Abstract: Our knowledge of the world comes to us through sensory channels. We sense light or dark; hot or cold; and pleasure or pain. This is how we understand and interpret our environment. From birth we learn what these sensory experiences mean and how society expects us to respond to them. This sensory language is highly contextual and inherently dynamic. However, the traditional methods of visual and verbal communication are often very specific and concrete. It is when we combine sensory language, visual language, and verbal language that we can create unique Kansei experiences. Designers are taught how to create visual and verbal messages, however, little if any time is spent teaching them to create sensory messages. Sensory language can utilize internal and external human senses such as vestibular movement, proprioception, the auditory system, or the olfactory system of the human body. As technology allows us to create more elaborate user experiences, a lack of attention to what a user senses may result in unintended or contradictory messages between the sensory channels of the body and the traditional channels of visual and verbal communication. As such, human senses are an important way of communicating the concepts of Kansei. Design students can learn to include Kansei concepts in their work by introducing them to theories of sensory integration, learning styles, and brain-based intelligences. The integration of these concepts into a traditional design studio will be discussed along with specific student examples from such a course.

Key words: Design Education, Kansei, Sensory Communication

1. Introduction

Communication serves many roles. It is integral to our work and our play. We seek out information and we indulge ourselves in the communication process. We live vicariously through our communications and we use it to build communities. Even the words communication and community share a common root in the English language. The truth is that we take pleasure in our communications and we seek out those communication experiences that best fulfill our needs. If some communication experiences are better than others, then it seems reasonable that we should be able to identify what elements make the experience strong. How then can we teach students to design communications that fulfill human needs?

2. Teaching Kansei

Traditional design education gives students a background in visual communication. The emphasis is usually on conceptual and formal design principles. And true to Shannon’s theory of communication, where a message is encoded and decoded as part of a communication process, it is important to know the target audience. And while this theory has merit, it does not always consider all of the channels of communication; nor, the simultaneity of multi-sensory communication. It is this richly layered, multi-sensory communication that speaks to the idea of communication as an experience. This experience is best described by the Japanese concept of Kansei. Lee,
Harada, and Stappers define Kansei as the structure of emotions that exist beneath human behaviors. It is described as being sensitive, feeling, aesthetics, emotion, affection, and intuition. Kansei has the ability to create a variety of feelings based on individualized emotions experienced by the target audience [1].

2.1 Sensory Systems

The kansei experience in communication comes from sensory information. Our sensory systems are the input channels to our cognitive processes. They are the filters through which we gain information about our environment. Our senses determine what we think and how we go about our lives. Therefore, it is important to understand the human sensory system. According to Robert Sylwester, author of A Celebration of Neurons: An Educator’s Guide to the Human Brain, because we walk upright with our heads held high off of the ground, our sense of smell is far less sophisticated than that of an animal such as a dog, whose nose is located near the ground where the relatively heavy scent molecules reside. However, as one sense is less acute, another is more so, thus accounting for the enhanced visual cortex in humans which occupies approximately one third of our brain mass. These adaptive features of our sensory system tell a story of who we are physically and cognitively [2].

Our senses can be divided into two major categories: external—such as the widely recognized five senses of sight, sound, taste, smell, and touch and internal—such as the somatosensory system. The internal and external senses take in information in a variety of ways. Maya Pines, in a report from the Howard Hughes Medical Institute, says that what draws our attention is change. We notice those things that change in position, size, volume or other distinguishable properties. She notes that the changing things become what we focus on and the unchanging elements become part of our background [3].

Each of our senses is capable of providing unique information. Vision allows us to glean information at a distance and can discern color, motion and position. Sound, by comparison, is more all encompassing. It does not rely on the presence of light or an unobstructed view. We can hear something around a corner or even while we sleep. According to Sylwester, the ears are our 24-hour monitoring system. Sound can deliver general information about culture, emotion, age, social status, and verbal information. The skin as a sensory organ can tell us about temperature, texture and comfort. Smell and taste are closely related in their ability to communicate about food. Other smells tell us about the age or condition of an object; is it dead or alive and how long has it been this way. While not related to smell, the nose also has the ability to receive information through pheromones released into the air by the skin. Pheromones regulate sexual behavior patterns in many species [4].

The internal somatosensory system tells us where our body is in space, how it is moving and how it is responding to external forces. The information from this system was typically included under the category of ‘touch’. It also includes proprioception, or body position, information. These internal sensations come from muscles, movements, joint positions, pressure, temperature, or areas of pain. It gives us information about situations such as a vestibular experience on an amusement park ride or the responsiveness of the keyboard we are using [5]. All of these sensory inputs combine to form a total communication experience. How we interpret or react to these experiences determines whether we form a positive or negative feeling about a particular situation.

