

Sound Design in New Media Public Art

Li Yang

Xi'an Academy of Fine Arts, Xi'an, China

Keywords: Sound, experience, presentation, new media public art, sound design

Abstract: Human beings have a long history of using and studying sound. In ancient times, people used sound for religious ceremonies to achieve the purpose of fascination and awe; they used sound for cultural, entertainment and political acts. In the Book of Rites - The Record of Music, it is written, "The music of the man is also music, and human feelings cannot be avoided." It can be seen that as early as the pre-Qin Dynasty, our wise ancestors have discovered the inseparable relationship between sound and politics and society. In today's networked economy, new media public art is booming, and people are paying more attention to the sense of experience, interactive experience, shopping experience, and art experience. This makes our connection with sound become closer. This paper focuses on the experience and presentation of sound in new media public art. Sound design is also a product of the information age. In today's visual explosion, people who seem to be close to each other are actually more detached, and we need sound to create more trust and connection with each other.

1. Introduction

This paper studies public art in new media art, because sound design or sound scene construction is almost the same as the indispensable elements of new media public art works, i.e., electronic technology equipment, public environment, and audience experience interaction. We can understand in this way that new media public art is the best carrier for the presentation of sound diversity, and that sound is the fastest tool for the dissemination of new media public art and its connection with the audience. What we can explore is not only how to make the sound become figurative, but also experiment how to make the figurative environment or picture become abstract through sound, and even change the meaning of the space. The change is amazing. The distance between the audience and the artist also becomes closer and has a solid trust with a sound connection.

2. New Media Public Art

2.1 The Concept and Generation of New Media Art

New media art is the most current type of artistic expression in the network era, it is the new harmonious space found by human beings between artistic sensibility and scientific and technological rationality, it is the cultural creative behavior of the collision between modern technology and artistic concepts, and it is a completely different way to re-perceive the world and

explore art with traditional art.^[1] It uses video, image, photography, comprehensive modeling, installation, performance and other ways as the art carrier to play science and technology, aesthetics, music, psychology, life science and other multi-disciplinary expertise. As a kind of art with wide coverage and strong integration, new media art absorbs the strengths of a hundred schools of thought, and has more powerful narrative expressive power and experiential infectious power. In comparison, the expression of new media art is more diversified and easier to disseminate, store, and reproduce. The main research object of this paper is the public art works in new media art, that is, new media art works that can be created with any electronic technology media and placed in public space and open to the public.

2.2 Cognitive Models of New Media Public Art

Several of the biggest characteristic differences between new media public art and traditional art are technological and interactive as well as the all-round perceptual way of experience brought by interactivity. It is a high-tech art product of the Internet era, relying on the development of electronic media, capable of presenting ultra-temporal and supernatural perceptual images, audio, and status, and interacting with the audience through the artist's skillful application of professional electronic equipment.^[2]

Among the five human senses, hearing and vision can be said to complement each other, the sense of hearing originates from the stimulation of sound, people can see choose not to see, touch choose not to touch, smell choose not to smell, taste choose not to taste, but can not choose to actively shut down the sense of hearing, the sound input from the auditory cortex of your brain to the hippocampus and the amygdala, the rest of the brain that controls the emotions and memories. Sound is the most effective form of input, and the response to sound is a direct expression of perceptual experience, which is essential not only for the arts but also for our everyday lives. Sound constructs every moment of our lives, kneading our memories, emotions and perceptions, all of which are intangible. If hearing is passive, then listening to sound is an active behavior of the brain. The auditory system receives a constant flow of sound information, and hearing sounds uses the brain's filtering ability to categorize, extract, and connect with the brain's memories and personal experiences in a focused way, and then finally react to the sound. Our two ears allow us to perceive stereo sound, helping us to perceive distance, spatial relationships, and where we are in the world. "Our ability to hear sound is multilayered, which means that we can gather information through a number of different mental and perceptual perspectives."^[3]

Extracting the correct information about the source of the sound. This helps us to perceive the size of the space, the environment or object, and the source of the sound on a conscious level. Sound can be synchronized with vision or it can come from outside of vision. We often use sound (not just speech) as a channel of connection, as if the next action or visualization might be to open or not open the door because the doorbell rings. Semantic mode listening refers to listening to the defense of speech-like sounds, such as human speech, animal speech, and computer speech. The combination of semantic listening patterns and causal patterns allows us to get more information from them and organize them to come up with more specific descriptive information. The referential mode is the effectual listening that is used to show emotions or express the purpose of the work. Most of this experience is unavoidable to the viewer, and even noise can and is a major source of cognitive information for the viewer.

