

THE IMPORTANCE OF SOUND DESIGN AND ITS AFFECT ON PERCEPTION

By

Jessica Ryan Drake

A Thesis Submitted in Partial Fulfillment
Of the Requirements for the Degree of
Master of the Arts
Department of Interdisciplinary Studies
At the State University of New York at Fredonia
Fredonia, New York

May 2012



Assistant Professor, Laura Deen Johnson
Thesis Advisor
Department of Communication



Assistant Professor, Phillip A. Hastings
Thesis Advisor
Department of Visual Arts & New Media



Kevin P. Kearns, Ph.D.
Associate Vice President for Graduate Studies & Research

ABSTRACT**The Importance of Sound Design and Its Affect On Perception****By****Jessica Ryan Drake****Chair: Kevin P. Kearns**

The purpose of this research is to clearly define the importance of sound design in film, television, and movies, with emphasis on how the audience is affected by the use of sound. Sound design is the overall aural image of a production, from pre-production to post-production. Sound designing is a process that greatly influences the outcome of a production. Sound is the secret emotional messenger in narrative Western filmmaking and without it a film falls flat. However, to fully influence the perception of the audience, sound and visuals need to work together in a symbiotic relationship, where each element benefits from each other. Sound and picture should never compete for dominance, but in our Western visual culture, sound often fights for its right to belong. Filmmakers need to realize and fully understand the importance of sound design and how it can greatly improve their production. Without sound, narrative Western films, only have moving pictures that are absent of depth and lack connection with the audience.

TABLE OF CONTENTS

ABSTRACT	2
CHAPTER	
I. The Thesis	4
II. A Brief History	6
III. Elements of Sound in Film	12
IV. Functions of Sound in Film	15
V. Western Visual Culture	23
VI. How Hearing Works	27
VII. This is Your Brain on Sound	31
VIII. When Our Ears and Eyes Combine	37
IX. Conclusion	42
REFERENCES	44

CHAPTER 1

The Thesis

Sound is a very complex concept. Sound is intangible. Sound can't be seen and sound certainly cannot be smelled. Sound comes from every angle and sound never sleeps. So then, what is sound? In technical terms, sound is a planned change in pressure within a medium caused by vibration, in which we interpret those vibrations through the process of hearing (Alten, 2008). However, even though sound in and of itself has a purpose, sound takes on another definition when it is paired with a visual medium. Sound no longer is just vibrations, frequencies, and science. Sound becomes something more. When sound is complimented by a visual medium, it becomes not only something one can physically see but something one can physically, emotionally, and mentally feel. Sound is the emotional impact on a piece. “[Sound] speaks directly to the emotions...[It] seems to by-pass the intelligence and speak to something very deep and inborn...” (Cavalcanti, 1900, p. 109). However, it is the union of sight and sound that has perpetually divided those in the film and television industry. Which element is more important? Does sound or do visuals rule the theoretical film kingdom?

Sound designers and other film sound professionals have come to realize that neither one holds the crown, even though sound is often taken for granted by filmmakers. It is pushed aside and not really thought of as part of the film. When it is considered it is often done so as an afterthought. According to Chion (1994):

In continuing to say that we “see” a film or a television program, we persist in ignoring how the soundtrack has modified perception. At best, some people are content with an additive model, according to which witnessing an audiovisual spectacle basically consists of seeing images plus hearing sounds. Each perception remains nicely in its own compartment. (p. XXVI).

Neither sound nor visuals is the dominant source of capturing the essence of any narrative Western film we have come to know. These two competitors don't actually compete whatsoever. They are more or less a team. A team that, when combined in the right ways, express the true meaning and purpose of a film. French film director, Robert Bresson (1977) stated, “The exchanges produced between images and images, sound and sounds, images and sounds, give the people and objects in your films their cinematographic life and, by a subtle phenomenon, unify your composition” (p. 24). However, these purposes and creative intents laid in place by very skilled sound professionals can only be vindicated through the thoughts and imaginations of those individuals to which movies are produced for; the audience.

Initially my research was driven by fundamental questions that I had. First and foremost, I was very interested in why is sound relegated to a secondary position relative to the image. Going along with that I wanted to understand why we associate emotional responses to sound and how does sound affect our perception. Lastly, I really wanted to know if there is a philosophical or historical reason why sound is considered by some to be secondary.

CHAPTER 2

A Brief History

Sound in film, movies, and television had a rough journey to get to where it is today. Sound began as an afterthought - which could be argued that it still is today. In the era of the silent film, when Charlie Chaplin made his legendary “Tramp” character famous, sound was never thought of as being a part of film. Even though sound was never thought to be an integral part of the silent film era, there is no point in history where silent films were ever publically shown without a sound accompaniment. More specifically, they were never shown without music. From the beginning it wasn’t considered as a significant component to Western narrative filmmaking. It was just an addition to the public showing. “In other words, the silent film never existed” (Cavalcanti, 1900, p. 98). Film was never presented to the public as just the moving pictures themselves, without an aural supplement.

Throughout the silent film age, films were aurally accompanied in many ways (Cavalcanti, 1900). Initially, the phonograph was often played in conjunction with the film. Because of the lack of technology, the synchronization of the phonograph and the film was never accurate, but the phonograph and its music were used to add to the cinematic experience. Embracing the emotive qualities of sound completed the illusion that what the audience was seeing was real. Live musicians and small orchestras were used for the same reason, to create the emotional impact of a film. “...Starting with the pianist at the first public projection of movies by the Lumière Brothers on December 28, 1895 in Paris. From the beginning, music was recognized as essential, contributing to the atmosphere and giving the audience vital emotional

cues” (“Silent Film,” 2012). According to Cavalcanti (1900), “At the beginning [of film history] music [in general] was used for two very different purposes at once: (a) to drown the noise of the projectors, (b) to give emotional atmosphere” (Cavalcanti, 1900, p. 98). Music was always publicly used to enhance the cinematic illusion. It is a common misconception that “silent films” were presented with no sound. Yet most theaters presented silent films with music, either by using the phonograph or live performance. It was never truly “silent” at all.

In addition to music, an announcer, commonly called a “barker,” was used to announce the film’s inter-titles. These modern-day commentators often attempted to synchronize their words with that of the actors’ on screen. These “barkers” soon became obsolete, but nonetheless, it was their audio commentary that added the emotional content to these early films (Cavalcanti, 1900, p. 98-99).

The silent era also saw the beginning of the use of sound effects (Cavalcanti, 1900, p. 100-101). Silent filmmakers saw the importance and usefulness of sound effects and employed the use of cinema organs, like that of the “Mighty Wurlitzer,” to create a variety of sound effects that were played along with the film by an organist (Cavalcanti, 1900, p. 100-101). The stop pedals of the organs were specifically labeled and used to produce effects like trains, chains, galloping horses, airplanes, children crying, sirens, and thunder. (Cavalcanti, 1900, p. 100-101). It really is hypocritical and absurd, as Cavalcanti (1900) calls it, to believe that the silent film era was purely silent. As one can see, sound and music were always a part of film history. Right from film’s conception, sound played an integral part in creating the cinematic experience by effecting the audience’s perception of reality through music, announcers, and sound effects.

Many filmmakers at the time had tremendous disdain towards the coming of sound films, more specifically the “talking film”. In this so-called silent film era, silence was considered a form of art. When sound came into the picture – literally – filmmakers saw it as a complete bastardization of film. According to Kracauer (1960) “They feared, for instance, that speech might put an end to camera movement...” (p. 127).

