NOISCAPE: THE INTERCONNECTION OF SOUND AND VISUAL: INSTALLATION PROJECT FOR THE HEARING IMPAIRED

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Research Background

There are many ways to observe (in order to understand) our daily lives containing daily activities, which most have been preconditioned and predetermined, presumably in an utmost complicated way, specifically invented to be inexplicable to our rationalities. Quest of something that cannot be neither questioned nor answered. Action taking, decision making: are we being urged to fulfill certain fundamental requirement to pursue future accomplishments or living purposes that we are uncertain of? These are queries, doubts that request information and encourage us to prolong an endless journey to seek what has not been untied. However, let us go back to the question again, how do we observe our day-to-day living: through our sensory system, through data construction and logical calculation made possible by mental faculty? Observation, looking, seeing and experiencing visual imageries are daily activities we normally affirm conclusively that the visual sense is the only mechanism that produces visual experiences. How far is the truth? Do we have other reliable sense that we could obtain similar quality of visual data about our physical world?

Despite from above provocative proclamation, the very nature of this research is to make a clear-cut investigation to unpack doubts such as those mentioned above. The objective of this research is to find a secondary channel to enhance visual experience. This proposition is an attempt to maintain visualization activity in a relatively unique manner. This unconventional way of establishing visual experience is rather compulsive than the traditionally inherited method of visualizing using visual senses (the eye). What I am suggesting here is to reestablish and to shift visualizing practicality to hearing senses observation. I practice my observation through sound. As a sound visualizer, I look intuitively at the vast community of sound in my daily surrounding, which provides abundant measuring data. Through sound, interpretation is made through processing of collected data in an audio format sample. Then, this process of mechanical production is realized through technically engineered process of transmission.

Noiscape: Project for the Deaf

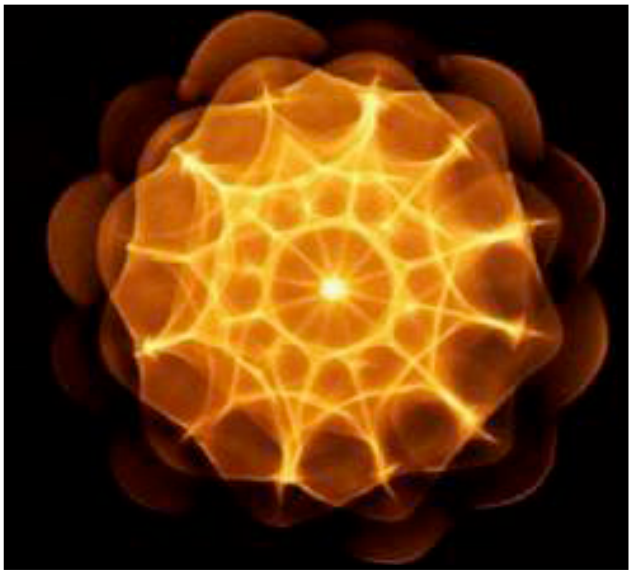
The research has lead to further investigation on related topics of interest, which will cover topics on hard of hearing/deaf/technology for hearing impaired people. The objective is to design a sound/noise simulator for the hearing impaired people to experience/feel the beauty of sound. This computational mechanism is hoped to provide new possibilities for the deaf to appreciate and enjoy sound like normal people. Hard of hearing is considered as one of the commonly experienced communication disorders. People experience this inability is partially or completely lacking in the sense of hearing. People with hearing interference disable to process any kind of information through hearing. Deafness may also be viewed as a condition, which prevents a person from receiving sound in any kind of forms. This has to be taken into concern because hearing sense is an important information receiver that process inputs from our surroundings.

Hearing impairment symptom has long been living among us. It affects individuals of all ages and cultures. It happens at any time, from the early stage of infancy to the old age. Most of deaf people are trained under a special education system in order to receive an adequate education and knowledge. They are taught in various range of approaches; sign language, auditory training and usage of amplification systems and hearing aid to enhance linguistic stimuli. These has been the traditional methods to help the deaf to obtain communication

ability. However, reports received from the local School of Special Training stated that hearing-impaired children are more sensitive to and stimulated by visual imageries in order to collect information. Case sample has provided evidence that deaf children take shorter time to familiarize sound through pattern and colour reading. This has proved that they are visual dependent. Thus, early assumption has been made to suggest new proposition to substantialize this community-based art project to help the deaf. Colours and visual imageries are used to attract visual sense in order to build perception, subsequently construct meaning of the perceived object. This has made a clear cut discovery that visible and visual communication mode can help to reduce communication delay. The research is not only outlining matters pertaining to communication ability but also the activity of perceiving and defining things through perceptions.