3. The "Language" of Sound in the Auditory Experience "

3.1 Properties and physical effects of sound

The world is a product of the interactions that occur between the energies of the universe. It may begin with the collision of distant galaxies, with rain falling on the ground, with the sound of human activity. "All of these movements vibrate and dynamically seek equilibrium, where the vibrations generate energy that causes the moving molecules of the air to vibrate again at a certain frequency and loudness, thus enabling us to perceive sound and acquire information in an instant. For example, frictional vibrations between air molecules and solids enable us to hear whistling and woodwind instrument sounds; liquid vibrations produce gurgling, gurgling, the sound of bubbles bursting in water, splashing sounds, etc."

Rhythm is the temporal character of sound, such as the swinging sound of a metronome, the running sound of an hour hand, or the barking of an animal. Rhythmic sounds, predictable and orderly, can bring the viewer a sense of tranquility, rigor and security. No rhythmic sound will bring anxiety and doubt; the size of the sound can be received by the human ear or not, absolute silence is almost no state or can not be achieved, because the operation of any auditory organs itself with the noise.^[4] The intensity of sound can also be called the energy of sound, we can often see the monster roar in the movie to bring a strong sense of shock and destructive performance, as well as the classic martial arts novels described in the lion's roar kung fu, the protagonist by roaring loudly!

Produces extremely strong energy. There are many artists who visualize and visualize sound through the vibrations produced by a certain amount of sound energy. As shown in Figure 1, different decibels of sound vibrate different objects to form different images.



Figure 1: Artists place rice grains on the sound box to form different patterns.

3.2 Non-verbal sounds in the voice

From ancient times to the present, people have used sound for security information, activities, hunting, playfulness, expressing love, and conducting military operations. Through sound, we are able to explore all areas of life, and visual media has risen rapidly because of sound, with movies and videos becoming the product of almost everyone's fascination. People, both ancient and modern, still use sound to evoke mystery, create ambience, and interact with emotions when describing events. In terms of our perception and understanding, sound is very abstract and complex. Except for special people with physical or mental disabilities, normal people's auditory and visual perception and experience are compatible with each other. We simply divide sound into two categories, one is non-verbal sound and the other is verbal sound.^[5]

Non-verbal sounds are sounds other than human speech. Such as music, nature sounds, noise, etc. Through the history of music, we can learn about its powerful ability to convey emotions and activate memories and generate feelings. Different types of music, and types of instruments trigger different responses, and understanding the structure of music helps us explore the true intent of a work of art. The basic elements of music: tune, harmony, intensity, silence and contrast can also be applied to the sound design of new media public artworks.

The cultural anthropologist Claude Lévi-Strauss has said that "music replaces experience and can produce pleasurable fantasies of eliminating conflicts and resolving difficulties." According to the classical analytical theory of psychology, when humans are still in the womb, our auditory organs dissolve between the environment. Deep within us, a sense of curiosity about the outside world Knowledge never ceases but is deeply dependent on the protection of this environment; therefore, human beings have a lifelong desire to return to the wrapped and protected physical memory of the Matrix. Music connects us to the feeling of being in the Matrix again and reduces our psychological defense mechanisms, increases trust, makes us dependent and more receptive to different things and positions. To get the audience involved in the story or the plot or the message, it is necessary to use the right music to remove the tension or to guide the audience to interact. Like music rehabilitation therapy in psychology, the therapist has to use music to gently interfere with the visitor's subconscious level of resistance and fear of the unfamiliar, so that he has trust in the therapist from the subconscious mind to the emotional main, more elaboration of subconscious ideas, so as to better discover the psychological problems and analyze the treatment. Music can easily influence the rise of sensual emotions, so that our position, ideas, subconscious behavior changes, reducing the viewer's distrust of irrational elements. In the range of brain experiences, musical environments play an irreplaceable role in bringing us into a specific psychological environment. The use of different types of music genres can guide the viewer from one state or level of emotional involvement to another. As shown in Table 1, music genres have physical, mental, and emotional effects.

