, viewers can read the conflicts inside the actors’ hearts. Many horror movies use extraordinary combinations of color and light to convey horror to audiences. At the end of the movie Saw (figure 8), Rembrandt lighting reveals only the top of the antagonist, and the strong light contrast between the antagonist and protagonist, mixing a strange green color, suggests the desperation in the protagonist’s mind. A chilly blue color and spotlight work in are also put to work in The Exorcist. (figure 9).

Italian filmmaker Dario Argento is a master of using color in horror movie, especially in Suspiria (figure 10). Crimson key lights, dark blue tints, and cult yellow create perceptions of the mysterious, horror, and unreality plots among viewers. The movie is a multi-colored mastery. Color has also been used to great effect in independently produced horror movies to give audiences hints of looming, dangerous, and creepy plot twists. The Shining (figure 11) provides a good example to support this view. In one scene in a bathtub, almost everything inside that space appears a shade of green which cannot exist in normal bathrooms. Another creepy use of color occurs in the scene where Jonny is persuaded to kill his wife and son. Classical cult movie’s director Stanley Kubrick (who, of course, is not only a cult movie director) makes use of dramatic color in his horror films.
**Space, Time, and Motion**

Space, time, and motion are key factors to help filmmakers transform narrative storytelling into visual storytelling. Space, which is created on the screen, gives audiences a sense of the three-dimensional reality of spatial relationships among characters. Like painters, filmmakers know that how to use cameras, actors, and objects to create a three-dimensional space on a two-dimensional canvas. Most spaces on the screen are intended to create a reality which audiences can relate to their lives.

However, the time is presented in a completely different way on the screen. First, cinematic time cannot be real time when audiences watch movies. Viewers cannot wait and sit in the theater for years to see Benjamin’s whole life in *The Curious Case of Benjamin Button.* “The mechanical clock, in short, helps to create the image of a numerically quantified and mechanically powered universe. It was in the world of the medieval monasteries, with their need for a rule and for synchronized order to guide communal life.”

In real life, time cannot be measured by private experiences, but the unrealism of movies allows directors and editors to play tricks with objective and subjective time to help tell a story. For example, a technique named Bullet Time, popularized globally by *The Matrix,* was first used in a horror movie named *The Stendhal Syndrome* in 1996. This movie used computer-generated imagery to complete this plot, instead of footage from cameras, and demonstrated new opportunities for how subjective time works in movies. The most common way to influence subjective time is not by controlling time but by manipulating the event itself and how audience

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experience itself. This technique might explain why usually viewers feel that time is shorter when they watch an action movie than a romantic movie. Although both generally last two hours, the density and intensity of events are generally much greater in action movies, which affects how audiences experience subjective time. Moreover, time is followed through motion, whether the motion comes from actors, cameras, or editing.

There are too many details on space, time, and motion in movies to discuss in this space. I do not mention many principles in this paper because countless basic cinematic books teach readers how to practice these principles in shooting videos. The main point I want to consider here is how filmmakers use spatial relationships, time, and motion to create tension in horror movies and grab viewers’ attention. I analyze the scenes from two horror movies to explore this question.
Psycho

Even among viewers who have not watched all of Hitchcock’s Psycho, the shower scene in this movie is an iconic scene in the thriller genre. Hitchcock is a master of suspense, and in the shower scene of Psycho, he uses timing and spatial relations to create tension. As seen in the following images, the scene first shows the actress showering and facing away from the door. Consequently, when the murder steps into this space, the character will not know what is happening. Thanks to the camera angle, audiences can understand what will happen when they see the actor enter the bathroom. Audiences worry about what will happen to the character before the murder starts. The director takes advantage of the time lag between the actors and the audience to create tension. In the subsequent action, the movie editor uses quick, dense montage images to show the storyline; the quick motion editing creates a fast sense of subjective time. After the murder kills the character, the pace of the moving pictures suddenly slows down. Audiences accept that the character will die, so they release their nervous energy, and the intensity of the event decreases. In addition, Hitchcock uses dramatic lighting in the scene when the killer raises the knife. The unclear identity of the murderer constructs a suspenseful plot that lasts until the end of the story. As well, the background music and actress’s screaming create tension. I discuss how sound creates tension in a horror movie more in the following section.
Psycho Shower Plot

Time line

plot time line

actor knows what will happen

actress knew what happen

audiences understand what will happen

create tension to grab attention

dramatic light

zoom in camera

dissonance sound/ startle reflex
The Silence of the Lambs

An article published in The New York Times on January 12, 2016 reported about that the owner of The Silence of the Lambs’ house could not find a buyer for it, even after lowering the price below $250,000. This anecdote shows how the horror of The Silence of the Lambs has affected people even 25 years after the movie was released. Let us see what happened in killer Buffalo Bill’s basement and why it has terrified people.

Starling is a Federal Bureau of Investigation trainee who, without any previous practical experience, has to confront a serial killer alone in his basement. Making the situation worse, the killer Buffalo Bill has night-vision goggles, which help him see everything clearly in the dark space and follow Starling, who has nothing except her gun. The director of photography chose to shoot this scene from Bill’s point of view (POV). Such “a point-of-view shot is intended to represent the subjective view of a specific character. In this way the audience sees what the character sees. POV shots give audiences an exaggerated sense of intimacy with the character... This translates into fear if the POV belongs to the antagonist.” 3 The spatial relationship between Starling and Bill evokes the audience’s sympathy for the protagonist. When the characters are too close, viewers are terrified because they hope that the protagonist will survive this fight, even she is at an absolute disadvantage. During this lengthy POV shot, the intensity increases, along with the audiences’ concentration on the scene. Consequently, when the gun suddenly appears in the last few seconds, the entire audience watching the movie is startled.