Some the most important filmmakers opposing the sound film were S. M. Eisenstein, V. I. Pudovkin and G. V. Alexandrov. The three filmmakers published a joint statement concerning the concurrence of sound and image. According to the statement, an image tends to “neutralize” an object by isolating it from reality and embodying it in a visual medium. Sound, when put in motion with the image, restores the “power and autonomy,” to the object, increasing its meaning and thus is not able to function as part of the bigger picture (Weis & Belton, 1985). The joint statement also rejects “talking films” and claims them to be an unrefined “commercial exploitation” (Eisenstein, Pudovkin & Alexandrov, 1928, p. 84).

The idea of sound in films was actually a more accepted idea than the idea of dialogue in films or “talking films.” Going back to the notion that theorists considered silent films an art form, sound in films also had been considered an art but with one, certain limitation. The sound could never be dialogue synched with the moving images. (Eisenstein, Pudovkin & Alexandrov, 1928, p. 83-85). Sound that didn’t match the visuals, otherwise known as “counterpoint,” or “contrapuntal” sound, was however looked at as a more artistic avenue for sound, than that of sound that paralleled the picture. Dialogue was very looked down upon and classic silent filmmakers saw it as a way for the commercial film industry to make money (Eisenstein, Pudovkin & Alexandrov, 1928, p. 84).

However, many silent filmmakers saw the potential and the influence of sound on a film, even if they resisted the use of dialogue. Clair (1929), found that after viewing a film, people leave the cinema giving the impression that, “They might have been leaving a music hall, for they showed no sign of the delightful numbness which used to overcome us after a passage through the silent land of pure images. They talked and laughed and hummed the tunes they had just heard. They had not lost their sense of reality” (p. 95). Clair found that with the careful crafting of sound, without the use of words, one could recapture the emotion and “poetic energy that animated silent cinema” (Weis & Belton, 1985, p. 77).

Silent film was often perceived as a medium that could take the viewer away from reality, especially in a time where reality was harsh and the Great Depression was at large. Cinema and silent films were sought after as something to relieve that pain and create a sense of numbness, as Clair (1929) says. However, sound brought reality back into the cinema. At the time that may have not been the greatest idea, but the audience was so intrigued with “talking pictures.” The talking cinema took off and no one, not even filmmakers pinned to the idea of the silent film, could stop it.

The talkies and sound films have easily become one of the biggest businesses and media outlets of our age. Without sound in film, the film industry and those invested in the film industry would go bankrupt (Clair, 1929, p. 92). Sound is an integral part, a crucial part, of film. Without sound, a film loses much of its emotional connection to the audience. Without an audience actually going to a movie theatre and experiencing the film, making a film certainly doesn't produce a profit.

To create this emotional connection to the audience, there are multiple elements that go into the sound of a film. This is where the idea of “sound designing” comes from. Much like the production designer who designs the overall look of the piece, the sound designer designs the overall sound of the piece. Sound designer/film editor Walter Murch first coined the term “sound designer” in 1979 when he won the Academy Award for Best Sound for the movie *Apocalypse Now*. Before Murch created the term, sound in films was just entitled as “Sound Effects” or “Sound.” Murch’s work on *Apocalypse Now* was the first time that sound was involved in the overall process of production and the first time sound was “designed” to affect the audience (Sragow, 2000). “When the film premiered in 70mm stereo in 1979, [it] put many viewers under a hallucinatory spell” (Sragow, 2000). Since then, sound design has become an integral part of a film’s production.

Throughout the history of narrative Western film, the use of sound has grown more common and more complex. It should be known, however, that sound designing for a production isn’t just placing sound effects in synch with the visuals. It’s a thought out process by the designer. To create a sound design, the sound designer engages in a complex and multilayered process. Each sound effect or sound element added has to have a purpose and add to the greater good of the piece. For this reason, sound should never be an afterthought. Thousands upon thousands of sound effects go into a production, of which thousands upon thousands of decisions were made to be able to place those effects into the piece effectively. Because so many complex decisions have to be made in order to create the sound design, the most successful projects include the sound designer from the outset of the project. Film sound and the way a sound designer goes about designing a piece should not be thought of as simple. It

takes time and consideration in order to effectively use sound, in concurrence with the visuals to manipulate the perception of the audience.

CHAPTER 3

Elements of Sound in Film

The fundamental elements of this design process include dialogue, music, and effects (DME). The dialogue and music elements of sound, in the simplest of definitions, are the spoken words and musical accompaniment of the piece. Sound effects, on the other hand, have many categories to which they are split and approached differently. Sound effects consist of backgrounds (BG's) which are the ambient layers that compose and build a scene's locale; foley, which is the synchronous live recording of the subtle sound effects, like clothing movements and footsteps, that give a production a sense of realism; and hard and soft effects, which comprise all of the diegetic and non-diegetic effects, which include all of the sound effects implied to be present or not present in each scene, respectively (Carlsson, 2004a).

Most of these components of sound are added to a production after the film or movie is already put together, but some of the most crucial sound is the sound captured on set, especially the dialogue. Good production dialogue and production sound in general are key components to the outcome of a production. It saves time, money, and the overall performance. Not all sound for a film that is not recorded on set is sub par but when production sound is not adequate, it either has to be fixed or replaced in post-production, adding expense and sacrificing the original performance of the actors (Carlsson, 2004). On-set sound personnel have to be aware of many factors to achieve great production sound. The most important factor is microphone placement. How the microphone is placed in relation to the sound source can make or break a scene. If the actors aren't properly "miked", they sound muffled and it takes the audience out of the story.

Electrical interference from electronic equipment and any other noise that has the potential to pollute the quality of the production soundtrack are also huge factors in the overall quality of the production soundtrack. Noise can be found anywhere and the potential with today's sound equipment to capture this noise pollution is very probable. Irrelevant noise does not stop just because a movie is being filmed. It is the on set sound team's responsibility to try to capture the clearest, most intelligible sound possible in an effort to effectively tell the characters' stories.

Herein lies a contradiction within the film system. As stated earlier, recording great production audio is vital to the overall success of the production, but there is a "wall" that on set sound personnel have to conquer in order to effectively practice their craft. Award winning sound designer Randy Thom (1995) states this paradox:

The assumption is that sound is something you collect while the cameras are rolling, being careful not to be a pest, and that no attention needs to be paid to sound before that point or after that point until all of the big decisions about the structure of the movie have been made.

Capturing sound on set is thought of as just that, nothing more than an afterthought. However, this should not be the case. Great sound films, like *Apocalypse Now*, were considered to be great because "...the entire film was structured in a way that allowed, and even encouraged, the sound to be great" (Thom, 1995). Sound was a part of the majority all of the major decisions made on *Apocalypse Now*. There was a sound design entity throughout the entire film process, due in part to its sound designer and editor, Walter Murch, but also due to its director, Francis Ford Coppola. Both these individuals were conscious of sound and the effect that it could have, not only on the overall effect of the movie, but how it would affect an

audience. These sound pioneers realized that filmmaking and all of its components needed to work together, needed to coexist. “Each craft should be encouraged to inform and influence every other craft, and to be open to influence from others” (Thom, 1995). Without this type of inter-craft synergy, movies as of late, fall flat, with “...little depth, and little soul” (Thom, 1995). What passes for great sound nowadays, “...too often is merely loud sound” (Thom, 1999).

A perfect example of this modern idea of overwhelmingly loud sound is the movie *Transformers: Revenge of the Fallen*, directed by Michael Bay. “...There's so much swirling, relentless action, indistinct robot characterizations and over-caffeinated techies loose on the special-effects machines that the movie, in mere seconds, achieves incoherence” (Anderson, 2009). There's so much sound going on that the viewer has no sense of what or where anything is and ultimately the viewer loses their connection to the film itself. There is just too much and it really makes it uncomfortable – and possibly dangerous – for the audience to watch.

