Sensing synesthesia

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SENSING SYNESTHESIA

A Thesis

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Master of Fine Art in The School of Art

by

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ABSTRACT

*Sensing Synesthesia* is an exhibition of experiments, carried out through the medium of graphic design as an attempt to generate a synesthesiac experience by visualizing sound. Since many elements within the realms of sound and sight are relative, creating a genuine synesthesiac experience for a viewing audience proved challenging. To address this problem, I created visual elements that corresponded with personal convictions, emotions and proclamations and presented them in a way congruent to the sounds being heard. Through these experiments, I discovered the personal growth of myself: the sharpened skills as a graphic designer, initiated interest in hand-rendered type as well as graffiti art as a style. Furthermore, I aimed that the interrelated, impactful relationship between sight and sound we all encounter on a daily basis generates a deeper experience despite our level of awareness.
EXPLORING SYNESTHESIA

Visual images and sounds can both evoke an emotional and/or physiologic response. However, a more intense response is elicited when visual and audio stimuli are combined. This cyclical effect of sensory stimulation and the interrelatedness of the senses has been recognized and exploited by artists, educators, and media professionals in order to maximize the emotional impact on their respective audiences.

The term “emotion” seems at first to be a relatively simple concept. However, in reality, emotions are complex reactions, consisting of a “feeling” or mood component, a physiologic component (e.g., changes in pulse, blood pressure, and breathing), and a cognitive component (e.g., invoking thoughts, recalling memories, and eliciting involuntary behaviors such as laughing or crying). Visual images can evoke a strong emotional response in the viewer. This statement is intuitively obvious as we all experience this effect numerous times each day. For instance, a beautiful sunrise fit for poetry, a masterful artwork hanging in the Louvre, a powerful photograph of war or even something as simple as a color palette, such as America’s red, white and blue, can rouse a myriad of emotions. This effect goes far beyond simple reactions to pretty paintings or scenes. Specific to graphic design, the written word can provide a comparable visual response just based on layout and typeface! Certainly, there can be no dispute that the appropriately triggered visual sense can elicit strong emotional responses in people.

VISUAL STIMULATION

The effect of visual stimulation is not limited to emotional feelings. Visual images produce strong physiologic effects as well. Pictures, books, movies, and other visual inputs may induce powerful physiologic changes in the body. Suspenseful movies can raise the heart rate, elevate blood pressure, increase breathing, induce sweating, and even transiently suspend breathing. Obviously, visual images can and do evoke strong emotional and physiologic responses. Furthermore, as mentioned above, these images also influence cognitive functions, sparking new ideas, recalling distant memories, and challenging preconceived opinions. The impact of visual stimulation is so great that even brief glimpses of an image may have a profound impact on behavior, an effect that has been successfully exploited by graphic designers specializing in advertising through strategic product placement and subliminal messaging.

The effects of visual images on emotion, physiology, and cognitive behavior have been studied extensively, and a considerable body of scientific research is dedicated to the subject. It is now generally accepted that colors can have a pronounced influence on our behaviors and mood, and the effect varies with the particular shade. A fascinating study conducted by Dr. Alexander Schauss, Ph.D., Director of the American Institute for Biosocial Research, reported using the color Baker-Miller-Pink to suppress angry, antagonistic, and anxiety ridden behavior in prison inmates. When the inmates’ cells were painted bubble-gum pink, there was a marked, albeit short-lived reduction in violent and aggressive behavior. According to Dr. Schauss, “even if a person tries to be angry or aggressive in the presence of pink, he can’t. The heart muscles can’t race fast enough. It’s a tranquilizing color that saps your energy. Even the color-blind are tranquilized by pink rooms.”

Another example that prominently displays the interaction between visual imagery and emotional and cognitive function is the Rorschach test. In the 1960s, Swiss psychologist, Hermann Rorschach, developed a series of inkblots which he showed to healthy volunteers as well as individuals diagnosed with a psychiatric disease. Each subject’s perceptions were recorded and then analyzed to reveal information about the individual’s personality and emotional functioning. This psychological tool is still used today to study healthy individuals and to detect underlying thought disorders in patients with mental illness.3

We are only just beginning to understand the complex way the human brain responds to and processes emotional visual stimuli. Researchers Stuart Dimond and Linda Farrington conducted an interesting study looking at the emotional responses of the two different hemispheres of the human brain. The investigators showed test subjects emotionally-laden films using a specialized contact lens so that only one eye could be used to see the image. Films were selected to provoke different kinds of emotional responses. Each film was shown twice, once to each eye, and the subjects’ heart rates were monitored during the viewings. Investigators found that the genre of film produced different effects depending on the brain hemisphere that received the visual input. The right hemisphere showed an enhanced response to a film of a surgical operation but a reduced response to a Tom and Jerry cartoon. Conversely, the left hemisphere reacted more strongly to the cartoon. Researchers concluded that “the right cerebral hemisphere acts as the dominant trigger to unpleasant emotional experience and that a division of labor for the production of different types of emotion probably exists between the two hemispheres.”4 Obviously, the way the brain perceives, processes, and responds to emotional visual stimuli is quite complex, and we are just at the beginning of our understanding.

Thus far, we’ve examined how visual stimuli can influence emotional “feelings”, human behavior, and the body’s physiology. The physiologic impact of visual stimuli cannot be overestimated; visual images can have a profound and, at times, even life-threatening effect on the body’s functioning. One excellent example demonstrating this point is photosensitive epilepsy (PSE). Some persons with, or prone to, epileptic seizures are particularly sensitive to flashing lights. Strobe light flashes may trigger grand mal seizures in such individuals. There have been numerous well-publicized examples of this effect. One infamous event took place in 1997 in Japan during an episode of the Pokémon anime, Dennō Senshi Porygon. The episode featured a scene that depicted a huge explosion using flashing red and blue strobe lights. 685 of the viewing children were taken to hospitals because of seizure activity.5,6 A similar phenomena occurred recently in response to a televised and online film promoting the 2012 London Olympics. An animated segment of the logo was blamed for triggering seizures in numerous people with epilepsy. Epilepsy Action, a charity located in England, received telephone calls from numerous people who had experienced seizures while watching the film on television and

4 Dimond, Farrington S. “Emotional Response to Film Shown to the Right or Left Hemisphere of the Brain Measured by Heart Rate.” Acta Psychologica 41.4: 255-60. Print.
online. As a result, the London 2012 Olympic Committee removed the offending segment from its website.\(^7\)

The potential to trigger seizures has become an important issue for web design as well. As with video games, rapidly changing images or highly regular patterns, such as flashing banner ads, or overly decorative fonts can trigger seizures in people with photosensitive epilepsy. Consequently, two sets of guidelines now exist to assist web designers produce content that is safe for people with PSE:

1) The World Wide Web Consortium has produced Web Content Accessibility Guidelines. Version 2, produced in 2008, suggest designers allow users to control flickering or avoid causing the screen to flicker at all.\(^8\)

2) In the U.S., websites provided by federal agencies are governed by section 508 of the Rehabilitation act. The Act mandates that pages shall be designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and less than 55 Hz.\(^9\)

The condition of PSE shows just how powerful the physiologic effects of visual stimulation can be.