Thinking about how young children hide behind doors to try to surprise their siblings can give a clearer sense of how timing and spatial relationships work in films.

The Silence of the Lambs basement plot

*Time line*

plot time line

actor can see the room

actress can see the room

audiences can see the room

create tension to grab attention

green color

POV angle camera

startle reflex

*Spatial*
**Sound**

Before synchronized sound recordings were introduced into movie productions, live orchestra performances provided the only sound synchronized with motion pictures on the screen. Matching the music played and the motion pictures on the screen was a problem. Orchestra musicians could not focus on both the score in front of them and the content on the movie screen. After the release of *The Jazz Singer* in 1926, movie factories around the world began to produce sound films, or motion pictures with synchronized sound. Narrative words appeared in motion pictures, and movie storytellers took advantage of the effects of music and sound to tell their stories to audiences. For instance, the audience of *Jaws* knows that something dangerous will happen when they hear some dissonant music and see the POV shot and might feel uncomfortable and anxious whenever they hear women and children screaming. Cinematic sound often operates on our subconscious, so it is necessary for the directors to understand how to use this language.

**Music Patterns In Horror Movie**

Prof. Michael J. Epstein, who leads Northeastern University Auditory Modeling and Processing Lab, has researched human reactions to alarming sounds and film scores for nearly 17 years. As a musician, he also has a lot of experience writing scores for movies. He identifies four main categories of music use in horror movies to evoke physiological responses: dissonance and unnaturalness, chaos, or disorder; the dynamics of loudness, speed, and pitch; uncertainty, expectations (silence during tense moments), whispered voices, context disconnect; and the startle reflex.

Daniel Blumstein claims that there are biologically ingrained reasons why sudden, dissonant sounds and minor chords make us apprehensive.\(^5\) While studying yellow-bellied marmots in Colorado, he found that, when baby marmots scream, they cause “nonlinear chaotic noise.” Horror movie scores make heavy use of this kind of sound, for example, in the iconic dissonant sound in the 1975 Steven Spielberg film *Jaws* (figure 14). When the shark starts to attack people, the chords start slicing and create a feeling of chaos. In *The Shining*, sound designers even used recordings of animal screams in the film. The same technique also shows up in Psycho’s famous shower scene. Nonlinear sounds – a dissonant chord, a child’s cry, a baby animal’s scream – trigger a biologically ingrained response, making hearers think that their young are threatened. Epstein explains the application of this natural reaction in film: “common musical intervals, changed slightly to create dissonance, are immediately disconcerting. The more a film uses them, the more uncomfortable we are.”\(^5\)

Blumstein found that musical clips in which melodies suddenly became higher provoked greater emotional stimulation. This response can be seen in animal calls: a marmot’s scream becomes higher when its marmot’s vocal cords are tenser, as is when the animal is scared.\(^3\) In addition, the dynamics of loudness, speed, and pitch in horror movie musical scores also create tension. When the volume fluctuates, the uncomfortable noise makes the audience nervous about what will or has happened on the screen. This technique was widely used in an old-school and early German Expressionism horror movies, such as *The Cabinet of Dr. Caligari*, *Nosferatu*, and *The Golem: How He Came into the World*. 

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The most innocent sounds from real life can be the most terrifying sounds in horror movies. Children’s singing and whispering are the common elements in horrors. The sound used in movies can be categorized into two groups: literal sounds and nonliteral sounds. Literal sounds are referential, which means that they convey a specific literal meaning and, in so doing, refer viewers to the sound-producing source, such as actors’ dialogue or ambient noise. Nonliteral sounds are not intended to refer to a particular sound source or to convey a literal meaning. Usually, they emanate outside the story, like background music or uncertainty ambient sound. A famous example comes from *The Godfather*: when Michael Corleone decides to kill his opponents inside the restaurant, an unexpected train sound alerts audiences to something dangerous happening. In horror movies, viewers know the source of children’s whispering. For example, although the children’s chorus in *The Birds* is not a threat, the visual images that follow it show birds attacking people. The montage blends images and sound to let audiences think that the children’s whispering means danger, as in *The Innocent* and *The Others*.

The final technique is the startle reflex. Many scenes in horror movies use the startle reflex to make the audience jump. Neuroscientist Seth Horowitz states that “a sudden loud noise activates a very specialized circuit from your ear to spinal neurons. It’s the ‘Startle Circuit.’ If you suddenly hear a loud noise, within 50 milliseconds your body jumps and begins to release adrenaline, with no consciousness involved. It’s five neurons.” Therefore, even though the jump scare is a convention, and most viewers already know that

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something creepy would happen after the silence, sudden, loud sounds played after silence can make audiences jump over and over again.

If the volume is turned down during horror movies, terrifying scenes likely will not scare viewers as much. Sound also can shape the space, creating tension in the audience. For instance when children hide inside a wardrobe in *The Other* (figure 15), a whispering sound starts and increases in volume, making audiences feel that this sound source is very close to the hiding children. The distance of the sound source is within personal, intimate space\(^7\), and the relationship between the children and the whispering person is unclear, even dangerous. Audience members will feel discomforted by the too-close proximity in real life, and the relevance of the experience will make them feel nervous when they see this scene.