How does a pattern of image or an intensity of a specific colour hue related to sound? The relationship could be realized through the process of re-formation and transformation of format of different entities. Technically, sound is measured by the intensity of loudness that transcends into a form of wave- free form organic linear patterns. The polarity of this pattern shares similar form of value with colour and designed shape. Sound measurement is calculated in units called dB (decibels) and Hz (frequency-hertz), which often associated with the study of speed of sound (sonic wave). Sound measurement technique has simultaneously lead the investigation to a wider scope of sound wave study – Cymatics.

Cymatics is often associated with the physical patterns produced through the interaction of sound waves in a medium. Cymatics system was used collaboratively by previous scientists, audiologists and visual artists to investigate visual sound phenomena. Devices and methods invented such as standing waves and piezoelectric amplifiers were used to capture visual display of a sound. Experimentation were made to demonstrate the visualization of sound through cymatics approach by sprinkling sand on a metal/tin plate and simultaneously vibrates the plate and draws wave patterns in the like of bounced atomic particles. Another experiment showed a form of a 3-dimensional star resulted from fine particles-contained water droplet into a container. Different speed produces multiple range of size of the star pattern on the surface of the water. The higher frequency, the more complex the shapes produced. Through the years, studies and profound discoveries have been made to unlock the mystery of visual sound phenomena. Researchers claimed that vibration is the core component that could significantly extent the possibilities of joining both senses to create a device to visualize sound. Cymatics was not the only research that proposed the idea of the association of two or more senses. Vibrations and moving patterns are result from past research done in cymatics studies that suggest the transmission of information through visual and motion. However, cymatics itself is insufficiently lack of explanation on how does the unification of senses work simultaneously. Another relatively significant research has been done to interpret the principle and working system of unified senses, known as Synaesthesia.



Sample of physical patterns of crop circle shape produced through the interaction of sound waves in cymatics study

Connecting Sound and Vision through Synaesthesia

The fundamental idea that navigates the research came from my curiosity mind intrigued by inquisitive thoughts. I see this uniquely interconnected

relationship of senses, scientifically claimed as The Union Of Senses or Synaesthesia, as a part of the whole interesting web of system in human mind. Viewing these psychological phenomena of color-sound-image correspondence as a sub-component of a larger constructive ecosystem in human mind has invited queries that question the nature of our sensory system working process. How does a person have the capacity to feel two or more sensory experiences or impulses that stimulate his/her sensory-modalities simultaneously (experiencing a cross-modal association)?

The working system of a synaesthetic experience diversified in accordance with the condition of two major categories of synaesthesia. Two-Sensory (the crossing of two senses) is the commonly experienced and rarely found Multi-Sensory (the crossing of three or more senses) fits in the second category. In despite of these variations, every individual`s form of synesthesia is indisputably unique. The translation of sounds to colors is the most studied form of synesthesia. Unlike other sensory modalities, vision is considered to be the most actively responsive modality. With the combination of vision modality and sense of touch, the illusion of tangibility created in the mind instantaneously conveys a holistic experience of physical reality. Within the condition of this tactual experience, a person could actually generate and digest transmitted data from the sound into the brain to interpret meaning without even listening to the sound. Through some form of mechanical device that produces motion colours and patterns and vibrations, listener/seer could achieve an equal bodily experience to normal sensuous experience. Synaestheic phenomenon could be translatable into a working system, which would affirmatively be applicable to hearing impairment symptom that will help deaf people to feel the sensation of sound. The development of such device is still in its infancy. Theoretically, synaesthesia phenomenon could be used as a platform in research to unlock new possibilities for the hearing impaired, where unified senses of visual and tactile that work cooperatively will help them to retrieve the sense of audibility of sound. The research to develop such hearing aid device should undergo the principle of the synaesthetic process. The elementary procedure of senses working system through the view of synaesthesia is exemplified in the diagram below.

The Idea

So much for the explanation on scientific implications, let us uncover the subject of idea of this research.