2.2 Teaching the Sensory Systems

In teaching students how to create sensory experiences, it is important to first help them understand how we receive information. Introducing concepts about sensory systems and sensory integration is very important. In a graduate level course on Sensory Communication, students are asked to evaluate a series of children’s toys as an experiential way to learn about multi-sensory communication. Because toys are very tactile and often involve
many sensory channels, they provide a good opportunity for the evaluation of sensory information. As a learning experience, students are asked to classify various aspects of the toy. They are given the chance to interact with a toy and then describe its interface in a variety of ways such as formal design principles, verbal information, auditory information, and the tactile quality of the interface. It is important that the students feel comfortable with the device. Because they invite participation and exploration, toys are a good choice. They are also less intimidating than many devices designed for adults.

Because sensory information is processed in a variety of ways, it is important to help students understand how these systems work and how they vary from person to person. As a way of understanding these differences, students are required to read “Thinking in Pictures: And Other Reports From my Life with Autism” by Temple Grandin. In this book Grandin, a woman with Autism and a professor at Colorado State University, describes the differences in how she processes information visually as compared to the typical person who processes information verbally. In discussing the specific situation of Temple Grandin, students are asked to examine the changing physical and sensory needs of other types of people such as children, the elderly, or those with disabilities. They are given the opportunity to relate their own tactile or sensory likes and dislikes. By providing students with both general and specific situations to address, they are given the opportunity to reflect on their own sensory needs and compare them to those of others. This relates to directly to Kansei. Lee et al. noted that Kansei requires a human centered approach. It also implies that human behaviors can change thus making flexible and dynamic designs a necessity [6].

2.3 Emotion

According to Robert Sylwester, our brains are programmed to react first and contemplate second. This is the instinct that kept early humans from harm. Things that had a particular sensory association such as quick movements or shiny reflections might indicate the presence of a predator. It is this scenario that caused our brains to process via the emotional channels first. Emotion, says Sylwester, is often a more powerful determinant of our behavior than our brain’s logical/rational processes [7].

Because the first reaction to a sensory input is emotion driven, a student needs to craft a sensory experience to create the correct emotional response. This response sets the tone for the rest of the visual and verbal communication. In movies or theatrical performances this mood is often set through music. This is readily apparent if you view a movie without the sound. The emotional tone is often completely lost in the absence of sound and the movie may in fact become absurd. Sound is a good candidate for setting the emotional tone. Sound, unlike visual information, is not dependent totally on location. It fills a space, it has directional properties, it can reinforce visual events, and it is able to convey information. Sound can be used to communicate fear, love, or hate. It can convey urgency, like the sound of a police siren, or give a sense of place, such as the ambient sounds of a basketball game.

Emotion driven thoughts tend to capture attention. They create focus on that particular emotion or event in a way that is absent from non-emotion related thoughts. This can be used to give a sense of relevance to the message. It has also been observed that memories that have an emotion associated with them are easier for people to recall later [8]. Not only do we have an increased ability to recall emotion related information, we prefer it. Joseph LeDoux, in The Emotional Brain, discusses the exposure effect. If a viewer has previously seen an object or pattern, even subliminally, research has shown a decided preference for that object or pattern over a novel item [9]. This has many implications for the designer or communicator with regard to eliciting a positive response to a message through repeated exposures.
Sensory communication comes from integrating the input of all of the sensory systems. Because sensory input varies greatly, the relative importance of each sense varies with the context of the situation. Visual information, for instance, can be divided into categories such as shape, color, or the perception of motion. According to Robert Sylwester, the visual system of the brain is designed to focus primarily on movement and contrast [10]. Our perception of color, for example, is dependent on its relationship to other colors. Geoffrey Montgomery, in a report from the Howard Hughes Medical Institute, notes that sensing color involves making comparisons. Our perception is determined by a comparison of the wavelengths reflected from an object and its surroundings. Certain lighting situations will cast a certain wavelength over everything but our brain just corrects the images [11]. As part of visual communication, color can be used to convey feelings, emotions, and ideas. Certain communication aspects such as the memorability of color are universal. However, the specific message of color is highly dependent on the culture and experiences of the viewer.

Antonio Demasio, author of Looking for Spinoza: Joy, Sorrow, and the Feeling Brain, says the relationship of the body and mind can be detected in metaphors developed by our cognitive systems. The metaphors are created by our imaginations based on the typical experiences and activities of the human body such as postures, attitudes, direction of movement, or feelings. This allows feelings to be associated with words or gestures. He cites examples such as the concepts of health, happiness, life, and goodness become associated with the word “up” or an upward gesture. Similar associations can be made with negative concepts such as death, illness, or evil and the word “down” [12]. Through sensory associations, communication can be enriched and enlivened. Feelings can be shown with words or images because of these associations. This important relationship between visual imagery and sensory information is integral to the visual and emotional nature of Kansei. It demonstrates the brain’s visual and metaphoric tendencies and gives insight into the complex reasons behind the emotional draw of visual information.