**Conclusion**

All horror movies in history cannot be analyzed exhaustively, and the cinematic techniques discussed here will not perfectly work in every horror movies. The next big scary movie could come from anywhere and might not follow these rules. As stated, one of the beauties of cinema is that it provides an open experimental platform for film artists to imagine, design, and even invent new functional tools to present their stories.

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*Figure 15 The Others (2001)*
CHAPTER 3

Cinema's visual tools
Overview

Film is an experimental discipline, so cinema students need to learn the skills and cinematic principles through doing. Usually, students examine principles which they consider applying in their films and judge whether they would work for audiences. However, a commercial film which can be released in theaters requires investment and experienced teams to work on it. Compared to Hollywood stars, cinema novices do not have rich funding support or human resources. Consequently, watching an exciting, successful movie has become another prevalent way for cinema students to learn film skills in genre movies, such as storytelling, cinematography, production design, and editing.

Isabel Meirelles believes “that a full understanding of how others have solved (design) problems enables one to successfully develop a set of skills that may be deliberately accessed for use in expert and productive ways.” Accordingly, film students can learn how to use color and light by watching Dario Argento’s Inferno, storytelling from Christopher Nolan’s Memento, and sound design from Tobe Hopper’s Proltergeist.

However, as a cinema student, I must share that learning cinematic techniques by watching movies is the most torturous to do so. I must watch a movie back and forth to decode the information contained in every layer in order to deeply understand one shoot. As a combination art, films contains many layers of information. Every scene in a movie is the result of cooperation by numerous workers involved in production. Film educators try to teach their students to separate layers and analyze each one individually. When discussing information design, it is useful to consider Edward Tufte’s theories: “the most powerful way to reduce noises and enrich the contents is using
techniques of laying and separation. At the same time the inevitably and unrelentingly matters the proper relationship among the information layers.”

A movie frame is like a geological map: as a map contains different layers of information about roads, lakes, buildings, and landmarks, for example, a movie frame combines information from light, color, production designs, composition, and sounds.

With a geological map, users can read layers of information separately according to their demands. Movies, however, are time-based productions, which mean that audiences need to recognize all layers at the same time. The elapse of time (whether real time or movie time) makes it difficult for students to read every detail of information in the layers of moving pictures, especially in a time-dense scene. Another challenge in film education is comparing moving pictures because it is difficult to remember previous states with which to make comparisons. Cinema students must watch a film repeated to remember all the materials.

“For readers and viewers, the intellectual task remains constant regardless of the particular mode of evidence: to understand and to reason about the materials at hand, and to appraise their quality, relevance, and integrity.”

Edward Tufte

Here, I need to clarify that ‘readers and viewers’ refers to the film students, not to general film audiences. As audience members, they will appreciate a film when everything on the screen is harmony. For instance, horror movies rely heavily on background music, but an excellent score alone will not drive audiences to buy tickets if the story, cinematography, and acting do not terrify viewers. Therefore, one task of filmmakers is to
learn how each functional element works separately and then organize them properly and present them as a film to audiences.

From Eisenstein’s early vertical montage method to recent interactive techniques, many visualization methods have been applied in film study. The fields of information design and film studies influence each other. For instance, the storyboard is the common technique in the pre-production of films. Directors and production designers use storyboards to outline the plot of the movie they will shoot, which helps filmmakers economize the money and time during the shoot. Storyboards are also used in magazines, newspapers, and even city planners’ notebooks. A storytelling timeline is another tool applied in both information design and film studies. Information design can help film studies as both an explanation design and as a discipline to understand, teach, and promote principles. I choose two representative methods – the vertical montage and iconic annotation – to explore how information design and film studies are related.

Connection between movie studies and information visualization

Figure 16 Storyboard by Thomas J. Wright for the cemetery scene for Family Plot and the pursuit of Mrs. Maloney by Lumley (1976).

Figure 17 Gordon Cullen’s drawing about cityscapes used the storyboard strategy. Concise Townscape, United Kingdom, Taylor Francis Ltd. 1995.
Figure 18 Inception: The Shooting Script, Christopher Nolan hand drawing

Figure 19 Storyline visualizations of the movies, such as Star Wars, Lord of the Rings with spatial information

Figure 20 Charles Joseph Minard’s 1869 “Napoleon March to and from Russia, 1812–1813”
Information visualization case studies about movies

Cinemetrics
This project is about measuring and visualizing movie data, in order to reveal the characteristics of films and to create a visual “fingerprint” for them. Information such as the editing structure, color, speech or motion is extracted, analyzed and transformed into graphic representations so that movies can be seen as a whole and easily interpreted or compared side by side.

This data visualization method combined the color with motion speed information to compare different genres of movies. It’s a good way to compare different genres like an action movie and horror movie. And this visualization tool using the abstract color from the movie scene can give an audience a high-level memory about the different films. The color pattern and motivation would be the icon for each film.

Figure 21 Frederic Brodbeck’s bachelor graduation project at the Royal Academy of Arts (KABK), Den Haag (2010)
Culturegraphy

This project is developed by Kim Albrecht, who currently working at the Center for Complex Network Research as a visualization researcher. He reveals represent complex relationships of over 100 years of movie references.