**AUDITORY STIMULATION**

Auditory stimulation is also capable of producing emotional and physiologic responses in people. Again, this phenomenon is common sense and routinely encountered by us all. A peaceful lullaby, the thrum of a running engine, or a moving symphony can stir the most vivid of emotions. Similar to visual stimulation, this effect is more complex than it seems. A song evokes emotion better than the lyrics alone, and certain noises and sounds can produce profound physiologic responses. For example, the sound track of a scary movie may elevate vital signs and induce “goose bumps” in the listener. In some instances, specific sounds evoke memories or visual pictures such as the classic violin shrill from the movie *Psycho*. This simply summarizes that not only does audible sensory stimulation create profound, complex reactions much like visual stimulation, both of these senses can work together to complement each other even when only one of these sensory modes is present.

Emotional responses from auditory stimulation have also been intensively investigated. The best, and perhaps most well known, studies which demonstrate that auditory stimuli can elicit emotional and physiologic responses are the classic experiments conducted by Ivan Petrovich Pavlov in the early 1900s. In short, Pavlov presented dogs with food while also ringing a bell. He found that after enough time, this conditioned behavior resulted when the dogs would grow excited and salivate at the sound of the bell even if food was not present. This result clearly


shows that an auditory stimulus can produce an emotional and a physiologic response. More recently, scientists have used Auditory Evoked Potentials (AEPs) to study the effects of sound stimuli. AEPs are similar to reactions prompted by visuals in that brain electrical activity is recorded from electrodes attached to a person’s scalp. However, with AEPs, the sensory stimulus is a sound, and the electrical recording reveals information about the effects of different tones, speech, and other audible vibrations on the human brain. Studies with AEPs have generated insight on how we perceive, process, and react to various auditory stimuli.

**COMBINING AUDIO AND VISUAL STIMULI**

While images and sounds can both individually elicit emotional, physiologic, and cognitive responses, the combination of visual and auditory stimulation provokes more intense, prolonged responses. To dispute this phenomenon is to have never seen a real “horror movie”. When the terror hits home—the killer’s coming and the score is trilling—there are only two possible responses: cover your eyes, or mute the sound. Interestingly, watching without sound or listening without seeing lessens the emotional and physiologic impact of the experience.

Scientists have studied combined-modality sensory stimulation, validating a superior impact when compared to single-sense stimulation. In addition, investigators Jean Royet and David Zald conducted an interesting experiment looking at the effects of sensory stimulation, emotion, and brain activity. The researchers presented volunteer subjects with a series of emotionally-weighted visual, auditory, and olfactory stimuli. Both pleasant and unpleasant stimuli were used as well as “neutral stimuli” as a control. The subjects’ brains were scanned with positron emission tomography (PET) scan during stimulus exposure. The investigators found that emotionally-weighted stimuli from all three senses activated many of the same brain regions. This may help explain the synergistic effect of combined sensory stimulation. It may also help explain sensory “cross over” which is discussed below.

It is unknown why the combination of visual and auditory input elicits a stronger emotional response than either sensory modality alone. However, certain clues may be gleaned from examining other related phenomena that are better understood.

Learning theory is one such topic that may provide useful insight into how the senses influence our cognitive and/or emotional responses. Learning styles are descriptions of the various ways people assimilate new information. It is commonly believed that most people favor some particular method of interacting with, taking in, and processing stimuli for the benefit of new information. Based on this concept, the idea of individualized “learning styles” originated in the 1970s and has gained popularity in recent years.

One of the most common and widely used classifications of learning styles was proposed over a decade ago by the teacher and researcher Neil D. Fleming. By creating a questionnaire

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called VARK, Fleming allows users to obtain a profile of their preferred method of learning. Fleming’s VARK model, which expanded upon earlier neurolinguistic programming models, postulates that, while we depend on all of our senses to process information around us, most people tend to rely on one of their senses more than the others to assimilate new information. He describes three basic types of learning styles: visual, auditory, and kinesthetic.

Fleming proposes that visual learners have a preference for seeing things and learn best through visual aids: pictures, overhead slides, diagrams, handouts, graphs, and plots. The Institute for the Advancement of Research in Education assessed twenty-nine previous educational studies in their investigation, Graphic Organizers: A Review of Scientifically Based Research. They concluded that visual learning improves student performance in: critical thinking, retention, comprehension, and organization.

Auditory learners learn best through listening. These individuals must be able to hear what is being said in order to understand and may have difficulty with instructions that are written. They also use listening and repeating skills to sort through the information that is presented to them. Auditory learners respond best to teaching techniques that involve verbal direction, group discussions, verbal reinforcement, reading aloud, and putting information into a rhythmic pattern such as rap, poem, or song.

The third type of learner, according to Fleming’s model, is the kinesthetic learner (also called a tactile learner). Such persons prefer to learn by direct physical experience such as moving, touching, and doing. Learning styles are intended for use as an educational tool. Identifying a student’s particular learning style enables an educator to tailor the curriculum to a student’s preferred learning style maximizing understanding and retention.

While the concept of individualized learning styles is widely recognized and accepted, it is also well known that people learn faster and retain more information when material is presented both visually and audibly. Educators make use of this principle every day, delivering lectures in conjunction with visual aids (e.g., slides, dry-erase boards, or printed handouts). Combining oral information and visual aids facilitates the learning process. This synergy in learning is not confined to the visual-auditory sensory combination. Similar results are seen by combining taste and smell or vision and smell. It appears that simultaneous stimulation of multiple sensory modalities creates a more forceful and lasting impression.

A second related topic which may shed light on how sensory modalities interrelate and trigger an emotional response is the phenomena of synesthesia. Synesthesia (from the Greek: syn- “together,” and aisthesis- “sensation”) is a neurologically-based condition in which stimulation of one sensory or cognitive pathway leads to automatic, involuntary experiences in a second sensory or cognitive pathway. People who report such experiences are known as synesthetes. Synesthesia comes in a myriad forms, encompassing a wide variety of linkages between sensory modalities and/or cognitive functions. Synesthesia can occur between nearly any two senses, and at least one synesthete, Solomon Shereshevsky, experienced synesthesia that linked

all five senses.\textsuperscript{18} While nearly every logically possible combination of experiences can occur, several types are more common than others.