Transformers: Revenge of the Fallen “...is the studio version of a genetically modified, growth-hormone-enhanced chicken. Consume at your own risk” (Anderson, 2009). Sound is the depth and the soul of a film, it's time for films to be written and produced with sound in mind again, to bring life instead of volume and spectacle, back into the cinema.

CHAPTER 4

Functions of Sound in Film

To achieve this depth of meaning in a film, there exists a sound and picture relationship that "...creates certain dynamics that affect overall meaning" (Alten, 2008, p. 234). The relationship to which sound and picture contribute to is not a contest of dominance. The whole is truly greater than the sum of its parts. Sound and picture need each other to fully elicit emotion and "It places the image in an emotional and physical context, helping us to decide how to take the image..." (Hilton, 1998).

There are five basic relationships between sound and picture (Alten, 2008, p. 234). The first and the simplest of these relationships is when sound parallels picture. When sound parallels picture, neither the acoustic nor visual aspect of the piece is superior. This relationship is commonly mistaken as being sound's only function in relation to the image. When sound parallels picture, what you see is what you hear and that could be good or bad depending what the sound designer is trying to achieve. However, "This sound/picture relationship should not be dismissed as unworthy just because it is so common; not all shots require sonic augmentation" (Alten, 2008, p. 234).

The second sound and picture relationship occurs when sound defines the picture. Not only is the sound more prevalent and dominant of the two elements in this relationship, but it also determines the subjective meaning of the images, or its point of view (Alten, 2008, p. 234). This relationship relies heavily on how the hidden emotional effects of music, can enhance the

audience's perception of the images and how these perceptions change with the addition or subtraction of music. The same scene with two different musical scores will have two different meanings. Sound designer Walter Murch states that music and sound together create the underlying emotional intent of a story, without it, the true meaning of the scene becomes lost in the images.

On the other hand, picture can define sound. "Picture helps define sound by calling attention to particular actions or images" (Alten, 2008, p. 234). This is most obvious with close-up shots. When a scene cuts to a close-up, it increases the impact of sounds. Not only is the sound louder and more up front in the mix, but also one can hear the more intricate details of the shot. As a general rule, the closer the shot is to its subject matter, the more details the audience will hear and the more impact the sound should have (Alten, 2008, p. 234).

Sound and picture are often juxtaposed against each other. This is often referred to as a "counterpoint relationship." Both sound and image, "...contain unrelated elements that together create an effect or a meaning not suggested by either sound or picture alone..." (Alten, 2008, p. 235). Counterpoint relationships between picture and sound have been proven to be very effective and can define a piece. One of the most famous uses of counterpoint sound is from the movie *Jaws*. When we see happy vacationers on the Amity Beach, we hear the classic, threatening *Jaws* motif, which by this stage in the film we are conditioned to hear this motif as a signal for the arrival of the shark itself. This type of relationship between sound and picture is often used affect the perception of the audience by creating a disconcerting emotional response.

The true essence of counterpoint alone has been said by classic film theorists, to be the only way sound should be presented in film. V. I. Pudovkin, along with being a strong advocate

against the “talking film,” he believed in counterpoint relationships between sound and picture. In fact, he thought it was the only way sound should be used in the cinema. He theorized that film is the result of bits and pieces that contribute to a unified whole and that sound should be rich in association and also joined as bits and pieces into that unified whole. He saw counterpoint sound as an art form and he felt that sound should be used to explain content more deeply to the audience (Zaza, 1991, p. 7-8). Even amidst his strong convictions against talking pictures, Pudovkin realized the influence and importance of sound’s effect on an audience, even if its importance was derived from only one relationship.

Sound and picture also have a complementary relationship that defines effect. In this relationship the sound and visual elements are different however, “together they create an impact that neither could have created alone” (Alten, 2008, p. 235). Separately, neither the aural nor visual aspect of the scene or the shot can convey the overall impact. Together, they compliment each other and create the overall impact of the scene. “Neither sound nor picture is dominant, and although they are parallel, they are reinforcing each other to produce a cumulative effect” (Alten, 2008, p. 235). In essence, this relationship between sound and picture is the quintessential idea behind sound design. When sound and picture do not work together in this fashion, the end product and the amalgamation that they create is very sub-par. Sound and image have to work together, both working to support the other and to fashion an impact that neither could have achieved alone.

Not only does sound cooperate with the visuals and this cooperation implies a meaning, but sound also has functionality within itself. Sound design and film sound hold four very important functions within a film. Sound’s functions include a narrative function, sound contributes to the overall story; a spatial function, sound tells the audience where the film is

taking place; an emotive function, sound manipulates the audiences emotions and a musical or rhythmic function that sound uses to secretly affect the audience's perception (Zaza, 1991, p. 15).

In its simplest form, sound tells a story. It has a narrative content. This cannot be overstated. Visuals are not the only element in a film or a movie that can create a storyline or define a character. Sound is a huge part in that development in conjunction with the visuals and should not be overlooked. A film's characters might be the source of the sound. Sound has the potential to exist outside of what is seen and tell a story outside the frame of the film. Lastly, sound can operate on an abstract basis and create allusions to associations or figures of speech, like metaphors, irony, ambiguity and thematic entity (Zaza, 1991, p. 25). The storytelling capacities of sound are truly a wise tool to use as a filmmaker. "The true faculty of the filmic experience is not merely seeing and hearing a film...but rather experiencing it by means of film" (Zaza, 1991, p. 25). Films are meant to tell a story and to make an audience react a certain way. As a filmmaker, you need all the storytelling tools possible to get the story's purpose across to an audience and sound should be one of those tools.

Film sound also functions spatially. Sound puts the audience into the scene and the scene's locale. Sound provides the audience with information that describes the scene's space, volume, environment and perspective. Eloquent, artistic composed shots of a beach complete with waves breaking on the sand will not put the audience on that beach. It is the sounds of that beach that pull them in. It is hearing the waves, hearing that calming ocean breeze and the occasional sea gull that makes the audience feel like they are in that location. "Every action takes place in an acoustic environment that has characteristics that are unique..." (Zaza, 1991, p. 16). This is similar to our everyday life. Sound is all around us, but no location that we're in

ever sounds the same. It's those unique characteristics that place the audience into the location of the scene.

The spatial content of a sound design can be created several ways. The most direct way this is done is through the careful use of sound effects. Sound designers meticulously and creatively design every ambience or background sound in a piece. Depending on where the scene takes place, each scene's background sounds define where the scene is taking place. The celebrated television show, *Lost*, has some of the most memorable and dense background sounds ever produced for a one hour-long episode (Lambert, 2010). The sound designers of this show, put the audience right on that deserted island and the audience here's the actual sounds of the remote jungle. It's these signature background textures that made this television show come alive. Signal processing also plays a role in putting the audience in a scene. Signal processing is basically the intentional altering of an auditory signal and these alterations affect what the sound actually sounds like (Audio Signal Processing, 2012). Sound designers use these tools to manipulate sound in a myriad of ways to make it seem as if the actions taking place in the scene really exist in that environment. Sound's spatial function is one of the most important functions of affecting the audience's perception and sound designers push creative boundaries to build these ambiances that affect the perception of the audience.