I use sound samples collected from my daily surrounding, sounds that are familiar to us, noises in the street, noises produced by vehicles, human and other inhabitant, living, crawling and adjusting their lives in a congested urban metrocity: atmospheric sound of natural habitat such as wind blows, birds whistling and so forth. These later to be altered sound samples are translated into moving colour patterns(using cymatics sound wave spirals and other related 3D animated forms) projected from an MP(multimedia projector) onto the wall in an enclosed space. These motion patterns move accordingly to the rhythm of the pre-recorded sound can also be viewed from a monitor screen. The sound/music becomes motion sensor that trigger and control the movement of the cymatics wave of colours and shapes. Impulse cables (electrical chord-like cable), which are connected from sound wave vibrator are patched on palm and skin of the participant’s both hands. This is hoped to produce vibrations that they can relate to the motion patterns on the screen/monitor. Tactilty of the vibration replicates the same rhythm of the sound. Even when the sound is unheard, participant can still be able to feel the moving pattern of the sound by emotionally connecting visual and tactile sensation to the beat. Sonic resonance resulted from vibrations.

Participant is required to be in his/her utmost meditative state of silence in order to obtain and achieve highest quality of sound observation. Through this multi-sensory experience, h/she will be driven by questions (later to be interpreted by his/her own rationale) that will redefine his/her sense of belonging, the physical presence and fixed/predetermined perceptions on the physical realm h/she inhabits. Fragmentary of images or emotions yielded by these visual and audio samples

of daily noises will be effectuated by his/her (participant) own interpretation, when h/she is thoroughly involved in the nature of sound sensory experience.

Unlike hearing, seeing sound requires interpretation made by the eyes and touch, functioning as the third ear. This is how participant will relocate the relationship between his/her personal experience of daily lives and his/her own individual interpretation of the noises felt/seen! Sometimes it is senseless and sometimes it makes them feel that there is more than what they have achieved in the physical reality. The sound wave simulation will intrigue their consciousness, simultaneously simulates an altered universe of acoustical landscape of sound and noise where they will spiritually travel through it. This superimposed artificial creation will drag their emotions and logical senses and beliefs in the sea of sound that they are imagining/interpreting. The sound produced in the mind is resulted from simulated sound wave cymatics pattern and vibration stimulator.

Endnotes

The experimentation on sound and image (visual sound) is hoped to create potential possibilities in extending and expanding visual culture issues.

Some people hear specific rhythm of sound when sees an object or image Some of them feel like they are being virtually teleported to another acoustical dimension, traveling through a remote and uninhabited and undiscovered continent of soundscape. What do you hear/see?

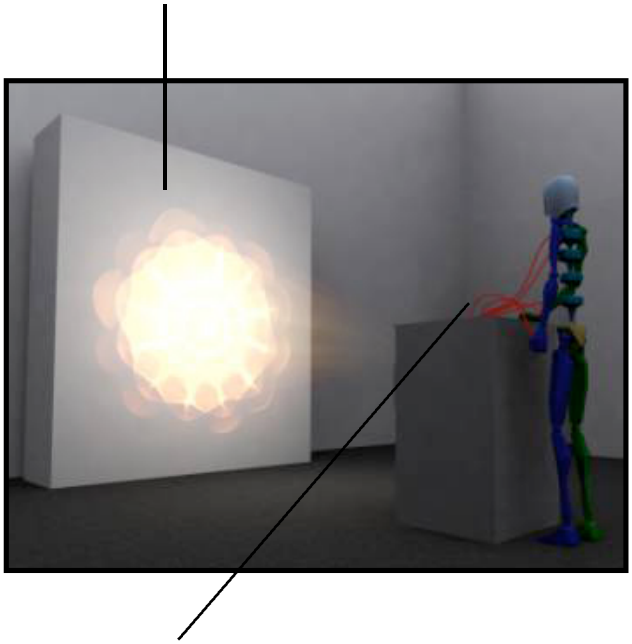
Referrences

1. The Individuals with Disabilities Education Act (IDEA), formerly the Education of the Handicapped Act (P.L. 94-142),

2. Cymatics- The Study on Sound Wave was primarily introduced by the Swiss born researcher Hans Jenny (1904 - 1972). It is derived from Greek words kyma (wave), and ta kymatica (matters regarding to waves)

3. Synaesthesia: Phenomenology and Neuropsychology. A Review of Current Knowledge by Richard E Cytowic neuroman@glib.org

Sound Wave Simulator; simulates cymantics wave patterns translated from the sound speed and rhythm. Cymatics spiral visualizes melody of the musical keynotes.



Impulse Cables; which are connected from sound wave vibrator are patched on participant`s both palms and hands. Vibrations stimulate tactile experience.