In grapheme-color synesthesia, one of the most common types, individual letters of the alphabet and numbers (collectively referred to as graphemes) are perceived as inherently colored.\textsuperscript{19,20} Affected individuals see letters and numbers shaded or tinged with a color. While different individuals do not usually report the same colors for all letters and numbers, studies have identified some commonalities across letters. For instance, “A” is likely to be red.

Sound-color synesthesia is another form of synesthesia and is particularly relevant to this thesis topic. Individuals with sound-color synesthesia hear certain sounds and visualize images which often resemble fireworks. Voice, music, and assorted environmental sounds such as clattering dishes or barking dogs, trigger colors and simple shapes that arise, move around, and then fade away when the sound stimulus ends.\textsuperscript{21} For some, the stimulus type is limited to music only, or even just a specific musical key. For others, a wide variety of sounds can trigger the synesthesia. The perceived hue, brightness, depth of field, and direction of movement may vary with a specific sound stimulus. Furthermore, in some individuals, the visual picture is so well developed that the individual actually reports seeing music on a “screen” in front of their face. One similarly affected individual, Deni Simon, reports that music produces waving lines “like oscilloscope configurations—lines moving in color, often metallic with height, width and, most importantly, depth. My favorite music has lines that extend horizontally beyond the ‘screen’ area.”\textsuperscript{22}

Synesthetes and non-synesthetes rarely agree on what color a given sound invokes. Composers Liszt and Rimsky-Korsakov famously disagreed on the colors of music keys. However, synesthetes show the same trends as non-synesthetes. Both groups say that loud tones are brighter than soft tones and that lower tones are darker than higher tones.

Visual motion-sound synesthesia, a recently identified type of the synesthesia, involves hearing sounds in response to visual motion and flicker.\textsuperscript{23} In total, over sixty types of synesthesia have been described, but only a fraction have been evaluated by scientific research.\textsuperscript{24} Many people with synesthesia use their experiences to aid in their creative process, and many non-synesthetes have attempted to create works of art that may capture what it feels like to experience synesthesia.

As discussed above, there are many different and distinct types of synesthesia, each

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classified by the specific senses or cognitive functions involved. Recent estimates indicate that some form of synesthesia may be present in as many as one out of every twenty-three persons, and men and women appear to be equally affected.\textsuperscript{25} Synesthesia may be congenital or may be acquired later in life, which is referred to as adventitious synesthesia. Congenital synesthesia is by far the more common form of the condition, and the phenomenon runs strongly in families, suggesting a genetic origin for the condition. Initially, synesthesia was thought to have an X-linked mode of inheritance;\textsuperscript{26,27} however, recent studies disproved that theory, and, to date, the precise mode of inheritance remains a mystery. Acquired synesthesia may occur in individuals under the influence of psychedelic drugs, after a stroke, during an epileptic seizure, or following blindness or deafness. Although synesthesia was initially characterized in the late 1800s, only recently have investigators begun to intensively investigate the condition.\textsuperscript{28} Psychological research has shown that synesthetic experiences have measurable behavioral consequences, while modern neuroimaging modalities have identified different patterns of brain activation among synesthetes.

The exact cause of synesthesia is unknown, but most experts attribute it to a neurologic basis. Specific regions of the brain are specialized for given functions. For instance, the occipital lobe is dedicated to vision, while the temporal lobe has specific areas for hearing. Likewise, there are brain regions dedicated to movement, sensation, memory, and even emotions. One popular opinion about synesthesia is that affected individuals have increased neural connections between discrete brain regions allowing for increased connectivity between the areas. For example, grapheme-color synesthesia might be the result of abnormal linkage of the grapheme-recognition area of the brain with the color-recognition area.\textsuperscript{29} When the individual sees a letter or number, there is cross activation between neurons in the color-recognition area, and the individual perceives color.

Although sometimes referred to as a neurological condition, synesthesia is not considered a pathologic disorder by the psychiatric community as it typically does not interfere with normal daily functioning. Synesthesia is a difference in perceptual experience, and the term “neurological” simply reflects that the brain is the origin of this perceptual difference. Most synesthetes do not consider their condition a handicap. In fact, many see their experiences as a gift, an additional hidden sense that adds to their life. Most synesthetes become aware of their perceptual differences in childhood, and some learn how to apply this skill in daily life and work. Some synesthetes have used their gift for simple tasks such as memorizing names and telephone numbers, while others have utilized their talent in more complex creative ways such as producing visual art, music, and theater.\textsuperscript{30}

Learning theory and synesthesia both provide valuable insight into the interrelatedness of


the senses and how sensory stimuli are perceived and impact physiology, behavior, and cognitive function. There are numerous other examples demonstrating how the senses interact with each other or are triggered by novel stimuli. The sensation of hunger is heightened when one both sees and smells appetizing food, rather than just visualizing the food alone. Patients with temporal lobe epilepsy often report strong odors just before or during seizure activity. Auditory hallucinations are quite common in psychotic states such as schizophrenia, and visual hallucinations are quite common with alcohol withdrawal and delirium treatments. Finally, psychedelic drugs such as lysergic acid diethylamide (LSD) and hallucinatory mushrooms are well known causes of visual hallucinations and are also famous for their effects on memory. These examples further demonstrate the poorly understood but very real interrelation of sensory stimulation and brain function. Finally, the previously mentioned study by Royet and Zald, which demonstrated that emotionally-weighted visual, auditory, and olfactory stimuli activated many of the same regions of the human brain, helps explain the interrelatedness of the senses and the genesis of phenomena like synesthesia.31

In summary, there appear to be poorly defined but important connections between specific brain regions, and such connections are closely involved in sensory perception, emotion, learning, and memory. The interrelatedness of brain areas gives rise to the remarkable abilities of synesthetics and may be unmasked in nonsynesthetes during pathologic states such as epilepsy, psychosis, alcohol withdrawal, and drug intoxication. These nebulous connections may be activated by various stimuli, allowing cross activation of different brain regions, heightening one’s appreciation or sensory experience. Artists, musicians, educators, and media professionals have tried to capitalize on this phenomenon in order to gain a stronger emotional or intellectual response from their audience.

