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PAYTON, LEE C.

COLUMBIA COLLEGE CHICAGO

Payton, Lee C.
Columbia College Chicago

Dynamic Cinema Soundtrack

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DYNAMIC CINEMA SOUNDTRACK

An Interactive Workshop for Incoming 1st Year Cinema Students

A Paper Presentation for the 2014 HUIC STEM Conference - by Lee C. Payton ©2014
Assistant Professor of Sound for Cinema, Cinema Art + Science - Columbia College Chicago

Prior to the first day of fall classes, our College offers a Weeks of Welcome celebration for incoming first-year students. This celebration includes events all over the city, and within the College, introducing first-time college students to the array of possibilities they may encounter during their 4-6 year degree program. In an attempt to help enlighten our incoming Cinema students to the nature and nuance of cinema sound, I host a two-hour interactive workshop entitled Dynamic Cinema Soundtrack. In two years, attendance at this event has doubled.

New students generate enthusiastic and inquisitive discussion, and represent an array of discipline interest from editing to screenwriting to producing, directing and cinematography, and even sound. Prior to this workshop, most first-year film students have little or no experience with the many considerations required of a cinema soundtrack. They may be less familiar with the categories of sound.

The content is presented in generally three parts. In efforts to lessen the intimidation sound poses to most people, the goal of the first part is to discuss briefly how sound works and how our ear/brain relationship functions¹. In the most simplistic terms, sound generates pressure vibrations that move through the air in waves. The outer ear, or the pinna is shaped to capture these vibrations, and then move them through our ear canal, which is focused on striking the eardrum².

The eardrum is approximately 10mm in width. When sound vibrations strike the eardrum this causes a corresponding movement of the three smallest bones in the human body - the malleus, the incus, and the stapes (referred to as the hammer, anvil and stirrup because of their shape). These bones respond to the vibrating eardrum by the force of leverage, forming a kind of 'piston' that presses against the

inner ear creating corresponding waves of pressure¹.

Pneumatic amplification describes the increase in pressure through the ear, from the eardrum to the stapes. The stapes has a surface area of approximately 3.2 square millimeters, while the eardrum has a surface area of approximately 55 square millimeters. With the increase in pressure by leverage, the sound is amplified roughly 20-30 times greater than when it entered the ear canal^{1,2}.

The stapes presses against a part of the inner ear called the *cochlea* at a point called the oval window². This causes sound pressure waves to travel through the cochlea. Along the walls of the cochlea are thousands of fibers, and some of them react with corresponding frequencies to the frequency of the sound wave¹.

Next to these cochlea fibers are specialized structures called hair cells, which respond to the resonance of the cochlea fibers. These hair cells move in response to the pitch and frequency of the sound wave, and send an electrical signal down the cochlear nerve to the temporal lobe of the brain¹, where it is deciphered and interpreted as a specific sound, or a specific kind of sound².

The brain interprets all this raw vibration 'data' and decipheres and differentiates into 'categories' of sound, like music, conversation, dialog, noise, environmental sounds, animal vocalizations, and so forth¹. This interpretation takes place extremely fast, as there is very little 'filtering' between direct sound input to the ear, and interpretation by the brain. Sound also enters the ear as we sleep, as there are no 'ear-lids' (akin to our eyelids that cover our eyes). Most people would agree that it is a loud, abrupt sound, like an alarm clock, that wakes us each morning.

It is not outside the realm of probability, that in primitive society our ears functioned more as a survival mechanism, alerting us to minute fluctuations in the 'noise floor' around us. *Noise floor* is a cinema sound term that is used to describe the base level of unwanted sound, like room tone or environmental noises, that is ever present when we record wanted sounds, like dialog and sound effects³.

These concepts lead the Dynamic Cinema Soundtrack Workshop into the next level of discussion about the ear/brain relationship - regarding the difference between *listening* and *ignoring*.

Webster's Seventh New Collegiate Dictionary provides the following definition for the word *listen*⁴ -

- : to pay attention to sound (~ to music)
- : to hear with thoughtful attention: heed (~ to a plea)
- : to be alert to catch an expected sound (~ for his step)

A common synonym for the word *listen* is the word *heed*⁵. Further, a word most closely associated with the word *heed* is the word *attention*^{4, 5}. One way Webster defines the word *attention* is - *consideration with a view to action*⁴. When we are actively engaged in the real-time process of listening to the world around us, a natural heightening of awareness occurs. This too may be a survival mechanism.