Sound is the emotional catalyst in a production. But how is it that sound, being the intangible force that it is, has so much of an affect on the emotive content and the emotional response of the audience? Our emotional responses go way back to our very own birth. We are born into a world already contrived with a predisposition of what "sad" sounds like or what "happy" sounds like. Musically, a major chord tends to evoke the sense of strength and cheerfulness, while a minor chord usually lends itself to a sadder, more depressed association

(Zaza, 1991, p. 17). These emotional “felt” responses are in fact learned and more or less a part of our memories. We are taught in the beginning years of our lives, consciously and subconsciously, that “certain frequencies, chords, combinations of tones and resonance can, by themselves, produce feelings of sadness, fear or joy” (Zaza, 1991, p. 16). And it’s not just musical elements, even though music in and of itself is a large part of creating the emotional content of a film. Certain types of sound effects and how words are spoken can and will evoke the same sense of emotive qualities. All sound has its own unique tonal qualities or timbre, just like that of music and musical instruments. Any perceived quality of sound such as bright or dull, wooden or metallic, etc. is a sound’s distinct characteristics that define the sound itself and define the sound’s timbre (Wildfire Media, 2010). The timbre of a sound affects how it is perceived emotionally due to our emotional learned responses to sound. A muffled sound of a gunshot gives the impression of distant danger, while the warm, vivid voice of a voice-over gives a sense of intimacy and sincerity. Sound designers will use these basic principles of learned emotive responses and incorporate them into their sound designs to manipulate the audiences’ emotions and therefore control the overall perception of the production. With this power over what the audience feels, sound designers have an unlimited wealth of emotive tools to greatly improve the effectiveness of their film. Sound isn’t just placed into a production for no reason at all. Sound designers carefully select and place each sound effect; line of dialogue or musical track in the film so that they shall have a purpose, and when combined with the image, creates an effect bigger than life itself.

Lastly, and certainly not least, sound functions musically. Music and rhythm are everywhere. There’s a rhythm to how a car crashes. There’s a pace to a handwritten letter. “Every natural event occurs with a pattern of fundamental movements or pulses that forms a

rhythm or pacing” (Zaza, 1991, p. 17). It’s this rhythm or this pacing that affects the audiences’ perception. The opening future war scenes from the movie *Terminator Two: Judgment Day*, is an excellent instance of the musicality and rhythm function of sound. The rhythm of how every laser blast, explosion and industrial sound is executed, contributes to the overall momentum and feel of the scene. The scene is intense, high energy and certainly futuristic, but the rhythm of in which the sound effects are placed, has a sort of surreal, ominous effect. Over the many laser blasts and explosions in this war scene, sound designer Gary Rydstrom places these industrial drone effects that influence the audience into perceiving this is scene as a flashback. Music and drones can also influence the pace of a scene in many ways. The fast tempo of the musical track can tell an audience that danger is coming or a slow paced track can emit a sense of calmness. The sound designer uses the rhythms of everyday life occurrences and creates the reality of those sounds, which creates an endless amount of emotions including but not limited to, anticipation, fear, humor and happiness.

With all of these functions in mind, one may wonder why sound is so underrated? Sound has proven itself time and time again as being so much more than its given credit for. A very simple and often forgotten example of sound’s criticality in film is the punch. Punches in real life do not sound like the punches in the movies. A brief image of a punch would not engrain itself in the audience’s memory but the sound of the punch solidifies the action and marks “...its form and tone directly into consciousness” (Chion, 1994, p. 61). We don’t really even see a punch. “What we hear is what we haven’t had time to see.” (Chion, 1994, p. 61). Sound is defining that action and defining the visuals. Without the sound of the punch, and sound in general, film is lifeless. So then why is there such a lack of consideration for sound and its usefulness by filmmakers? If a good sound design can only improve a piece, why is it simply forgotten? Just

because the “visual” preceded the “aural” in film history, doesn’t mean that sound should forever follow the picture in every aspect. I should note that not every filmmaker thinks this way. There are a handful of directors past and present, who fully harness the potential of sound in their Western narrative films, like Scorsese with *Raging Bull*, Coppola with *The Godfather Trilogy*, Kubrick with *2001: A Space Odyssey*, Lucas with the *Star Wars Saga* and Spielberg with the *Indiana Jones Trilogy*. Despite the sound awareness of these filmmakers, the general consensus of the use or lack of use of sound still stands, that the time to be aware of sound comes at the end of the filmmaking process. However, “it doesn’t make any sense to set up a process in which the role of one craft, sound, is simply to react, to follow, to be pre-empted from giving feedback to the system it is a part of” (Thom, 1999). This approach rarely works out too well. A film is a complex machine, consisting of interconnected elements, and when all elements are all finely tuned and fully operational, it presents a purpose to the viewer.

CHAPTER 5

Western Visual Culture

This lack of concern for sound design in film is due in part to the idea "...that sound work is a series of boring technical operations you don't understand unless you're a physics major..." (Thom, 1996). Thom is right. Sound work does have some serious science behind it. However, the lack of respect for sound is largely due to our Western visual culture. Prolific sound designer Walter Murch (2000) states:

...Four and a half months after we are conceived, we are already beginning to hear. It is the first of our senses to be switched on, and for the next four and a half months sound reigns as a solitary Queen of the Senses.

We become in tune with the continuous sounds that we are submerged in while in the womb; our mother's breathing, her voice, her heartbeat and the myriad of other muffled sounds that we hear in vitro. However, Murch (2000) states that:

Birth, however, brings with it the sudden and simultaneous ignition of the other four senses, and an intense jostling for the throne that Sound had claimed as hers alone. The most notable pretender is the darting and insistent Sight, who blithely dubs himself King and ascends the throne as if it had been standing vacant, waiting for him.

It is like we are born into this Western visual culture idea. From birth onward, seeing takes precedence over hearing. Sound seems to fall to the background of our consciousness and "...function more as an accompaniment to what we see" (Murch, 2000).

We interpret and identify meaning more with the aid of sight. Words, symbols and pictures constantly tell us what we're doing, where to go and how to perform a certain act, without a sound attached. We rarely hear the sounds of life without seeing something. "We are not accustomed therefore to draw conclusions about visual things from sounds we hear" (Balazs, 1952, p. 122). We as a culture do not use sound as a primary source of meaning. "For [centuries], Western knowledge has tried to look upon the world. It has failed to understand that the world is not for the beholding. It is for the hearing. It is not legible, but audible" (Attali, 1985, p. 3).

We are never taught in school how to hear or to identify the source of sound. However, we are taught to read and to write, to attach association of a word or phrase to picture, along with many other visual identifiers. Visual and tactile processes are the primary qualities of Western thought, which can be traced back to the philosophies of Descartes and Spinoza, who believed in ocular and tactile centrism (Metz, 1980, p. 157). If something cannot be seen and/or physically touched, the chances of our society being able to identify what that something is, is highly unlikely. It's kind of a downfall of our society, especially with film. We don't take the time to aurally observe our surroundings. Sound is all around us. From 360 degrees all around us, sound enters our ears. Day and night sound is there. When we dream sounds affect our subconsciousness and creeps into our dreams unknowingly (Dement & Wolpert 1958). Just because we aren't listening, doesn't mean sound stops. It is a constant force in our every day lives that without would throw our entire lives off balance. And this fact is often taken for granted. Attali (1985) states that:

Our science has always desired to monitor, measure, abstract, and castrate meaning, forgetting that life is full of noise and that death alone is silent: work noise, noise of man,

and noise of beast. Noise bought, sold, or prohibited. Nothing essential happens in the absence of noise. (p. 3)

Because we decode meaning with the help of our eyes, film is considered a visual medium. However, we derive more meaning from what we hear in a film and even more meaning when the two are combined. “To a large extent it’s the sound that creates the third dimension, the depth, but our minds fool us into believing that we see it” (Dykhoff, 2003). This goes back to the four main functions of sound. Sound tells us the who, what, when, where and why in the most enigmatic way during a film. “The waves that a sound transmits are not just sound waves. The waves of ideas, movements, emotions, travel across the sound” (Kavaler, 1985, p. 150). As our eyes are consciously processing the visual elements of a film, our ears and our brain are intuitively processing every bit of sound that comes out of the speakers, then combining with the eyes to create this amalgamation, that we consider film. Film is not just the visual elements; it’s the whole experience, the whole package of sound and picture.