Several examples have been documented of various attempts to heighten the emotional and mental impact for a viewing audience. Most of these examples were not possibilities when artists were originally interested in the ideas surrounding cross-modality stimulation. Only with the advent of technology can this have profound, life changing importance for individuals. Neil Harbisson is a painter from England, who was born with the condition of only seeing in black and white. With the help of a device called an Eyeborg, Harbissen can now see color. This device transforms color into musical notes, allowing Harbissen to paint what he hears.32 In the 1990s, Stephen Malinowski and Lisa Turetsky of Berkley California wrote a software program entitled The Music Animation Machine (www.musanim.com). With this program, colored bars move against a black background in rhythmic time while classical music is simultaneously played. It has been proven that young children that are able to “watch music,” develop a deeper appreciation for classical works and grasp the complexities, repetitions, layers and rhythms of music, more easily than other children. Similarly, Irina Vanechkina showed that children who have been painting or drawing develop a better understanding of musical works and are better at analyzing the structure of a musical score later in life. Allowing color blind individuals to perceive color, developing a better understanding of visual and audible art, regardless of knowledge or formal training, and educating an audience are some of the many benefits visualizing sound can achieve.33

32 The Times Online “Entertainment Section” http://entertainment.timesonline.co.uk/tol/arts_and_entertainment/visual_arts/article3423446.ece
Aside from practical implications, the art community has tried to cross-stimulate the senses and, thus bring out the synesthetic potential that may be buried in us all. Louis Bertrand Castel was the first to design an instrument based on the relatively new ideas of color and sound called the clavecin oculaire, which could be described as a color harpsichord. Unfortunately, like his predecessors, Castel was limited to the technology of the time in that the color of his instrument could only be seen in dim light.

Beginning in the late nineteenth century, a theatrical inventor named Robert Wagner experimented with ways to enhance the audience’s theatrical experience by creating an atmosphere which appealed to all the senses. Instead of merely watching a performance on stage, detached from the actors and perhaps, straining to hear the music from the orchestra, Wagner is known for placing the orchestra on all sides of the audience, as well as using the aisles as parts of the stage and even filling the air with certain fragrances as if the audience were literally in a specific, ultimately fictitious, environment.34

British inventor Alexander Rimington, crafted a portable machine rooted in Issac Newton’s theory that both sound and light were based on the same vibrations. Rimington assigned each note to a specific color and if the pitch of a certain tone was higher, he lightened the assigned color’s value. Again, technology could not keep up with creativity and Rimington’s machine was ineffective. A sound-producing organ would have to be played in perfect synchronization as Rimington’s light organ in order for a true synesthesiatic-inspired experience to occur. In England, Frederik Kastner developed an organ named a pyrophone which successfully “played colors,” but was confined to his home, being too large to transport.35

Visual artists such as French painter Eugene Delacroix, was known to whistle as he painted in order to capture the right environment, which allowed sound to influence his visual piece. Founded in 1911, a group of German artists called der Blaue Reiter (the Blue Rider), believed the art of music was the highest level of art. They considered music detached from the material, superficial world in which painting, sculpting and other forms of visual art were rooted, but based within an immaterial art form. Der Blaue Reiter collectively attempted to visualize this deeper spiritual world through paintings and executed the first synesthetic experiments of visual art by including members from all disciplines of the art community including composers, dancers and theatrical producers. “Using the color palette as a keyboard, capable of touching the human soul was not started by der Blaue Reiter but was popularized by them.”36 Perhaps the most important advantage from experimenting with visualizing sound came from this group, in the early 1900s. Known for their unique collaborations, rooted in the spirit of synesthesia, der Blaue Reiter is credited with inventing the genre of visual art known as abstract art!
MY WORK

Originally, the goal of my work was to generate an authentic synesthesiac experience by using visual elements specific to the medium of graphic design in combination with sound. My intent was to allow the viewer to see what was heard in hopes of evoking a stronger mental and/or emotional connection with the artwork than what is commonly experienced by merely looking at graphic design. Aside from the obvious issue of me not being a synesthete, other issues such as the relative meaning of color and differing opinions of what sound looks like combine to an almost unapproachable task of visualizing sound.

Instead of approaching my goals from a literal standpoint, or conversely, visualizing random, seemingly meaningless sounds, I first selected specific auditory stimuli. The catalyst for each sound choice operates under the unifying themes associated specifically to interpersonal relationships. My initial research on the topic not only introduced the ideas related to visualizing sound, it also served as a starting point to generate new ideas. I discovered most experiments previously carried out by other professionals were all relative to the artist in meaning and execution.

For each piece in my exhibition, I first pinpointed the sound element I wanted to visualize. I then documented the personal emotional, physical and mental response I felt relative to my own experience. For the first piece, the song I chose offered a progressive transition of sounds that accumulated to a variety of emotions such as reciprocity, lament, courage and hope. I noticed the effortless movement of my foot tapping and head bobbing during the louder, more energetic parts of the song and noted the calmer movements of my body during the slower, softer parts of the song. The thoughts that ran through my mind as the song played were guided mainly by the lyrics which describe a seemingly universal story of broken relationships and the inner strength acquired from moving on.

Interestingly, my research revealed most experiments regarding synesthesia involved visualizing individual tones or songs in their entirety. The second piece I created breaks apart from these common experiments by utilizing a different sort of auditory stimuli: the ambient sounds of a crowded room full of conversation. Merely recording the sounds of a crowded room was not congruent with the previously established theme of relationships and did not lend itself to exact clarity for what visual elements would best represent the sound. To remedy this, I began with a more controlled sound, manifested by specific texts, spoken by specific individuals whom I have specific relationships with. Once the complete sound byte was created from scratch, I listened to the voices and documented several natural responses within myself. The emotional response was that of attachment and pride. Additionally, the content of what each voice was saying strengthened my emotional attachment to the sound since each voice was speaking lines I had specifically written about relationships. Physically, I was very still and I concentrated intensely on each sound, trying to pick out various phrases or words, much like someone would naturally experience in a crowded room. The mental stimulation from this sound was one of reflection regarding the deep connection I have with each person that participated as well as myriad of relationships from my past.

Once I had documented the various ways in which I personally responded to the sounds for each piece, I began to explore the visual components that I could utilize to best visualize each response. Additionally since each sound had such personal relevance, I immediately began to explore handwritten type instead of computer generated type, to visually capture the personal meaning found within the audio. Furthermore, while creating the visual elements for each piece, I directly pulled from Eugene Delacroix’s technique of playing sounds repeatedly.
PIECE #1: I’VE NEVER BEEN SO ALONE. I’VE NEVER BEEN SO ALIVE.

The first experiment I began involved visualizing a song by the 1990s band Third Eye Blind, called *Motorcycle Drive By*. The lyrics describe a bittersweet story of a realized, failed relationship in addition to the inner-strength found within the act of letting go. The lyrics remind me personally about various relationships I have experienced. To further drive the idea of bittersweet, contradicting emotions experienced within a relationship, I changed the title of the piece from *Motorcycle Drive By* to a repetitive lyric found within the song: “I’ve Never Been So Alone. I’ve Never Been So Alive.”