Movies are shown as unique nodes while their influences are depicted as directed edges. The color gradients from blue to red that originate in the 1980s denote the era of postmodern cinema, the era in which movies tend to adapt and combine references from other movies. The metrics information visualization language is a great strategy for me to think about how to organize the movie data and how to show the relationship between all the information. For example, if I choose different phobias as the x-axis. I could put sub-genres horror movie in the y-axis, then I can compare how sub-genres share with ‘same phobia’ to elicit audience reaction, also can observe what is the most common phobia in the horror movie.

Figure 22 Kim Albrecht: Culturegraphy (2012)
Neurocinema

Since motion picture cameras were invented in the 1890s, film began its history as a new medium for art. With the development of the technology, films went though under one minute long without sound in the 1890s to 1927, audiences can hear the sound in movies; From black and white to full-color movies. Films moving from freshness to a large-scale entertainment industry, Looking through the Hollywood, Bollywood, Hong Kong film industries, there are hundreds of thousands of people live in the film industry. The process of making films, somehow, is both an art and an industry. One essential purpose for industry is commercial products, therefore, movies in these days need to consider more about their audiences. Not like the experimental movies, most of the movies are commercial arts in their industries; filmmakers need to study their audience interests, tastes. They have many difference ways to research about whether films stories, cinematography style, media applied aesthetics, etc. accepted by their audiences or not. For instances,
before the movie release out to the theater screen, some directors would choose a group of target audiences and let them watch films or segments of films first. In order to do a survey first before they spend more money to propagate and publicize their movies to the theaters. In the film industry, businessman wants to maximize their profit, they have to know their audience accurately.

Neurocinema provides a new way for filmmakers to figure out what’s the emotional response in their audiences' brain. Now, the new practice of neuromarketing is being applied to the film industry, starting with the horror genre. (neurocinema aims to change the way movies are made, 2009) Furthermore, a sizeable number of neuromarketing companies already brain test movie trailers for the major studios through fMRI, EEG, galvanic skin response, eye-tracking and other biometric approaches. (Kevin Randall, 2011) For some independent filmmakers, like the neurocinema pioneer Peter Katz, believed that the neurocinema will help filmmakers have scientific evidence to figure out which cinematic techniques were scary audiences most in the horror movie. Worked together with a neurologist, and a neuromarketing company MindSign Katz took a horror movie segment Pop Skull as a sample to test.
one 24-years-old female audience’s brain response. According to MRI technique, they basic monitor audience’s Amygdaloid reaction to the movie sense. The amygdala is the emotional center of the brain. It’s involved in the feeling of disgust, anger, lust and fear—all emotions especially elicited during a horror movie (Kevin Randall, 2011) The result showed this audience’s reaction to most scary sense she felt like in movie senses.

The raw data-driven result from neurocinema study will give filmmakers more truthfully information about their audiences. One point that mentioned by Katz is that your audiences might say that they like your film when you ask them, or do a survey according to their narrative response, but they actually they were not giving any positive reaction in their brain. The neurocinema will allow filmmakers have conversations and feedback loop directly from audiences’ “mental model”. Moreover, the neurocinema study would also enlarge the scale of audiences for the filmmakers, giving more box offices to movies. The reason is that there is one result from Katz’s experimental study: some sexual senses in the horror movie did not elicit audience reaction, which directors hoped to deliver. According to motion picture association of America film rating system, movies in the United States would usually be rated to five categories: G, PG, PG-13, R, NC-17. Most horror movies are usually rated as R, which means audiences under 17 need accompanied by adults. But maybe some sexual and violent senses were unnecessary been shown. The neurocinema research could reduce some senses may allow more people to watch them.
**Vertical Montage**

Like text editing, film editing should follow the content of directors’ representation of the story. Unlike the text editing which only needs words, films require different types of bricks (e.g., color, lighting, sound) to build the structure. Eisenstein’s concept of the vertical montage⁵ (figure 25) (Eisenstein, 1968) offers the opportunity for the interaction designer to build a tool to help filmmakers and film students annotate and perceive the different movie aesthetics simultaneously at work in the same sense.

Eisenstein developed the concept of the vertical montage is a response to the invention of sound films, in which sound was synchronized with the motion picture, and orchestras were no longer needed to play music along with motion pictures in the theater in real time. To diagram how moving pictures and soundtracks work together, Eisenstein expanded the montage structure from a simple, horizontal succession of pictures and added a new vertical dimension to make clear how the different layers work together to construct a film. When studying applied media aesthetics in movies, the inductive method is typically used to analyze different elements in a film. An abundant literature teaches students how to analyze these elements in movies, but texts cannot consistently present the sequence of temporal and spatial information visually because the aim of motion pictures was to break the limitation of textual description. The vertical montage provides a new method for movie students to learn about movies and analyze each aesthetic element individually. Following this principle, information design can work well to offer a visual tool that reduces the number of steps students need to learn from the text, translate the textual

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description of a camera image to a mental image, and then apply their mental model to a real movie screen via cameras. This tool seeks to enable movie students to learn and communicate with each other based on pictures from movie screens.