The issue here is why does the industry seem to place sound in the back seat if it is an integral part of our everyday life? It is time for filmmakers to understand sound’s potential and the overall effect sound can and does have on a piece. Film schools should not be teaching that sound is only a final step in the production process and basing film teachings mainly on moving image implications (Altman, 1992, p. 35). Sound should be an integral part of all film theory and to realize, according to Zaza (1991), that:

The visual bias of Western culture guarantees that the average person can operate a camera. Having viewed only a few photographs (or movies) imparts some basic sense of

selection and arrangement. Cameramen arrive with a more critical eye and clever hand, but are, essentially, made. Soundmen are born. (p. 26)

CHAPTER 6

How Hearing Works

It is very important to understand the intricacies of the ears and how our ability to hear affects our perception. Sound designers and filmmakers should be aware that without this complex procedure there would not be the complete “cinematic experience.”

How we hear and decipher sound is a very in-depth process that begins with the ear itself. The ear is divided into three parts: the outer ear, the middle ear and the inner ear. Sound waves first reach and are collected by the pinna, the physical and visible part of the outer ear (Alten, 2008, p. 6). The larger the outer ear structure, the more sensitive hearing is. According to HyperPhysics (2010), “...A larger ear captures more of the wave and hence more sound energy.” The sound waves are then focused through the ear canal to the eardrum where they vibrate at the beginning of the middle ear. The middle ear, with the help of the three smallest bones in the body- the hammer, anvil and stirrup- protect the inner ear from loud pressure changes (Alten, 2010, p. 6). The vibrations are then passed through the hammer, anvil and stirrup and into the inner ear. Sound begins in the inner ear at the cochlea; a snail-shaped structure which is filled with fluid that the stirrup causes to vibrate (ThinkQuest, 2011). “It is here that sound becomes electricity in the head” (Alten, 2010, p. 6). Sound then travels through the basilar membrane in the center of the cochlea, which it rests on sensory hair cells. “These fibers feed the auditory nerve, where the electrical impulses are passed on to the brain” (Alten, 2010, p. 6). Contained on the upper portion of these cells are cilia, which “When the stirrup causes the fluid in the cochlea to vibrate, the cilia move” (ThinkQuest, 2011), transforming these

mechanical vibrations into electrical and chemical signals, which are then sent to the brain, where the brain then interprets these signals as sound. In essence, the ear feeds the brain energy through the use of the cilia (Tomatis, 1992, p. 125). Each one of these microscopic cilia hairs “...amplify auditory signals and discriminate frequencies” (Alten, 2010, p. 6). They correspond to the entire auditory frequency spectrum and the normal human hearing range of twenty Hertz to twenty kilohertz. As our ears age and we are exposed to loud sound pressure levels, these cilia become damaged, creating hearing loss and narrowing our hearing range (Alten, 2010, p. 6). Our ears are very delicately and intricately designed and it is extremely important that we are aware of what we are exposing our ears to. Hearing loss is a very serious condition and without hearing we lose all acoustic perception.

The ear is a marvelous tool that was designed to aurally interpret the world around us. It is the ear and the signals it sends to the brain that makes all auditory processes, including auditory perception, possible. Our ability to hear is such an essential process in our lives. It is so essential that we often miss it entirely and take it for granted; we merely forget that it is there. “Talk to people who have experienced hearing loss – even mild hearing loss – and you quickly discover what hearing does for us on a daily basis” (Healthy Hearing, 2010). Hearing allows us to connect to others and without being able to fully interact with others we feel left out and isolated. Hearing is directly linked to our ability to feel emotions because of this interaction with others and our environment around us. According to Healthy Hearing (2010):

Isolation due to a lack of ability to hear often leads to depression, anxiety and disconnect from the rest of the world. Studies have shown untreated hearing loss had a direct impact on overall quality of life, everything from emotional happiness to relationship success with friends and loved ones.

Our ears emotionally and physically contribute to other functions of our bodies. The ears affect the cognitive functions of the brain and are a huge component in how we physically communicate with each other. “The ability to think, to solve problems and meet challenges are diminished by hearing loss since the brain is no longer stimulated like it once was” (Healthy Hearing, 2010). The brain is constantly interpreting sound waves via the ears and without using the auditory parts of our brain; our ability to reason and figure out the world around us begins to fail. “Studies have shown by treating hearing loss cognitive abilities stay sharp and are especially crucial for persons with condition such as Alzheimer’s and dementia” (Healthy Hearing, 2010). Hearing is a fundamental part of not only our every life, but how the ear and the brain interact is a key element to how we perceive sound in films.

Hearing is also an essential part of communication. In order to respond to what another person is saying, we need to be able to aurally interpret their message. Likewise, we need to be able to hear ourselves to accurately respond to that message or to get our own message across. According to Tomatis (1992), “...One speaks with one’s ear...” (p. 125). We do not have the ability to intelligibly speak without the aid of our ears (Tomatis, 1992). Even though we have two ears, they both function differently from each other and have their own unique purpose. The right ear is said to be the “director” (Tomatis, 1992, p. 50). “The right ear takes charge of operations because it receives information more rapidly” than the left ear. (Tomatis, 1992, p. 51). Our superficial amateur listening is adequate for the left ear, while accurate perception of sounds, comes from the right ear. The right ear empowers the left (Tomatis, 1992, p. 52). The eyes operate in the same fashion. A dominant eye doesn’t show itself when observing landscapes and backgrounds, but if one goes to read and observe detail, the dominant eye suddenly takes charge.

This is paralleled in the ears, where the dominant ear focuses on the precise sound and the other ear provides a general picture of the sonic background (Tomatis, 1992, p. 52).

This superiority concept within the ears contributes greatly to our tonal accuracy and how fluently we can perceive sound. How accurate we can reproduce tones or pitches is often associated as being one of the main characteristics of being a good or bad singer. Individuals who can reproduce great tonal precision and are considered to be good singers or musicians are said to be “right-eared” (Tomatis, 1992, p. 51). These individuals interpret sound very rapidly and their right ear has full control over their auditory processing. Left-eared individuals are usually behind the beat, have colorless vocals and cannot carry a tune (Tomatis, 1992, p. 51). These individuals do not perceive sound rapidly and sometimes do not communicate fluently, due to certain auditory processing disorders, like stuttering (Tomatis, 1992, p. 51).

What is alarming in all of this is that even though sound and our ability to hear are critical to how our bodies function, we seem to forget it is actually there. Any knowledge of the importance of sound and of the intuitive power that our ears hold is just cast aside. It’s that “out of sight out of mind” idea. Unfortunately, sound is always out of sight. “...The eye is [however], posited as the ground of all knowledge in a discussion of the hierarchy of the senses in Western civilization” (Doane, 1980, p. 55). We cannot see sound and because we are born into a world where we deduce our surroundings with our eyes, sound is forgotten. However, it must be noticed that without the complexities of the ears and their relationship with the brain, sound design and the filmic experience would not be possible.