To begin creating the visualization of this song, I divided the song into two main categories: lyrics and musicality. Keeping in mind the ideas initiated through my research, I focused my attention first on the lyrics and the typographic rules implemented through graphic design. Letterform, layout and color were the three main components used to help dictate the overall visual design of these lyrics. When approaching the musicality aspect of this piece, I allowed broader rules regarding color symbolism and the meanings associated with various tones govern my design decisions while focusing on color relationships and overall composition.

VISUALIZING LYRICS

Before discussing each individual verse in detail, the lyrical component of my work overall needed to capture the emotional and audible cues found within the singer’s voice. To accomplish this, I decided to draw all of the letterforms by hand to keep a personalized touch, as well as to maintain a sense of visual consistency. Also, I altered the baseline of the hand drawn lyrics to parallel the rise and fall of the melody as well as spell out the words phonetically so the viewer could see how the melody sounds. This allowed a visual cue to indicate which notes were sustained or in contrast, sung quickly.

The first verse is drawn in all lowercase, round, thin letterforms to mimic the soft, approachable sound of the melody. All of the anatomical parts of each letterform are clearly illustrated to allow maximum legibility, which also supports the idea of easy, relaxed sounds. I determined where breaths were taken and began grouping the words together based on the singer’s phrasing which dictated many compositional settings. I colored the first verse in yellow to embody the symbolic meaning of joy and freshness, much like the sunshine and excitement found in the beginning of a new relationship.

The second verse introduces uppercase letters and the form of each letter becomes a bit wider. The content of the lyrics become more aggressive and is visually symbolized by taking up more visual space on a letter-by-letter basis. To help the letterforms look more dense, I took out the counters within several letters. I allowed the natural phrasing of the singer dictate composition as well as the phonetic spelling of sustained notes, just as I drew the first verse. Since the letterforms themselves were growing in size, I decided a warm pink would be an appropriate contrasting color which symbolizes the dueling aggressive lyrical content against the more pleasant, joyful mood set from the first verse.

The lyrical segue between the second verse and the middle section of the song is drawn in the same fashion as the second verse by utilizing lowercase and uppercase letters. Visually, the verses are different by completely avoiding the counters and rounded corners. The compositional decisions were also made in the same manner while the color shifts to a bold orange. According to Leatrics Eisemann’s *Pantone Guide to Communicating with Color*, orange symbolizes creativity.37 The idea of creation is evident in the the second verse from the lyrics: “I would like

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to build something...”. It is in this transitional part of the song the lyrics seem to shed the painful emotions associated with letting failed relationships go and begin to focus on the ideas associated with moving on (see figure A).

As a whole, the middle portion of the song is more active, faster paced, louder and more expressive. It is here that I began to introduce elements commonly found in graffiti art. Having never studied graffiti art, I quickly became interested in the complete freedom graffiti lends itself to letterform drawing. The brief phrase which introduces the fast paced, rhythmic sounds is drawn in all capital letters, and begins to introduce basic graffiti styles such as arrows and broken letterforms. The color red, proven to increase blood pressure, is used in combination with the uppercase lettering in hopes of demanding the viewer’s attention. (see figure B).

FIGURE A: Detail of First and Second Verse with Transition from “I’ve Never Been So Alone. I’ve Never Been So Alive.”
Experimenting with the traditional style found within graffiti art, the main part of the middle section, just before the climax, the lettering here is drawn in all uppercase and very dense. The arrows, broken letters, tails, blended letterforms and the introduction of a three-dimensional look, all come together to create a dense wall of text. From a compositional standpoint, the design still follows the rules of melodic movement and phonetic spelling set in place from the beginning. Even though the song is loud, chaotic and full of energy during this part of the song, I chose the color of various blues to acknowledge the colors used in the first verse.

For the song’s climax, the letterforms were drawn in all uppercase and in pure graffiti fashion to allow maximum visual expression. Since the singer is screaming the words, I used the computer software Adobe Photoshop CS4 and Adobe Illustrator CS4 to help render the lettering into a true three-dimensional form which creates the illusion of the letters jumping off the canvas and dominating the overall visual space. The color of the text itself is dominantly purple because the text before it is blue, and the “transitional phrase,” the text immediately after, is red. (see figure C)
FIGURE C: Detail of Middle Section from “I’ve Never Been So Alone. I’ve Never Been So Alive.”

As the song moves from the middle to the end, the transitional phrase, written in all capital letters preserve heavy graffiti influences. Similarly, just as the segue from the first part of the song to the middle are red, the text here is the same red color.

As the song ends, the letterforms mimic the forms from the beginning but are used as a combination of round shapes, counters and bowls being avoided as well as upper and lowercase letters. The letter “I”, when referring to the singer’s experience with the described relationship, is always capitalized which suggests the inner strength the singer has successfully found throughout the song. The soft green coloring signifies the lack of commitment to neither warm nor cool tones but rather a hue that could be interpreted freely. (see figure D)

FIGURE D: Detail of Last Verse from “I’ve Never Been So Alone. I’ve Never Been So Alive.”
VISUALIZING MUSIC

Once I had drawn the letterforms for each verse, I turned my attention to the musical, instrumentation aspect of the song. Just as music supports the lyrics found within the melody, I wanted the graphic elements of the music to serve as a backdrop to the letterforms. I approached the visualization of the abstract sounds of guitars, drums, cymbals and other instruments by keeping close to pure, simple geometric forms. The number of simple shapes was limited to prevent the viewer from becoming distracted by a busy background. I wanted the focus to remain on the typography.

The first part of the song is simply a picked acoustic guitar and slow-moving bass line. I utilized the simplest of geometric shapes first, the circle. By drawing varying sizes of the circles, an overall organic form was created which would sit behind the lyrics of the first verse. I chose cool blue tones to create a sense of visual calm as well as to mimic the soft sounds playing under the lyrics.

The second verse continues the sounds of the guitars as well as introducing the percussion of a ride cymbal. To visually represent this addition in instrumentation, I created a second organic shape consisting of more circles as well as hints of a line that wove in and out of the circular form. The colors of the circular shapes were changed to a warmer tone by mixing red and blue, which created an organic shape of various purples. The lines that run through the circles are stark red and orange. These colors serve as visual cues that suggest the music is gaining momentum and will soon change to warm, loud tones. (see figure A)

As the song transitions into the middle part, the theme of circles and lines continue by manifesting themselves into hypnotic circular forms. The circles become larger as a whole and the lines bend and swirl around the circles to create a spiraling, almost dizzying effect. The colors here are the same colors used later during the song’s climax, but are much more saturated with black, preparing the viewer for the climax of the song without creating visual competition between the two sections. (see figure B)

As the song approaches the energetic climax, the background is a solid yellow for several reasons. First, in order to provide visual rest the yellow background serves as a strong support for the overwhelmingly dense blue lettering and again, I did not want to distract the viewer from the typography. Second, the beginning and ending of the song have a deep, solid, dark blue hue, when the song is most calm. For the peak of the song, I chose a bright, solid yellow, which is the complementary color of blue. Finally, the yellow background and blue lettering are the direct opposite of the blue background and yellow lettering found within the first verse. This deliberate use of inverting the color scheme visually suggest the calm, peaceful mood created from the soft acoustic and smooth melody from the first verse, has been drastically transformed to its opposite at this point of the song.