Figure 25 Sergei Eisenstein - montage structure of a sequence from Alexander Nevsky (1939)
Figure 26
Dubbing mix cue sheet from ‘The Shining’, illustrating 4 different music tracks.
Interface Design

Jesse James Garrett’s diagram shows the tensions between two different approaches to the design of the user experience. An interface can show information or can support tasks and behaviors. As in film and video, the interfaces on digital screens use graphic and spatial elements to frame information. The montage principal from cinema studies also influences interface design. When audiences read information in the interfaces, they acquire data from each different sections, and when viewers combine the information from these sections, “the interface meaning” emerges, and the data sheet can be used to translate the information. Similarly, film studies also contain multiple layers, and when filmmakers combine them, the meaning of film is revealed. However, unlike in cinema studies, the interfaces in interaction design do not necessarily serve narrative words.

Figure 27 Jesse James Garrett, elements of the user experience (2000)
Iconic annotation

If the book is the interface for text, cinema can be seen as a medium interface for events which take place in three-dimensional space. In movies, applied media aesthetics can be used as words to make sentences, and sentences to make scenes. Even though movies are a medium that relies heavily on visual language, people tend to use narrative words to describe movie plots in casual conversation, and movie critics comment a movie in text. Among movie audiences with different mother tongues, the language of a text can sometimes be an impediment to ease of communication and reduce viewers’ excitement over talking about their favorite scenes with the people who share their taste. Therefore, iconic annotation enables more efficient visualization than textual annotation. When editors attempt to use the montage method to edit a movie, they first need to find the images they want from the shooting meta-data provided by photographers. The iconic annotation method not only eases communication with machines but also simplifies communication with other people (figure 28) (Davis, 1993).


Figure 28 Iconic annotation Marc Davis, 1993
Doing a movie screen study is similar to doing research with textual books. Film producers also need to read a movie (articles) and understand the message of each scene (sentences). Similar to an essay, a movie also has references and a bibliography. When film students learn about a movie, they want to study its relationship with other movies with similar themes, such as the colors common in slasher films and the use of dissonant sounds to indicate dangerous events to come. Therefore, studying movies also uses data references. Like hyperlinks in articles, those in scenes also help filmmakers more easily extract information from movie metadata.

The iconic annotation method offers users many benefits and conveniences. It can not only serve as a global, international annotation language but also as an interaction design strategy enabling interaction between humans and machines. In my research and design strategy, I emphasize that using the iconic annotation helps users realize the visual similarities between instances or subclasses of a class – the visual resonances in the iconic language. 

**Conclusion**

Montage theory has two different basic techniques. First, in a temporal montage, separate realities form consecutive moments in time. Second, a montage within a shot includes multiple layers in one frame. Vertical montages use the first technique, while the strategy of iconic annotation study could be regarded as a montage within a shot. Analyzing the image sequences and applied aesthetic (techniques) elements in movies can endow interaction design with different dimensions based on movie principles. The combination of these two methods can help audiences observe movies from different angles and in various layers, enabling them to learn information more quickly and rationally.
CHAPTER 4

Project descriptions
Design descriptions

As with every piece of art, it is difficult to establish one standard rules to judge movies and distinguish the good from the bad. I conducted a survey asking a small sample to name what horror movie first comes into their mind and what their favorite horror movie is. The answers varied: silent movies (Nosferatu and The Phantom of the Opera); psychological horror films, (Real Window, Se7en, Ring); nature horror (The Birds); occult horror (The Exorcist, Monster Horrors, Alien, Godzilla); slasher horror (The Texas Chainsaw Massacre); zombie apocalypse (Night of the Living Dead); torture porn (Saw); and numerous independent movies (Suspiria, Erasersheed, The Rocky Horror Picture Show).

In this thesis on design, I focus on analyzing six horror movies from the early 1920s to the 2000s. As Professor Marilyn Fabe1 points out, viewers trained in the close analysis of single film sequences can better see and appreciate the rich visual and aural complexity of the medium of film. These six movies are The Cabinet of Dr. Caligari (1920, Robert Wiene), Frankenstein (1931, James Whale), Psycho (1960, Alfred Hitchcock), The Shining (1980, Stanley Kubrick), The Silence of the Lambs (1991, Robert Jonathan Demme); and The Grudge (2003, Takashi Shimizu). I do not argue that these six are the best horror movies because all viewers have their own tastes in movies. I selected these six movies because first, they are well known among cinema students and horror movie audiences, and I do not want readers to not be able to connect the images in the text and movie scenes. Second, the movies share some common characteristics which can aid in a distance reading of scenes.

Dr. Franco Moretti, a director of the Stanford Literary Lab, developed the concept of distance reading. Instead

of using qualitative methods to study literature, he proposed using quantitative methods. Moretti makes characters into nodes and verbal conversations into connections. He claims that his network “makes visible specific ‘regions’ within the plots.” In his research, he defines the “protagonist” as “the character that minimizes the sum of the distances to all other vertices (nodes).” Although Kathryn Schulz critiqued this theory, distance reading is a great method for audiences, readers, and researchers to compare about different things with common elements. Why do apply distance reading method in my analysis? Thousands of books teach how to be an expert in cinema. If I applied close reading as the only method to study movies, this research would be redundant and miss the opportunities to learn about films from different angles.

“A man who wants the truth becomes a scientist; a man who wants to give free play to his subjectivity may become a writer; but what should a man do who wants something in between?”