Merriam-Webster online defines the word *ignore* thusly⁶ -

- : to refuse to show that you hear or see (something or someone)
- : to do nothing about or in response to (something or someone)

And further explains the origin of the word⁶ - obsolete - *ignore* to be ignorant of; from French *ignorer*; from Latin *ignorare*; from *ignarus* ignorant, unknown, from *in-* + *gnoscere, noscere* to know.

Webster's 7th Collegiate Dictionary adds for the word *ignore* -

: *to reject... as ungrounded*⁴.

A common synonym for the word *ignore* is the word *neglect*^{4, 5}. Webster further defines the word *neglect* with the following -

*NEGLECT implies giving insufficient attention to something that has a claim to one's attention*⁴

A common synonym for the word *neglect* is the word *omit*^{4, 5}. One way Webster defines the word *omit* is -

: *to fail to perform or make use of*⁴.

By a logical distillation of definitions, we can say that the active, real-time process of listening to the world around us can be seen as consideration with a view to action. Whereas, by the same deduction, we can say that the active real-time process of ignoring the world around us (or 'tuning things out...') can be seen as a failure to perform or make use of our ears.

It is likely that the majority of intimidation to Cinema Sound by first-year film students comes from the fact that they have spent their lives using their ears for *ignoring* what they don't want to hear, rather than *listening* to the world around them. We humans have a tendency to 'tune out' the sounds that we don't want to hear, but the ear still picks up the vibrations, and the brain responds in kind, just as if we were actively listening. These physical, scientific and mathematical concepts are at once simple, yet phenomenal and complex. In discussion with students, and delving into these concepts, the voodoo inherent to cinema sound slowly dissipates, leaving in its wake an incomparable curiosity.

Our brains know the difference between actively listening and actively tuning things out. Herein lies the genesis for unfortunate intimidation towards sound in general and cinema sound specifically. Another aspect that defines 'active ignoring' is the amount of time we are immersed in the inner-world of our own minds. It is interesting to note that the root of the transitive verb *ignore* is *to be ignorant of...* One can existentially deduce that when one ignores a sound, for whatever reason, one is actively participating in the perpetuation of ignorance. Could this mean that if we listened more (as a species), we may become more enlightened?

How often are people so absorbed by their thoughts, that they don't hear sounds in the world around them? What percentage of the time do we focus so much of our attention on planning and envisioning the tasks at hand that we miss out on rewarding sonic experiences in reality? Case in point - while I was biking along the lake one day, a restored 1930's era Gloster Gladiator fighter plane flew by, the kind with the exquisite Bristol Mercury air-cooled, 9-cylinder radial engine⁷. WOW!

That engine sounded cool! While this free ear-gasm was CHUGGING by, I glanced around at the hundreds of people also biking along the lake and no one was taking any special note of this magnificent sound. They were, however, focused intently and internally on their rides, and in most cases, blasting their ears with iPods.

A series of discussion questions that first-year cinema students and I explore in this workshop evolves as follows:

- When you go to a movie, would you agree that the experience you have is 50% visuals and 50% sound? By general consensus, students usually agree to this ratio.

- Why is the brain more forgiving to a glitch in the picture than a glitch in the sound? Meaning that most people will watch a crummy picture if the sound is ok, rather than watch a perfect picture riddled with audio distortion. Students realize the difference once we establish that the visual cortex⁸ is accustomed to fractured input stimulus because of biological necessities such as blinking and sleep. Interestingly, German physicist and physician Hermann von Helmholtz⁹ after much study, concluded that the eye's optics were of '...rather poor quality...'¹⁰

- Even more visual stimulus is cut off in the cinema if we add in the amount of times we look away, glance at cell phones, or bury our heads during the gory parts. But as long as the sound continues, our brains perceive the story as being *continuous*. Sound Designers and Re-Recording Mixers exploit the phenomenon of 'sound continuity' from the frame-by-frame edits, all the way to the final sound mix, and every scene in between, to establish the recreation of a world.