3. Teaching Learning Styles

Howard Gardner, in his book, Frames of Mind: The Theory of Multiple Intelligences, breaks down human prowess into a series of “intelligences.” In defining what constitutes an intelligence, Gardner looked for the existence of prodigies or the isolated loss of capacity due to brain damage to serve as evidence of an area of human intelligence. Two of these intelligences, linguistic and spatial, are particularly relevant to communication. Individuals who develop a high level of linguistic mastery consider far more than the semantics of language when using their skills. In the case of the poet, words are imagery, sounds, and rhythms. Words are phrased to create sensory experiences akin to music or painting [13]. Spatial thinking, by comparison, is based on a person’s ability to perceive visual information. Spatial prowess can take the form of the ability to perform spatial transformations or the ability to recreate aspects of a visual experience [14]. Because spatial and linguistic information is often processed through the visual channel, the two types of information are able to interact. According to Robert Sylwester, our brain works on the basis of parallel processing. A multitude of conscious and subconscious thoughts and actions occur at the same time. During this process, all sorts of interconnections and feedback loops process the information and bring everything together into cohesion [15]. It is this process of synthesis that allows the designer to define or create meaning through the control of symbol systems and sensory information.

In order to better understand the impact of learning styles on how individuals acquire and process information, students are each given a learning styles assessment. They evaluate themselves on visual, verbal and kinesthetic learning processes. This assessment is then accompanied by reading material describing the strengths and assets of each
type of learner in addition to what situations are not conducive to that learner. Through this process, students discover that most people learn through more than one method. Based on this information, students are expected to address the issue of learning styles in each design solution that they create. They are expected to utilize at least two learning styles and present information to their target audience through multiple channels when possible.

4. Visual and Verbal Integration

Humans communicate through symbol systems. Paul Rand says, in his book, *Paul Rand: A Designer’s Art*, “It is in symbolic, visual terms that the designer ultimately realizes his perceptions and experiences; and it is in a world of symbols that man lives. The symbol is thus the common language between the artist and the spectator” [16]. Verbal language, mathematics, visual arts, gestures and other sensory processes are all systems capable of conveying thoughts or ideas from one person to another. According to Howard Gardner, the cognition and deployment of these symbol systems are much of what makes humans distinctive. The three most important symbol systems for human survival and productivity are verbal language, visual imagery and mathematics. Gardner identified prowess in each of these areas an intelligence. Interestingly, Gardner notes that no intelligence is completely dependent upon a single sensory system, nor is any sensory system in itself an intelligence [17].

4.1 Verbal Information

Students are encouraged to pursue a resonance between their visual and verbal messages. The integration of verbal information adds clarity to a sensory message. It combines with the emotional and cognitive information taken in by the senses and gives it specificity. Verbal or language based information can provide factual details or elaborations. It may be possible to communicate the concept of dinner time through the use of scent but it is more challenging to communicate the concept of a 2:00 p.m. board meeting via the olfactory channel. However, it can be argued that verbal and sensory communication when presented in tandem, are more effective than either one in isolation.

Language based information can be transmitted through visual, auditory or even tactile channels. The channel used to carry the language will also add to the message. An auditory channel will add additional information about the speaker such as gender, age, social position, emotional overtones, and credibility. Dorita Berger notes that the rhythmic nature of sound can encourage attention and interest. The appeal of popular music may in fact be its use of repetition. She also notes that tempo, or the speed of pulsation in music, determines how attuned the brain will be relative to the sound. Tempo can also be used to elicit emotional and physiological responses. For example, a tempo equal to that of a normal heartbeat can actually be used to slow down a fast heartbeat in a listener [18].

4.2 Sensory Richness

Sensory messages can set the tone for visual and verbal communication. They also have the potential to disrupt the message. It is the responsibility of the communicator to carefully craft a sensory message that supports and enhances total communication. Sensory richness also needs to take full advantage of the brain’s ability to parallel process sensory information. Using multiple channels for sensory information in addition to verbal information gives the communicator the opportunity to create a multifaceted message with room for specificity and interpretation. It invites viewer participation in the decoding of a more elaborate message. It holds the potential of creating a more memorable message by giving the viewer an active role in the information process.

4.3 Resonance

People are unique and complex in how they think and how they communicate. Howard Gardner points out that life consists of more than one area of intelligence and they are not related in a zero sum situation. Some individuals or
cultures will emphasize one area while others may emphasize the acquisition of many areas [19]. This opens up the possibility for poets and artists to coexist, perhaps even in the same person. We need to tell our stories. The intermingling of communication systems and sensory information creates a synthesis of form and content that appeals and challenges the viewer. When the visual, verbal and sensory messages all come together with a common purpose they create an informational resonance. Students need to understand that resonance may come from formal or conceptual unity or from a combination of elements that create a sense of variety within a structure of harmony. Resonance reinforces communication.

5. Conclusion

As we teach students to communicate through identity design, corporate branding, multimedia design, experience design, and environmental design, it is becoming increasingly more important that we teach them how to communicate with sensory information. By teaching students methods to control and tailor messages using visual, verbal, and sensory information they can create more empowering messages that speak to the Kansei concept of individualized emotions. By incorporating Kansei into design methodology, emotional and functional considerations can come together into a more meaningful and satisfying solution. This combination more closely mirrors the nature of human thought. It allows designers and users to create things that satisfy more than just the physical requirements. By taking design to this higher level, we can begin to examine what it is that creates pleasure in a product beyond basic usability or resigned tolerance.

References

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