Robert Musil, The man without Qualities
Let us start our journey through horror with an early Germany expression horror movie: *The Cabinet of Dr. Caligari*. The most impressive element of this movie is the production design given the limited budget. The filmmakers from Universum Film Aktiengesellschaft decided to paint shadows on the set rather than create them naturally with electric light. The weird aspects of the production design made the images in this movie stick out in viewers’ minds. Robert Wiene built an uncanny world for his audience, fulfilled with thorns and discomfort. While the production designers for other movies try to bring reality back to the screen and make audiences believe that everything happening on the screen could occur in real life, *The Cabinet of Dr. Caligari* creates a world which exists only in art and makes it possible for audiences to appreciate horror.

This movie is one of the earliest with a twist ending. One day, a weird man named Dr. Caligari appears in Francis’s hometown. Caligari brings with him the somnambulist Cesare, who can predict deaths of people who ask him questions. Everything that happens in Francis’s world tells him that Cesare killed his friend and tried to abduct his girlfriend. Francis investigates and finds that the evil Cesare’s owner, Dr. Caligari, is the director of an asylum, and the somnambulist Cesare is the result of his experiments. However, at the end of the movie, the audience learns understand that everything happened in the movie happened only in the imagination of Francis, who is an asylum patient. All the characters in the movie are real people, but their real identities are than in those in Francis’s mind. Cesare is also an asylum patient, and Dr. Caligari is the real asylum’s director. “The destabilized contrast between insanity and sanity, and hence the destabilization of the very notion of sanity itself.”


Jump to 1931, a golden year for horror movies. The success of Frankenstein made Boris Karloff the first Hollywood horror icon. Dracula was released that same year and reinterpreted the imagery associated with theatrical productions of Bram Stoker’s book. However, Karloff’s acting provided an innovative presentation of a tortured monster, a visual symbol of the narrative of isolation and madness. Frankenstein is the one of most famous horror stories, which might live forever in horror circles – remade over and over again in horror movie history.

The storyline in this movie is simple. Henry Frankenstein is a crazy scientist, attempting to create life with electricity and a dead body. However, when he puts a criminal’s brain into a dead body, Frankenstein’s man-made monster became a brutal murder, causing riots in the town.

As synchronized dialogue in movies became globally popular during the early 1930s, audiences of the 1931 Frankenstein, heard little background music but many sounds synchronized with the moving pictures. Drawing on the discussion of how music can trigger audiences’ emotions in horror movies, Frankenstein provides a great example showing how excluding the music and including a soundtrack in motion pictures trigger emotional responses in the audience.
Psycho

Among the most well known of Hitchcock’s suspense films, Psycho enables analyzing how timing works in horror movies. Hitchcock believed that horror exists when audiences know more than the characters in a movie plots. “The point is to draw the audience right inside the situation instead of leaving them to watch it from outside, from a distance. And you can do this only by breaking the action up into details and cutting from one to the other, so that each tail is forced in turn on the attention of the audience and reveal its psychological meaning.”

The entire suspenseful story in Psycho happens in the Bates Motel. Marion Crane, hauling money she stole from her boss, bursts into Norman Bates’s motel on a furiously stormy night. Norman’s mother kills this woman because she sees her as a threat that might take her son away from her side. The detective hired to investigate the stolen money also comes to the Bates Motel and is also killed by Norman’s mother. During these two murders, audiences do not see the face of Norman’s mother’s but only hear her voice and see the shadow of a woman’s long hair. These unclear images produce the horror in the story and provoke the audience’s curiosity. The mysterious character of Norman’s mother leads to a surprising but reasonable ending to the story.

The shower scene in this movie has become an iconic visual and audio moment in Hollywood horror-movie history. Following the montage method, time is dense in this scene. Without any dialogue or a creepy atmosphere, Hitchcock makes this cruel scene it unforgettable. Let us look at this scene in detail to see how ‘the master of suspense’ made this famous horror movie.
Psycho

The story timeline shows main characters in movie *Psycho* and the interaction between these characters through the time. For instance, after Lia Crane stolen her client’s money, she came into Norman Bates’s Motel, therefore, her storyline moves close to the storyline of Norman Bates.

In the spatial relation diagram, the line shows how characters movement around the Norman’s motel. For example, this map shows the footprint of Bates Motel and a marsh that Norman drop down Lila Crane and Det. Milton’s corpses. The line shows their movement.
The Shinning

While viewers of Hitchcock’s *Psycho* are one step ahead of the characters on the screen, the characters in Kubrick’s *The Shinning* know what happen before the audiences, even by only a few seconds. Audiences know that horror has happened when they see that characters have dilated pupils or hear the characters scream. In addition to other outstanding performances by other actors, Jack Nicholson’s twisted face when he said the line “Here is Johnny” terrified audiences. The bloody elevator scene still appears in some audiences’ viewers even though this movie was released in 1980.