The climax of the song embodies the song’s title: I’ve Never Been So Alone. I’ve Never Been So Alive. The shapes here resemble an interwoven pattern of wavy lines that mimic the two main geometric forms found throughout the song thus far. The line and the circle unify to become thick strokes mimicking the movement and chaos heard. The colors are varied and bright and instantly grab one’s visual attention when the piece is looked at as a whole. The busy shapes and bold coloring create a background that would imply the sounds represented here are busy and bold as well. (see figure C)

As the end of the song approaches, the loud, chaotic sounds subside and fade to reveal the familiar acoustic and bass guitar. The familiar organic shape created from various sized circles
is drawn to mimic the song’s beginning and to visually suggest that the end and the beginning of
the song sound the same. The colors are various shades of brown in that they are not warm nor
cool, but like the lyrics colored in green, the background is almost a neutral color suggesting bal-
ance and establishing the mood of independence and strength achieved by traveling through the
voyage of the song. (see figure D)

**METHOD**

The method I used to create the lyrics of this piece started with a pen and paper. I drew
out each individual letter for each word in the lyrics, considering the letterforms, baseline, bowls,
counters and phonetic spelling of sustained notes. I then positioned words into groups based on
when the singer took breaths or paused between phrases. I scanned the drawings into the com-
puter, erased any unwanted lines in Adobe Photoshop CS4, then placed the drawing in Adobe
Illustrator CS4. To maximize control over each letter and ensure line quality, I converted my
drawings using the built-in Live Trace feature. I created a customized setting of threshold and
corner fittings to preserve my drawing as best as possible.

Often, I was unhappy with the scanned results or saw various inconsistencies from letter
to letter. Even though the computer allowed flexibility and ease of manipulating each grouping of
letters, often times, I would print out the progress I had made and redraw letters by hand to better
suit my intentions. Once a section of the song was printed, I used tracing paper to copy the letters
I was pleased with and redraw the letters that needed adjustment.

While drawing the letterforms, I would either listen to the song as it looped or would sing
the melody to myself as I drew in order to ensure accuracy in considering the placement of each
letter and the phonetic spelling of each word. Once I had finished a verse, I would then play the
song in real time and revaluate all of my design decisions.

As far as successful execution of the lyrics, I knew that as the song reached its climax,
the letters would evolve in shape as well. Starting in lowercase, transitioning to all uppercase, be-
coming three-dimensional, and at the climax, appear to be coming off the page, and then resolve
to its original form of flat, unassuming formations. The only time I changed my method was in
creating the three-dimensional text that appears to be coming off the page during the song’s cli-
max.

I started the same way as the rest of the letters but discovered once drawings were pro-
cessed through Live Trace, they could have filters and effects applied to them. I transformed
the letters into true three dimensional shapes in Adobe Illustrator CS4, imported each letter into
Adobe Photoshop CS4 where I added gradients, inner and outer glows, strokes and other various
effects that created the illusion of the text literally coming off the page. (see figure E)

The method I used to create the background is similar to the way in which I created the letterforms themselves. I drew every circle and line with a pen on paper and then scanned in each piece separately. Using Adobe Photoshop CS4, I created large electronic documents that allowed me to reassemble the individual scans and create an overall background. I then placed each background image into Illustrator, used Live Trace to preserve image quality and achieve maximum control with editing. Finally, I placed the various groupings of text onto the background imagery and positioned the elements in a cohesive manner.

Combining the lyrics with the background graphics used to visualize the instruments created a large file that was then flattened and rasterized as it was brought into Adobe Photoshop CS4. Occasionally, the background elements could be seen through the lettering so I spent considerable time erasing extraneous markings. Once I had a black and white version of the drawing I began to apply the color.

The end result is a piece measuring forty-four inches tall and 310 inches wide. Due to its proportions, the viewer is required to start at one end of the piece and walk the length of the piece until the end. This sort of presentation provided the best representation regarding the narrative nature of music in that the static, visual piece that accompanied the song also had a beginning, middle and end. It was printed in full color on matte, paper in three separate sections and then tiled together. (see figure F)
FIGURE F: I've Never Been So Alone. I've Never Been So Alive.
PIECE #2: DEFINING RELATIONSHIPS

When I decided the body of my thesis work would be a visualization of sounds, I immediately thought of visualizing music, but then had the idea to create visual work based on ambient sounds, like traffic, a dog’s bark, or a room full of people talking. I decided since the catalyst of my show operated under the topic of relationships, a room full of conversation would lend itself to a more cohesive creative solution. I also wanted the two pieces in the final exhibition installation to relate not just in theme but in appearance. To do this, I utilized hand-drawn typography but in a slightly different way. In order to give this piece its own feel, I decided to create an animation to accompany the sound.

Since the first piece was my own personal account of relationships from my past, and spoke in a very intimate way, I wanted to direct the audience’s thoughts regarding relationships to a more external place. To do this, I started by creating a list of eight common relationships: Teacher/Student, Employee/Boss, Doctor/Patient, Mother/Child, With Yourself, Spiritual, Intimate and Purely Physical. I then gathered a few paragraphs of information about each relationship’s duality. My intent was to suggest new meanings that contrasted the popular opinions society has about these same relationships. I wanted to encourage the audience to consider different ways of thinking about common relationship arcs.

Several people were in my life and daily living each of these types of relationships in a very real way. I asked each individual to read his or her respective pre-selected text as well as write the text on blank, lineless paper. Not only did I want to maintain hand-rendered typography, I felt the best way to visually represent each human voice is by the same human’s natural handwriting.

The first paragraph, about the relationship between a teacher and student is as follows:

Children spend approximately 5-7 hours a day with a teacher for almost 10 months. We ask ourselves, ‘What is considered a good teacher?’ A teacher and student who have the qualities of good communication, respect in a classroom, and show genuine interest in teaching and learning will establish a positive relationship in the classroom.” It has been said, “Knowledge is the only thing you can give away and still keep for yourself.” A true teacher does not teach children how to think, but how to think for themselves.