CHAPTER 7

This is Your Brain on Sound

As audience members, our auditory system, including our brains, can perceive sound in film or a singer performing as being a pleasing experience or not. According to Tomatis (1992):

...A good voice [or sound] is one, which enables the body of the listener to experience pleasing vibrations. To listen to someone else singing is to enter into a partnership of vibration...because producing sound makes the outside air vibrate. To listen to someone playing, singing, or speaking is to let oneself be put in vibration with him. (p. 47)

Hearing music and sound, is not just a biologic process that is only considered in scientific and medicinal circles. Our ability to hear enables sound to vibrate through our entire body, our bones, muscles and nervous system (Tomatis, 1992, p. 54). This concept of physically hearing and psychologically perceiving sound connects our entire being to the outside aural world.

How our ears and our brains interact is to thank for this. The study of this interaction between the ears and brain and how we perceive sound is called psychoacoustics (Alten, 2008, p. 3). How we listen, our psychological responses, and the physiological impact of music and sound on the human nervous system are all included in how we perceive sound (Incredible Horizons, 2000). This capability to aurally interpret sound is engrained in us from birth, through the physiology of the human ear and the complex auditory processes of the brain. According to Cavalcanti (1900):

Babies are afraid of loud bangs, long before they can have learned that there is any connection between noise and danger – before they even know there’s such a thing as danger...Pictures speak to intelligence. [Sound] seems to by-pass the intelligence and speak to something very deep and inborn – as the instance of the baby seems to show. (p. 109)

We are very intuitive creatures and our capacity to recognize sound as information plays a large part in that intuition. However, when it comes to sound perception, we perceive on a very deep emotional level. Psychoacoustics at its most basic level of study is our emotional response to sound. Yes, psychoacoustics measures the psychological and neurological responses to sound (Sound-Remedies, 2008), but these psychological and neurological responses directly influence how sound makes us feel.

One of the best examples of this concept is our reaction to the sound of fingernails on a chalkboard. The thought of actually hearing that sound alone can make one’s skin crawl. Why we have this very unpleasant emotional and physical response has to do with how our ear canals are designed and our perception of sound (Geere, 2011). Uncomfortable sounds like Styrofoam squeaks, a plate being scraped by a fork, and the fingernails on a blackboard, all involve frequencies that “...lie firmly within the range of human speech – between two thousand and four thousand Hertz” (Geere, 2011). Studies have shown measurable physical responses and obvious uncomfortable emotional responses when we are exposed to these unpleasant sounds that lie in that frequency range (Geere, 2011). According to Geere (2011):

[This] physical response is likely generated by the shape of the human ear canal, which prior research has shown to amplify frequencies in the range of two thousand to four

thousand Hertz. What seems to happen, the researchers reckon, is that when a screech on a chalkboard is generated, the sound is amplified within our ears to painful effect.

When these frequencies are removed from the sound, it makes it easier to listen to, however interestingly enough, "...removing the noisy, scraping part of the sound made little difference" (Geere, 2011). The sound of fingernails on a chalkboard is an excellent example that shows how we perceive sound and because of how we perceive sound, we react in a certain way. This sound is also greater proof of how certain frequencies resonate in our bodies and affect our perception more than others.

Sound and music also have specific reactions within the brain that evoke particular reactions of the body. It is also very important to note that these responses to sound and music are completely involuntary. We don't tell our bodies to respond a certain way to sound. We cannot control how we react in response to an aural stimulus. These intrinsic responses happen on such a deep level that we don't even realize they're happening. This unconscious response to sound is such a powerful force that it is even used in many medicinal fields, including but not limited to, stress reduction, addiction therapy, sleep assistance and various healing applications (Sound-Remedies, 2008). Furthermore, "[Sound] is nonverbal so it can move through the brain's auditory cortex directly to the center of the limbic system. This system governs emotional experiences and basic metabolic responses such as body temperature, blood pressure and heart rate" (Incredible Horizons, 2000). More intense, fast paced and loud sounds often excite the body, raising ones heart rate, blood pressure and body temperature (Incredible Horizons, 2000). Take the sound design of the movie *300* for instance. The movie's sound design is completely over the top, but certainly not overdone. All the in your face, intense fight effects, blood and

guts, lend themselves to an intense, fast paced storyline that excites the mind and body. Even the film's score is highly aggressive. More specifically it is aggressive in the low-end percussion and uses unconventional film score instruments, like the electric guitar that tends to add to the intense nature of the film and alters the audience's perception.

Sound can also excite peptides in the brain and stimulate the production of endorphins. Endorphins are natural opiates secreted by the hypothalamus, which produce a feeling of natural euphoria, shifting mood and emotion (Incredible Horizons, 2000). Lastly, and one of the most important aspects of psychoacoustics is how sound and music evokes our memories. "Music can activate the flow of stored memory and imagined material across the corpus callosum (bridge between left and right hemispheres of the brain) helping the two work in harmony" (Incredible Horizons, 2000). Our senses are tied directly to our memories; sound being one of the most prominent. It is these memories that help create our emotional responses to sound. In the animated movie *How to Train Your Dragon*, the vocal sounds of Toothless the dragon, that are exchanged with the main, underdog character Hiccup, highly replicate that of a common, household pet. It is these sounds that remind the audience of the companionship between a pet and its owner. Toothless' vocal sounds greatly affect the emotional response of the audience in the scenes where their friendship is threatened.

Our emotional sense of fear is highly linked to sound and our past associations of this emotional state. According to Thompson (2002):

From an evolutionary standpoint, we can assume that humans, like all animals, evolved a sensitivity to the potential dangers associated with sounds. Brain systems that generate fear are highly conserved throughout evolutionary history, suggesting that fear responses

in modern brains are similar to fear responses in early hominids.

We rely heavily on sounds to indicate danger or a predator of some sort. This sense of fear is something that is engrained in us and sound is a large proponent of fear. “The fear centre of the brain - the amygdala - lies deep inside the temporal lobe, which processes sound (Thompson, 2002). This is the main reason why sound in films evokes such an emotional response from us in horror films.

Sound designers and filmmakers recognize these instinctive responses and use them to fully captivate an audience through their emotions. “Sound may be the most powerful tool in the filmmaker’s arsenal in terms of its ability to seduce” (Thom, 2002). Sound has limitless possibilities to emotionally affect an audience and it should be used as such. One of the earliest and greatest advocates of emotional reactive sound in films was Alfred Hitchcock. Hitchcock is greatly known for his visual techniques but his use of sound has received little to almost no attention. Hitchcock used instinctive styles of sound during a time when little was known about the cinematic powers of sound (Bays, 2000). He believed that sound brought a complete sense of realism of the image to the cinema (Weis, 1982, p. 14). It is this complete realism that roots itself in our emotive reactions of Hitchcock’s films that make them so famously horrifying. One of Hitchcock’s favorite emotive sound techniques was “...pumping low-frequency energy (below 400Hz) from the track during scenes of impending trauma” (Zaza, 1992, p. 32). Low-frequency sound waves have the tendency to travel underneath seats and are felt through the diaphragm, producing an uncomfortable sense of slight nausea (Zaza, 1992, p. 32). Instinctively, this technique evokes nervousness and a threatening effect from an audience. Hitchcock knew exactly what this technique would fabricate in the minds of his audience and used it frequently

throughout his films (Zaza, 1992, p. 32). Hitchcock's awareness of psychoacoustics and the emotional and physical responses that sound can provoke in an audience made his works some of the most celebrated horror films in history.