In this movie, Jack Torrance takes up the position of a winter guide at a hotel in Colorado, which is closed and isolated from the outside world every winter. Jack and his family move into this hotel to start their work and life there. Jack’s son Danny has an occult power called the shining, which allows him to see visions of the hotel’s horrible past and possible future, including his father’s murder. The spatial relationships between the camera and characters create tension throughout this movie. The following visualization shows the scene in which Jack begins to threaten his wife. I use a diagram to explain how the cameras’ and actors’ motions increase the intensity and horror of the scene plot.
The Shining

Design description

This visualization presents one plot in the movie *The Shining*. This plot aims to create the most intense conflict between Jack and Wendy. In this plot, Jack using words and action to threat his wife Wendy. The visualization shows up how the director used time, space and camera relationship between two characters to create the tension. For example, space in the room is limited, the line in the spatial map shows out the movement of two characters and cameras. As you can see director create more movement of two characters, then to prolong the plot time. At the end increase audiences emotional response to this plot.
The Silence of the Lambs

Amid the aesthetic fatigue of slasher, sex, and gore horror in the 1980s, serial killers became a remarkably popular narrative in literary fiction at that same time. Horror had become remarkably artificial and removed from the cultural reality of audiences.\(^8\)

One storyline of The Silence of the Lambs is based on Harris's horror novel Red Dragon, which introduced another horror icon to the world: Dr. Hannibal. The NBC network's decision to make Hannibal into a television series shows that the Hannibal story still flourishes in horror world Edward Theodore Gein, a real-life serial killer inspired this movie. This cruel murder case also influenced Psycho and The Texas Chainsaw Massacre. The relation of The Silence of the Lambs to real life has long horrified people. The scenes in Buffalo Bill’s basement have kept people from buying the beautiful house in Pennsylvania where they were shot.

This movie was shown in many famous film festivals and won the Academy Award for the Best Picture in 1991. Therefore, I selected this movie as a benchmark for an in-depth analysis of horror scenes. I also researched real-life phobias, which are a type of anxiety disorder and the persistent fear of an object or situation which cannot be avoided entirely.\(^9\) Combining the analysis of object phobias and terror scenes in movies can explain why those with phobias are scared by these films. Finally, I performed a frame by frame analysis of the screen color, lights, image compositions, and sounds in these scenes. The comparison of scenes within a movie can reveal information about how scenes contribute to telling the story and relate to each other.


Here is a brief analysis about one scene in the famous horror movie The silence of the lambs. The plot in the scene: this is the first time that FBI trainee - Clarice Starling prepare to meet Dr. Hannibal Lecter in the prison. Starling had heard about the Dr. Hannibal Lecter is a frightening cannibal before, and this is the first time that she has to finish her reality mission by her own. Therefore, it's not hard to see Starling's anxiety and nervous before she meet Dr. Hannibal.
Media Applied Aesthetics Analysis

The Silence of the Lambs

Scary Scene

MAP OF FEAR

Necrophobia
(fear of corpse)

Foniasophobia
(fear of murders)

Phagophobia
(fear of being eaten)

Cleithrophobia
(fear of being trapped)

Scopophobia
(fear of being watched)
CINEMATIC TECHNIQUES

Color  Lighting  Composition  Sound

Green filter

Fill

Side  Side  Side  Side
Design description

In this experimental visualization about the silence of the lambs, I analyzed about the all key horriﬁ scenes, to separate understanding how color, lighting, composition (camera and characters relationships) and sound cooperate to create horror scenes. The ﬁgure on page 71 presents a one-plot analysis, the static analysis consist the color analysis, light position analysis, composition analysis, and sound analysis about each frame. Vertical montage methods help audiences to read different layers of information at the same time. About the ﬁgure on page 72-73. The diagram shows all horror plots in the silence of the lambs. I apply the same vertical montage methods to analyze these frames. But from this visualization, audiences can compare the lasting time about each plot in the same movie. For instance, the last scary scene, which Starling tried to ﬁnd the killer in his basement, is much longer than some horror scenes in the middle of the story. The circle in P73 shows represents the whole movie, audiences would understand the distribution of scary scenes in the context of the whole movie. In order to understand how time can create fear in the horror movie.
The final visual work about the silence of the lambs is an interactive tool mock-up. How to connect fear in real life and in cinematic experience? Phobias can be one way to explain why some audiences were terrified by some specific plot, such as needles, corpses plots. The ‘map of fear’ connect each horror plots with real-life phobias. And on the right side, it shows the cinematic techniques that used in selected plots. The combination of two visualizations can help filmmakers better understand in one movie, how to terrify their audiences.
**Ju On: The Grudge**

Finally, I end our horror movie journey with a Japanese horror movie, *Ju On*, remade by an American director into *The Grudge*. This Japanese horror film can be categorized as a haunted house films. *The Shining* is also a haunted house horror movie, and the similarity between the two is not coincidental. Colette Balmain, a lecturer at Kingston University on east Asian cinema and cultures, argues that “all the films discussed, mediate on the prevalence of domestic violence as a result of socio-economic transformations.” Unlike some Chinese and Thailand horror which work as horror only when their audiences understand some of their cultural context, *Ju On* can be enjoyed without such background knowledge.

Following the traditions of horror fiction, the story of *Ju On* tells about a women and her child who died in a house. Their grudge against their death makes them into evil ghosts haunting this house. Everyone who lives in or passes by this house, no matter who it is, is killed by the lady and her son. Unlike *The Shining*, where at least Danny and his mother escape from Jack, every character dies by the end of *Ju On*; no one survives the grudge.

*Ju On* plays on spatial relationships to trigger audience members’ fear. For instance, view can see Toshio’s face appearing outside Hitomi Tokunage’s apartment elevator at each floor, but Hitomi merely closes her eyes and stands inside the elevator alone. Moreover, the timeline in the movie is not linear. The director tells six main characters’ story separately, divided into six sections with different scene and time sequences, as diagramed in the following pages.
The story timeline shows main characters in movie Ju-On, and the interaction between these characters through the time. For instance, when Rika went to Kayako's house, tried to finish her job, the horror story starts. Therefore, Rika's storyline move close to the storyline of Kayako and Toshio.