This is a good time in the workshop to ask students if they still think the modern cinema experience is equal parts picture and sound. None of them have said yes at this point. Students gradually realize how significant a part of the overall story sound is. As they ruminate on what the percentage the split might actually be, we discuss audio requirements for animated films, computer generated imagery (CGI), off-screen sounds, and period films. It was at this point in one workshop that a student yelled out 'Radio!' She was my hero. If only she could have heard Orson Welles' *War of the Worlds* when it first aired¹¹.

We usually conclude the first segment of this workshop by relating these physical phenomena to the general understanding of working Sound Designers and Re-Recording Mixers. Cinema Sound Artists rely on human perception of, and emotional response to sounds in order to manipulate the categories of cinema sound for maximum affect upon the audience. We employ a battery of techniques to draw attention to certain details of the sound part of the story.

The second part of the Dynamic Cinema Sound Workshop is a two-minute video that I produced. Using sound design and narration, this video presents the components and categories of cinema sound, and a basic overview of the sound design process, in an expedient and entertaining way.

If we attempt to cover the same information in group-discussion, it usually takes more than the entire two hours. There is much to consider in a cinema soundtrack.

--- The 2---minute video will be screened at this point in the Conference Presentation.

The third part of the workshop draws from a two-page list of example screenings from feature films, foreign films, documentaries, and highly informative DVD behind-the-scenes bonus features on cinema sound. About halfway into the workshop, students invariably have some idea of what to listen for and we sometimes screen only a fraction of the examples. Most of our time is engaged in dynamic discussion about sound and the possibilities of storytelling with the cinema soundtrack.

--- Below is a list of DVD supplemental material to be screened during this Conference Presentation.

The goal of the Dynamic Cinema Soundtrack Workshop is not to foster competition between visual and aural learners, but rather to help eradicate the voodoo surrounding cinema sound. In doing so, we can broaden the Film students' approach to, and interpretation of, the cinema experience. This workshop simultaneously provides an additional language through which students can communicate their ideas and visions to colleagues and fellow filmmakers.

Students are enthusiastic to learn about sound and cinema. Many of them approach me after the workshop and express how beneficial the presentation is to their overall outlook on a film education. Often students are eager to take my courses because of their positive experience at this workshop. Students also express that just an overview of sound in general, and of cinema sound specifically, provides the potential for insightful and transferable skills training that helps them take their first steps into a larger world.

List of DVDs and Scenes from which to Screen during Conference Presentation

- HEAT¹² --- Directed by Michael Mann --- Chapter 10; conversation between Vincent and Albert --- line of Dialog does not match lip flaps of Actor. Why?
- CARS¹³ --- bonus feature (Target exclusive bonus DVD); Foreign language Dialog translation for finished Animation
- CORPSE BRIDE¹⁴ --- Directed by Tim Burton --- bonus feature; simultaneous original Actor voice recording alongside finished animation
- COME & SEE¹⁵ --- Directed by Elem Klimov --- bombing raid scene; use of sound design and sound effects to give "subjective" POV audio for main character
- WALL---E¹⁶ --- bonus feature on cinema sound effects with Ben Burt; *excerpts*

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- ⁵ The Synonym Finder, J.I. Rodale, Warner Books, ©1978, ISBN 0-446-37029-0 - pgs. 670-671 under the word 'listen' & pg. 533 under the word 'ignore'
- ⁶ <http://www.merriam-webster.com/dictionary/ignore>
- ⁷ http://en.wikipedia.org/wiki/Gloster_Gladiator
- ⁸ http://en.wikipedia.org/wiki/Visual_cortex
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- ¹⁰ http://en.wikipedia.org/wiki/Visual_perception
- ¹¹ http://en.wikipedia.org/wiki/War_of_the_worlds
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- ¹² HEAT - <http://www.imdb.com/title/tt0113277/>
- ¹³ CARS - http://www.imdb.com/title/tt0317219/?ref_=fn_al_tt_1
- ¹⁴ CORPSE BRIDE - http://www.imdb.com/title/tt0121164/?ref_=nv_sr_1
- ¹⁵ COME AND SEE - http://www.imdb.com/title/tt0091251/?ref_=nv_sr_1
- ¹⁶ WALL-E - http://www.imdb.com/title/tt0910970/?ref_=nv_sr_1