It is this awareness of psychoacoustics that all sound designers and filmmakers should be taking into account when producing their films. The brain is a tremendous entity and is highly affected by sound. The potential to attack the emotional state of an individual through the use of sound in film is very prevalent. Knowing that sound is an emotional vehicle in the brain can only make a film more meaningful and ultimately more powerful.

CHAPTER 8

When Our Ears and Eyes Combine

When sound and visuals are eloquently married together, the audience becomes entangled in the essence of the film. It is through the combination of these two elements that we, as the audience, truly emotionally experience a film. According to Doane (1980):

Picture and track, to a certain degree, have a composition of their own but when combined they form a new entity. Thus the track becomes not only a harmonious complement but an integral inseparable part of the picture as well. Picture and track are so closely fused together that each one functions through the other. There is no separation of I see in the image and I hear on the track. Instead, there is the I feel, I experience, through the grand-total of picture and track combined. (p. 56)

We cannot experience a film without the fusion of the sight and sound, but it should be said that the ears and the eyes, although they work together, process information very differently from each other. Yes the eyes and ears have some similarities in relation to which eye or ear is dominant and the separate function of the two eyes or ears. However, the pace in which the eyes and ears process information is greatly diverse. According to Chion (1994):

...The ear's temporal resolving power is incomparably finer than that of the eye; and film demonstrates this... While the lazy sphere thinks it sees continuity at twenty-four images per second, the ear demands a much higher rate of sampling. ...The eye is content to notice merely that something is moving, without being able to analyze the phenomenon.

In this same time the ear is able to recognize and to etch clearly onto the perceptual screen a complex series of auditory trajectories...(p. 134)

Our ears act without hesitating; dissecting intricate details at an alarming rate, that is unmatched by that of the eye. With this rapid rate of analysis, the ears have the capability to distinguish more delicate nuances than the eye (Balazs, 1952, p. 122). The number of sounds and noises the human ear can discriminate "...runs into the many thousands – far more than the shades of color and degrees of light we can distinguish" (Balazs, 1952, p. 122). However, we can mentally acknowledge far more visual forms than sound forms, just because we are used to interpreting the world "...without conscious assistance of our hearing" (Balazs, 1952, p. 122). Although we can discern many more auditory objects at a faster rate than the visual, we do not have the capability to actually know what all of those sounds are. Perceiving sounds and actually identifying its source are two different ideas. "We may be aware that we are hearing a different sound than before, without knowing to whom or what the sound belongs" (Balazs, 1952, p. 122). Our eyes help us to know and recognize objects better than our ears, but our ears perceive more delicate nuances at a quicker rate than our eyes.

With sound's and image's different rates of processing information, sound, in a technical sense, does help or has a direct influence on what the audience is seeing. The ears and eyes work together to decode the puzzle of what appears to be an arbitrary selection and arrangement of shots (Zaza, 1991, p. 4). Many times in films and movies, sound is used to cover up gaps and even mistakes in the visual effects (Thom, 1996). Sound cannot save a picture in itself, but it does make up for some technical problems in the visuals. According to Zaza (1991), "At the edit point, sound can smooth over the cut and make it invisible" (p. 27), binding the flow of images

(Chion, 1994, p. 47). If the shot is not as well put together and kind of dull, “Sound can make the image appear more magical, less a manufactured commodity” (Zaza, 1991, p. 27). Sound also has the ability to imply shot size (Zaza, 1991, p. 2) and the type of shot (Thom, 1999). Very close shots of peoples’ hands; faces and their clothing imply a sense of intimacy. These types of shots call for a very detailed and expressive use of sound. We should experience the action of these shots “...through the point of view of either the person being photographed or the person whose view of them we are sharing” (Thom, 1999). Sound is used in these types of shots to create this sense of closeness between the character and the audience. Wide shots or establishing shots on the other hand, greatly take advantage of the use of sound (Thom, 1999). “...They provide an opportunity to hear the fullness or emptiness of a vast landscape” (Thom, 1999). Wide shots enable a sound designer to fully create a location through the use of sound. Sound and sight’s different processing rates enable the two to work together to make one continuously flowing film. What the visuals lack, sound makes up for and vice versa.

It is our ears’ ability to perceive these many thousands of sounds and the eyes’ ability to identify, which make the sound in film so important. At any point in time in a film or television program, we are bombarded with hundreds of different sounds and visual elements. Our ears have the ability to physically perceive these sounds and in conjunction with the identifiable powers of the eyes, put us in the realm of the film. According to Zaza (1991), “Through the faculty of hearing we become aware of unvisualized events, events happening only in the aural world; combined with sight, we then experience the deepest emotional engagement...” (p. 25). A film can only be fully appreciated when the two elements, sound and image, are combined (Zaza, 1991, p. 5).

This “theatre of the mind” reaction, a term coined by the poet Stephen Vincent Benét (Alten, 2008, p. 233), one of which we evoke a picture in the mind’s eye through the combination of sound and image, can be understood in the context of synesthesia. “Synesthesia is the phenomenon whereby a sensory stimulus applied in one modality causes a response in another” (Alten, 2008, p. 233-234). Synesthesia does relate to psychoacoustics and how we perceive sound, however, synesthesia is the actual event we experience in the brain when sound and visuals are combined. It is the idea that “...demonstrates that the ear sees and the eye hears” (Alten, 2008, p. 234). It’s the whole film experience; creating another world in the audience’s mind, through different psychological, neurological, physical and emotional responses.

One of the greatest concepts of synesthesia and its application to sound design is that, it allows for the expansion of the screen’s dimensions (Alten, 2008, p. 234). According to Zaza (1991):

The visual image has a boundary, a fixed reality subject to technical interpretations. Sound has no boundary, is an abstraction of reality, and is invisible in the human’s primarily visual world. Sound cannot be fixed and held like a photo; it requires time to exist. (p. 26)

Sound is not bound to the screen as the picture is, which allows the sound designer to fully emotionally envelope the audience with sound and put the audience in the pseudo-reality of the film. Sound is flexible and because as a culture we have a Dionysian desire to escape everydayness (Zaza, 1991, p. 26-27), sound designers use the abstractness of sound to allude to this dream-like state. According to Zaza (1991), “In the darkened space of the theatre, the audience is removed from all other spatial context outside the controlled acoustic arena of the

theatre and the projected envelope of the screen. Sound removes barriers of belief” (p. 27). Surround-sound has also contributed to this abstraction of reality (Chion, 1994, p. 149). With sound coming from every direction in a theatre, it has created a spatial existence for sound; it has put the audience in the center of scene and the aural space. “...[Sound designers] rely on a unique apparatus to decipher the aural world and express aural ideas...[the] Ear and heart are the tools of passion and virtuosity” (Zaza, 1991, p. 26). The key to a sound designers work is how the ear interprets the abstract, aural world of the film, in union with the eyes and creates an emotional corollary.

CHAPTER 9

Conclusion

My research for this thesis was mainly focused on the importance and role of sound design in film. Sound has the ability to enhance or to greatly decrease the value of a film. Its value should never be thought of as less than that of the visuals. “Sound shows us the image differently than what the image shows alone, and the image likewise makes us hear sound differently than if the sound were ringing out in the dark” (Chion, 1994, p. 21). These two crafts work together in a symbiotic relationship, elegantly dancing and creating the cinematic experience. This experience is always changing and evolving together. Only when each craft influences the other does the movie begin to take on a life of its own (Thom, 1999). Even though it is a common thought in our Western culture, that film is a visual medium, my research has proven that film is anything but. Film is an experience that needs to be felt and sound is the emotional catalyst in film.