With that said, consider this: People fall in love. It’s beyond the mind. That’s what makes Romeo and Juliet a great play. Here, our society thinks it has a shaping role to play in what otherwise could be a chapter in an anthology of great love affairs. How odd this romance is to the rest of us:

A suburban Seattle school district elementary school teacher, Mary, was 34, and the married mother of four children in 1996, when she and her sixth grade student, Vili, entered into a sexual relationship. She was arrested in 1997 when she was pregnant with their child and sentenced to six months in jail. A month later, she was pregnant with their second child. She served seven and a half years in prison for having sex with a minor. She was released from prison on August 4, 2004.

According to the sixth grader, “Mary didn’t take away my childhood, I gave it away by consent. I knew what I was getting into. She knew
what we were getting into. I don’t feel one bit in my entire body that she ever raped me. I don’t love her because she is 30 years old and she doesn’t love me because I’m 15 years old. We love each other for who we are.”

Read by an LSU student, this definition is considered taboo by society but states the profound connection of love that can be attained by anyone despite boundaries such as how they met or age.

The next paragraph, regarding the employee/boss relationships states:

A good boss provides and allows feedback. This boss also allows their employees to offer their opinions and highly values them. A good boss trusts that their employees are fully equipped to handle any job, yet remains available for assistance. (No need to micro-manage or leer over an employee’s shoulder.) An excellent boss does what needs to be done when no one else can or will do it. This is a multi-faceted role. Whether it be discipline, recruitment, or simply filling in or adding a helping hand, a good boss will do it.

Even though dependability is exhibited over time, it is essential in creating a great boss/employee relationship. Being easy to work with is key. Your boss needs to be able to guide and direct you in your work endeavors; after all, he’s your boss. Showing that you work well with others without distracting or causing conflict is highly desirable in any employee. The employee will have to be resourceful and improvise in the face of a dilemma.

A fellow co-worker defines the ideal way in which a boss and employee should relate to each other, suggesting one person is not more important or “above” the other, but that a successful relationship at work demands an equal distribution of accommodations and accomplishments.

The third paragraph describes a patient’s relationship with a doctor and what constitutes a doctor/patient relationship:

As defined by World Health Organization, health is a “state of complete physical, mental, and social well being, and not merely the absence of disease or infirmity.” Health is a dynamic condition resulting from a body’s constant adjustment and adaptation in response to stresses and changes in the environment for maintaining an inner equilibrium called homeostasis. It is the patient’s choice to seek out professional help when health is threatened. It is the responsibility of the professional to treat the absence of “good” health to achieve homeostasis.

A local nurse describes other associations applicable to defining a doctor/patient relationship. Perhaps medical professionals are not the only relationships needed in order to maintain a true sense of health.

Read by a woman at sixteen weeks pregnant, the relationship between a mother and child

38 Star Campus: Linking Young Minds Togeth. http://www.thedailystar.net/campus/2010/05/03/camspotlight_secret.htm


40 U.S. Food and Drug Administration. http://www.fda.gov/ohrms/dockets/ac/00/slides/3591s1a/tsl016.htm
can also be defined as a source of anxiety or fear as this next paragraph states:

During pregnancy week sixteen, your baby has grown strong enough to hold his head straighter. Your baby’s eyes and ears are moving into their final position and your baby is focusing much of her energy on her circulation system. By sixteen weeks pregnant your baby’s heart is pumping roughly twenty-five quarts of blood each day.41

Fear of childbirth is common among moms-to-be. Most women have concerns about coping with pain, childbirth-related injuries and the possibility of having a cesarean section. Some moms have additional concerns due to previous life experiences such as previous sexual assault, having undergone invasive fertility treatments, previous traumatic birth experience or pregnancy loss. New moms quickly realize that between caring for a baby, maintaining their relationship with their partner and, for some, working outside the home, one of the first things they lose is the carefree ability to pursue a wide range of interests and activities. For some moms, things that used to be interesting no longer hold appeal.42

The relationship with yourself is commonly neglected but extremely important. One aspect of your relationship with yourself is how you define yourself sexually. This paragraph simply defines various types of common sexual identities:

It has been stated “. . . heterosexuality consists of sexual behavior, practices, and identity predicated on exclusive preference or desire for the opposite sex. Heterosexuality, bisexuality and homosexuality, together, make up the heterosexual-homosexual continuum. Bisexuality is sexual behavior or an orientation involving physical and/or romantic attraction to both males and females. Individuals who lack sexual attraction to either sex are known as asexual. People who have a distinct but not exclusive preference for one sex over the other may also identify themselves as bisexual. Bisexuality does not require that a person be attracted equally to both sexes. Despite the belief that one cannot be bisexual unless equally attracted to both sexes, a person may have a distinct preference for one sex over the other and still be considered bisexual.”43

The above is voiced by an individual searching for an accurate way of defining a piece of her identity by considering the full range of sexual identities commonly used to label ourselves. The paragraph regarding the spiritual relationship is one I wrote many years ago as a form of personal therapy:

Am I forced to believe for fear of consequence? Is believing my only hope? Deny the truth, the real, to be saved? Is there a chance I will not face death by ignoring thought? Certainly will I die if I choose either way! Worldly offerings are real and the only evidence that truth exists.

In this truth, emptiness consumes the void and gluttons remain starved. Slowly, creeping in, my lust for real knowledge grows. Violently, I struggle to remain ignorant. Knowledge verses ignorance causes a storm of confusion, clearing the way for emptiness to grow. Fools willingly turn a deaf ear to rational myth. The fallen believe logic is stronger than myth. The saved ignore the truth of the world and gamble their entire lives on an after life. Sinking in a shrinking box, time fades along with certainty. Love is shown through acts alone, but leaves an absence of proof. Goodness is not enough! Love that is forced challenges a willingness to love. Denying love, for a peace of mind I’m forced to believe is hardly a way to live.

Before becoming a man of science, the voice heard reading this paragraph is from a man that studied for the priesthood and is redefining spiritual relationships as one that can feel forced and filled with uncertainty, instead of unquestioned faith.

The last two paragraphs are contradicting statements about relationships but still relevant to the confusing task of defining them. The first describes open relationships and polyamory despite the commonly held belief of monogamy:

An open relationship is defined as, “... a relationship in which the people involved agree that they want to be together, but in which romantic or sexual contact with additional people is accepted. Permitted. Tolerated. Some polyamorists believe it is meaningless to classify relationships as ‘open’ or ‘closed.’ Some relationships may be primarily a long-distance relationship where the couple still wants to be together, but one or both of them also wants to see other people. Some people occasionally use an open relationship to test their partner. The ‘open’ in ‘open relationship’ usually refers to the sexual aspect of a non-closed relationship, whereas ‘polyamory’ refers to the extension of a relationship by allowing bonds to form (which may be sexual or otherwise), as additional long term relationships.”