Furthermore, because this movie telling a story about a house fill with the grudge. I enumerate each characters' relationship with the house. From it, audiences can see that everyone, who has a relationship with the house, would be killed in the end. The indiscriminate attacking, no distinguish between good and evil is the reason of why audiences feel fear.
Distance Reading
These six movies all present horror scenes within the narrow space of a house. This setting is one reason domestic horror movies usually have lower budgets than, for example, space sci-fi movies, such as *Alien* and *The Thing*. Control of production design during the shooting of a film can provide actors and actress with a strong plot to help them on its content. Acting then is much easier than when facing an after-effects monster.

The distance reading and comparison of these six films reveals some patterns in horror movies. Just like music, the shooting location, cinematography, and storyline of horror movies exhibit common trends. For example, at least three of these movies have horror scene shot in a bathroom. One reason might be that the mirrors in bathrooms can be used to trigger horror. As well, a bathroom represents a private space and connotes relaxation and safety. Terrible events happening in a bathroom violates the audience’s subconscious expectations of a private safe space, possibly leading to let their panic.

Although the actual relationship between the multiple shooting sites in a house are different in these six movies (internal spaces, connecting spaces, secret spaces, and open spaces), the function of these locations is generally the same. Therefore, I simplify them into one house for readers to compare easily in a visual diagram.
Design description

The following pages show the final visualization about the distance reading compares six horror movies. It has three main parts of information. First, it enumerates the timeline of six movies, audiences can see that *The Shinning* is the most longer movie within these six movies. Second, this visualization shows the shooting locations about these six movies' horror scenes. I categorize the location to four main groups: internal space, connection space, secret space. Each group has its own subcategories: internal space: bedroom, living room, bathroom, and basement; connecting space: elevator, stairs, and corridor; secret space: jail and laboratory; open space: outside and house roof. The patterns of where the horror movie filmmakers choose to shot the film give audiences information about which space is the most ‘popular’ space to generate fear. Furthermore, it can show the information about where the filmmakers would choose to shoot horror plots according to the different stories. The last information is the horror scenes scary plot itself. Users compare to see the real movie scenes according to the movement of time slider.

This interactive application combines three information together. When users drag the time slider, they can see the movie plots, the location of shooting these plots would highlight in the left. Therefore, the users can compare the patterns of when and where the horror plots would happen in one movie or between six movies.
I KNOW WHAT HAPPENED IN YOUR HOUSE

LOCATIONS

MOVIES

The Cabinet of Dr. Caligari
Frankenstein
Psycho
The Shining
The Silence of the Lambs
Ju-On: The Grudge
<table>
<thead>
<tr>
<th>Time Line</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="120x87.png" alt="Image 1" /></td>
</tr>
<tr>
<td><img src="207x152.png" alt="Image 2" /></td>
</tr>
<tr>
<td><img src="121x580.png" alt="Image 3" /></td>
</tr>
<tr>
<td><img src="207x629.png" alt="Image 4" /></td>
</tr>
<tr>
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</tr>
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</tr>
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</tr>
<tr>
<td><img src="207x346.png" alt="Image 10" /></td>
</tr>
</tbody>
</table>

83
I KNOW WHAT HAPPENED IN YOUR HOUSE

LOCATIONS

MOVIES

The Cabinet of Dr. Caligari

Frankenstein

Psycho

The Shining

The Silence of the Lambs

Ju-On: The Grudge
CONCLUSION
Since the development of computer, data have become commonplace, and as an information space\textsuperscript{1}, cinema can accumulate a dataset for audiences. As Brendan Dawes\textsuperscript{2} observes that data needs poetry, data in isolation are not information. Information emerges after taking certain editorial steps to tell a story. Cinema provides enormous datasets for audiences and opportunities for contemporary information designers to edit these datasets and tell a story. For instance, the quantitative analysis of the evolution of novelty in cinema through IMDB keywords can let audiences perceive changes in different genres through the time. Nick Redfern’s\textsuperscript{3} exploratory data analysis of the editing structure of slasher films provides a method for readers to compare about slasher movies using a dataset.

As an information designer, I can understand that how information visualization can serve as an educational tool for cinemas students learning about movies. Like the exploration and the development of hypertext since the early 1930s, movies and pictures should be hyperlinked in their networks. ICinema’s T\_Visionarium\textsuperscript{4} project provides a good example to explain how audiences can filter movies by meta-data on imagery, colors, characters’ emotions, and plots situations, for example. The mARChive\textsuperscript{5} project presents images and videos as a dictionary, enabling audiences to recognize and learn about information through meta-data.

My research aim is to take advantage of information visualization tools to create a story driven by cinematic data. Eventually, I hope that, through my experimental and exploratory researches, audiences can see the benefit of information visualization for the film education. Taking advantage of characteristics of data, educators can build on existing design methodologies to create new knowledge models for film studies.

\textsuperscript{1} Boland Jr, Richard J., Ramkrishnan V. Tenkasi, and Dov Te’eni. “Designing information technology to support distributed cognition.”

\textsuperscript{2} Redfern, Nick. “Exploratory data analysis and film form: the editing structure of slasher films.” 2012


\textsuperscript{4} mARChive: Sculpting Museum Victoria’s Collections

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