The birth of film did not consist of synchronized sound. Any sound that did accompany the film did not come from within the film’s structure, but rather from a phonograph or a group of musicians playing along with the film. Sound’s secondary importance began with the conception of Western narrative film. However, in today’s world “...it has become commonplace to see a moving figure on a screen as we hear movement” (Chion, 1994, p. 64). It has become a habit to hear sound match the visuals. Without it, film would feel unnatural (Chion, 1994, p. 64).

Sound's secondary position relative to the visual's is also relegated by our Western visual culture. As a society we do not identify and derive meaning from an aural stimulus, instead we rely on words, phrases, symbols and pictures to decode the world around us. It is this philosophy that appoints sound to its secondary position in our society.

My research was also largely concentrated on how our minds, bodies and emotions are affected by sound and how these responses affect our perception while experiencing a film. Sound unconsciously enters into our brains through the ear canals and affects what we emotionally and physically feel in conjunction with the visual stimulus of a film. Sound has the capability to make us happy or sad and can even tap into past experiences we may have had, all affecting our emotional response and our perception of the film.

Sound is a very powerful, intangible force, which is always affecting our perception of the world around us. It is this powerful force, that sound designers and filmmakers use as a very manipulative tool to not only bring a new purpose to their films, but to gracefully control the perceptions of their audience.

REFERENCES

- Alten, S. R. (2008). *Audio In Media*. Belmont, CA: Thomson Wadsworth.
- Altman, R. (1992). *Sound Theory, Sound Practice*. New York, NY: Routledge
- Anderson, J. (2009). Movie Review: 'Transformers: Revenge of the Fallen' Loud, Over-the-Top, Overlong. *The Washington Post*. <http://www.washingtonpost.com/wp-dyn/content/article/2009/06/23/AR2009062303462.html>
- Attali, J. (1985). *Noise: An Essay on the Political Economy of Music*. Manchester, UK: Manchester University Press.
- Audio Signal Processing. (2012). Retrieved March 1, 2012, from Wikipedia, The Free Encyclopedia: http://en.wikipedia.org/wiki/Audio_signal_processing
- Balazs, B. (1952). Theory of the Film: Sound. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 116-125). New York, NY: Columbia University Press.
- Bays, J. M. (2000). Sound: Hitchcock's Third Dimension. Retrieved from <http://borgus.com/hitch/sound.htm>
- Bresson, R. (1977). *Notes on Cinematography*. New York, NY: Urizen Books Inc.
- Carlsson, S. (2004). ADR or Looping. Retrieved from <http://www.filmsound.org/terminology/adr.htm#adr>
- Carlsson, S. (2004). Ambience. Retrieved from <http://www.filmsound.org/terminology/adr.htm#ambience>

- Carlsson, S. (2004). Diegetic and Non-Diegetic Sounds. Retrieved from <http://www.filmsound.org/terminology/diegetic.htm#diegetic>
- Carlsson, S. (2004). Foley. Retrieved from <http://www.filmsound.org/terminology/foley.htm>
- Cavalcanti, A. (1900). Sound in Films. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 98-111). New York, NY: Columbia University Press.
- Chion, M. (1994). *Audio-Vision: Sound on Screen*. New York, NY: Columbia University Press.
- Clair, R. (1929). The Art of Sound. . In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 92-95). New York, NY: Columbia University Press.
- Dement, W., & Wolpert, E. A. (1958). The relation of eye movements, body motility, and external stimuli to dream content. *Journal Of Experimental Psychology*, 55(6), 543-553.
doi:10.1037/h0040031
- Doane, M.A. (1980). In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 54-62). New York, NY: Columbia University Press.
- Dykhoff, K. (2003). About the Perception of Sound. Retrieved from <http://www.draminst.se/start/inenglish/articles/ljudartikel/>
- Eisenstein, S. M., Pudovkin, V. I. & Alexandrov, G. V. (1928). A Statement. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 83-85). New York, NY: Columbia University Press.
- Geere, D. (2011). Why Fingernails on Blackboards Sound So Horrible. *Wired UK*. Retrieved from <http://www.wired.com/wiredscience/2011/11/chalk-board-fingernail-sound/>

Healthy Hearing. (2010). Hearing Problems: Hearing Brings Your World to Life. Retrieved from <http://www.healthyhearing.com/content/news/Hearing-loss/Types/47469-Hearing-brings-you-life>

Hilton, K. (1998). Walter Murch: The Sound Film Man. Retrieved from <http://www.filmsound.org/terminology/foley.htm>

HyperPhysics (2010). The Ear and Hearing. Retrieved from <http://hyperphysics.phy-astr.gsu.edu/hbase/sound/ear.html>

Incredible Horizons. (2000). Psychoacoustics: The Physiological Impact of Music and Sound on the Human Nervous System. Retrieved from <http://www.incrediblehorizons.com/psychoacoustics.html>

Kavaler, B. (1985). Direct Sound: An Interview with Jean-Marie Straub and Daniele Huillet. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 150-153). New York, NY: Columbia University Press.

Kracauer, S. (1960). Dialogue and Sound. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 126-142). New York, NY: Columbia University Press.

Lambert, M. (2010). Lost, The Final Chapter. *Mix Magazine*. Retrieved from http://mixonline.com/post/features/lost_season6_final_chapter//index.html

Levin, D. (1993). *Modernity And The Hegemony Of Vision*. Berkeley: University Of California Press.

Metz, C. (1980). Aural Objects. In E. Weis & J. Belton (Eds.), *Film Sound: Theory and Practice*. (pp. 154-161). New York City, NY: Columbia University Press.

Murch, W. (2000). Stretching Sound to Help the Mind See. Retrieved from

<http://filmsound.org/murch/stretching.htm>

Silent Film. (2012). Retrieved February 28, 2012, from Wikipedia, The Free Encyclopedia:

http://en.wikipedia.org/w/index.php?title=Silent_film&oldid=479329408

Sragow, M. (2000). The Sound of Vietnam. *Salon Media Group, Inc.* Retrieved from

<http://www.salon.com/2000/04/27/murch/>

Sound-Remedies. (2008). Psychoacoustics. Retrieved from

<http://www.sound-remedies.com/psyc.html>

ThinkQuest. (2011). Your Sense of Hearing. Retrieved from

<http://library.thinkquest.org/3750/hear/hear.html>

Thom, R. (1995). Confessions of An Occasional Sound Designer. Retrieved from

<http://filmsound.org/randythom/confess.html>

Thom, R. (1996). More Confessions of Sound Designer. Retrieved from

<http://filmsound.org/randythom/confess2.html>

Thom, R. (1999). Designing a Movie For Sound. Retrieved from

<http://filmsound.org/randythom/confess.html>

Thompson, Bill. (2002) Evoking Terror In Film Scores. *M/C: A Journal of Media and Culture*,

5(1). Retrieved from <http://www.media-culture.org.au/0203/evoking.php>

Tomatis, A. A. (1992). *The Conscious Ear: My Life of Transformation Through Listening*.

Barrytown, NY: Station Hill Press.

Weis, E. (1982) *The Silent Scream: Alfred Hitchcock's Sound Track*. Madison, NJ: Fairleigh Dickinson University Press.

Weis, E., & Belton, J. (1985). *Film Sound: Theory and Practice*. New York, NY: Columbia University Press.

Wildfire Media. (2010). What are the Six Qualities of Sound Perception. Retrieved from http://www.cafemuse.com/kitchen/perception/six_qualities.htm

Zaza, T. (1991). *Audio Design: Sound Recording Techniques for Film and Video*. Engelwood Cliffs, NJ: Prentice-Hall.