This text demonstrates the possibility of establishing a successful, meaningful relationship with multiple partners simultaneously. Despite common views of monogamy, perhaps intimate relationship can exist in many forms with many people.

Conversely, the final paragraph I chose to discuss were those based solely on physical attraction:

Human sexuality has many aspects. In biology, sexuality describes the reproductive mechanism as well as the basic biological drive that exists in all species and can encompass sexual intercourse and sexual contact in all its forms. There are also emotional and physical aspects of sexuality. These relate to the bond that exists between individuals, which may be expressed through profound feelings or emotions. Many of us confuse lust for love, which can end in tragedy. Just because your partner attracts you physically doesn’t mean they are relationship material. Safe sexual activity can be the benefit of a healthy relationship, however, when it’s the only reason you’re staying with someone,

it can ruin even the closest bond. The reason that purely physical attraction-based relationships fail, is for a variety of reasons. The first, is that after a while, even fantastic physical chemistry, can lead to complacency. A combination of boredom and lack of sexual tension, can result in a parting of the ways, unless both people are willing to explore ways to keep enough variety in their physical involvement, to maintain interest, by keeping it alive and fresh. Even still, the long-term feasibility of this kind of physically based relationship, is unlikely.45

Acting in rebellion to his strict upbringing, the reader here suggests embracing our natural state of complete sexual freedom will rarely result as creating healthy bonds necessary for successful long-term relationships.

Aside from the conceptual, personal statement I wanted to communicate regarding relationships, the technical and artistic part of this piece should also be discussed. Since I was creating a customized sound of a crowded room, I asked each person to read the text aloud into various recording devices. After recording the voices of the eight people reading their respective paragraphs, I used a program called Soundtrack to mix and edit their voices so they were all heard at the same basic volume. In order to do this, I had to utilize two tracks for every one voice and manipulate the volume in a stereo setting instead of the default, mono-output.

Furthermore, instead of trying to get all voices to end in real time simultaneously, I let the natural pacing of each individual’s reading play until the paragraph they read was heard once. The effect resulted in a natural sounding trailing off of individual voices. After each voice was individually recorded and mixed, I exported an overall mix that lasts a total of one minute, thirty-five seconds.

Once I had a customized audio track, I began to work on the visualization of the sound. First, I asked each individual to write on blank, line less paper, with a black pen. I told them to write down the words they spoke verbatim in their natural handwriting. Size, legibility and other factors did not matter in that they used their natural voices to record the words audibly, I wanted to capture their natural handwriting to record their words visually.

I then scanned each writing sample at a high resolution setting using a standard scanner and opened each electronic scan in Adobe Illustrator CS4. I converted each writing sample, using Live Trace, into vector-based imagery, which preserved line quality while ensuring retention of the unique characteristics found within each writing style. I used the pathfinder tool to create transparent backgrounds and delete all white space surrounding each letter as well as each letter’s enclosed spaces. Still using Adobe Illustrator CS4, I colored each block of copy based on the user’s favorite color. To maintain a sense of harmony, as well as allowing equal visual dominance to parallel the equal use of volume, I kept the color palette to a series of soft, pastel tones.

After preparing each writing sample in Adobe Illustrator CS4, I created the overall composition so each piece of text overlapped each other to create a canvas of seemingly random markings. Since I used each person’s voice twice in the recording process, I used each person’s writing sample twice as well. To minimize confusion, I simply mirrored the text and used the same color established for each individual.

Once each element was placed on the canvas appropriately, I saved several files. The first file I saved was void of color and the combination of all writing styles. This would serve as

the static image that consistently displayed on the gallery wall. The other files created were the colored version of each individual paragraph. (see figure G)

I knew I wanted the color to complement the sound in that the color would not be introduced until the sound was heard. To sync the audio with the visual element, I went back to the program I used to mix the audio, called Soundtrack, and listened to each paragraph individually. I listened for natural breaks in phrases and recorded the word spoken at various times counted by the program’s built-in timer. Since I was creating an animation at twenty-one frames per second, I could easily figure out where various keyframes needed to be inserted when I started animating the color. For example, if the individual said a particular word at twenty-three seconds, I knew the animation of color had to reveal the same written word at frame 483 since 21 frames x 23 seconds = 483.

Once the handwritten text was prepared in Adobe Illustrator CS4 and the audio cues were noted, I imported each Illustrator file into Adobe Flash CS4. Each colored Illustrator file was converted to a movie clip within Adobe Flash CS4 to allow maximum flexibility and ease of file handling. Line by line, a simple rectangular mask in combination with a motion tween was used to reveal the colors at the appropriate time to coincide with the audio. On the main timeline, a rendering of the overall composition was placed on the stage and locked in place. Then, an instance of each movie clip symbol was placed on the stage and positioned in the appropriate place to correspond with the overall composition.

After tedious consideration was given to the overall composition, as well as implementation of masking and smooth animation of the entire piece, I exported the flash file as a Quicktime movie. I then exported the mix of the customized audio track and imported both the Quicktime movie and audio track into Adobe After Effects. Here, careful alignment was given to the position of the animation and the audio track so when the piece was played back, the words ran in
perfect sync to the audio. Exporting an overall Quicktime movie resulted in the finished product. The final piece was displayed on a wall with a common projector and a surround sound stereo system. (see figure H)

FIGURE H: Screen Shot from “Defining Relationships”
CONCLUSION

Synesthesia is a naturally occurring phenomenon that everyone experiences to some degree throughout their lives. Emotional responses to visual and audible stimuli elicit powerful reactions. As it has been scientifically proven, combined, these reactions can reach even greater heights. The work created, based from these facts, suggest a stimulation of multiple senses can be applied to the artistic world and not just through learned behavior or information retention.

The use of typography and color, both essential to creating successful graphic design, can be harnessed and presented in such a way to evoke these powerful, lasting emotional responses. *Sensing Synesthesia* does not create an *authentic* synesthesiac experience, but it does suggest that the simultaneous appeal of the senses will create a stronger experience for an audience and take them to a place within themselves they could not otherwise reach.
VITA

Jeffrey Johnson was born in Nashville, Tennessee, to Michael and Terrie Johnson. Spending his childhood in Pine Bluff, Arkansas, Jeffrey was first introduced to music at a young age. After moving to Clinton, Mississippi, as a teenager, Jeffrey continued to study music and became proficient playing many instruments. While earning his bachelor’s degree from Delta State University in Cleveland, Mississippi, Jeffrey began taking art classes. Once he was introduced to art, he was immediately drawn to the graphic design field. The many aspects of graphic design were intriguing, but not consuming, which allowed him to continue his passion for music. After graduating from Delta State University, Jeffrey began to work as a professional designer for an architectural firm. Two years later, he decided to move to Louisiana to earn his Master of Fine Arts degree.