Table 1: Physical, Mental, and Emotional Effects of Music Genres (quoted by David Sonnenschein)

typology	affect (usually adversely)
religious music	Inner Peace, Transcendent Consciousness
a cappella (music)	Breathing steadily, the heart opens and brings contemplation
New Century Music	A peaceful state of awakening
Baroque music	Accurate and in order
classical music	Lightness, illusion, majesty
romantic music	Emotion, warmth, patriotic spirit, pride, romance
impressionist music	Emotions, Fantasy Influence, Daydreaming
Jazz, blues, reggae, ska.	Cheerful, sincere, tongue-in-cheek humor, playful, lazy
Latin music	Sexy. Hot.
popular music	Confident, beautiful, dynamic
rock 'n roll	Anger, stress building or stress release
Punk music, hip-hop	Irritation, rebellious behavior

Different music stimulates different areas of the brain than other sounds. When measuring the brain's ability to recognize phonemes, people are able to recognize up to 30 minimal speech phonemes per second, but only 10 notes per second. This special feature of the brain allows us to isolate sound objects that have no meaning on their own, but can be combined into subjective, abstract entities of meaning. The German musician Friederich Marpurg also categorized moods and

emotions based on rhythm, pitch, and harmony. As shown in Table 2 Acoustic Representation of Emotional States.^[6]

Table 2: Acoustic Expression of Emotional States

state of mind	voice (an opinion)
bereavement	Slow, listless sighing melody; delicate intonation; dissonant harmonies
joyful	Fast-paced, lively melodies; warm tonal colors; harmonized harmonies
wish	Delightful, joyful melody
dread	Sharpness in the lower register
laugh heartily	Prolonged musical notes
shyness	A softer, more hesitant melody than fear
romance	Upbeat, gentle melody with playful ornamentation
detest	Rough and Decisive Harmony
sympathize with	Gentle, flowing melody; soothing movement; bass repeats
envy	Introduced by easy tones; then strong tones appear; alternating fast and slow back and forth
fury	Rough harmonization of successive note combinations; frequent changes in the bass; dissonance in the upper voices reading (phonetic value of a character)
prudence	Swinging, hesitant melody; interrupted; fast ending
irritable	Rapid changes, dissonant variations and harmonies

4. The Presentation of Sound in New Media Public Art

4.1 Non-verbal Voices in New Media Public Artworks

Due to the blended nature of sight and sound, the nature of new media public art is also diverse and complex. Artists convey emotions or ideas through the contrasting tensions of sound, environment, and vision.

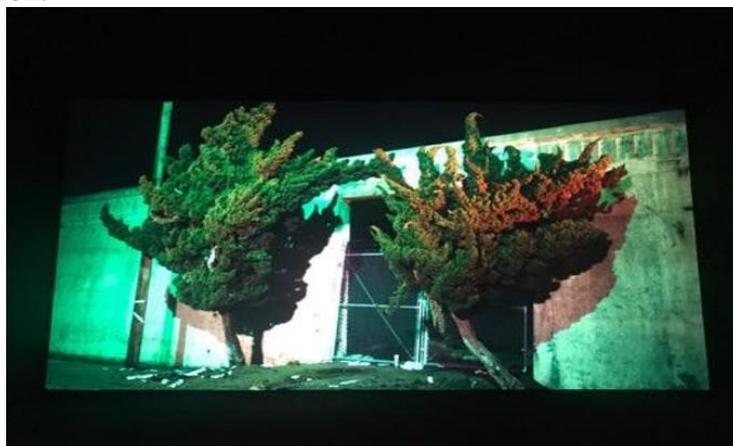


Figure 2: Nightlife by Cyprien Gaillard

For example, Cyprien Gaillard's 3D video work Night life, Figure 2, from the Duchamp Prize -

French Contemporary Art Scene held at the Red Brick Art Museum in Beijing in 2017, was accompanied by the ska-inspired songs Black Man's World and Black Man's Pride, both of which were composed by Jamaican musician Alton Ellis, and the ska music can be a good way to relax. World/Black Man's World" and "Black Man's Pride" composed by Jamaican musician Alton Ellis, which can relax the viewer's state of mind. The ska music can relax the viewer's mind. Especially, the melody is far away from the boundaries, which is a good effect to ease the conflict flexibly. Loose music and the video with the hurricane swaying trees, interspersed sculptures, random night perfectly reflect, regular rhythm and chaotic sense of the picture instantly form a psychological rhythm, so that the audience to produce a kind of seemingly real familiar sense of intimacy. At the exhibition site, many visitors took out their cell phones and used the function of listening to songs to search for the background music used in the works. After the exhibition, these two songs were widely disseminated and looped by the audience in major social networking software. By spreading these two witty and pleasant ska melodies to the audience's brain, the artist lowered the audience's psychological trust defense line, and quickly created a sense of familiarity and intimacy with the artwork.^[7]

The audience was able to get closer to each other quickly and make a deep impression on themselves. There is a video on the internet about "Night life", the reporter asked the audience how they felt about the piece, one of the audience answered "I really smell the summer night while enjoying the piece." That's how music triggers the audience invisibly, and it's also more direct than visuals in terms of conveying emotion, so using the right sound in the desired mood is worth a million pictures.

Another famous example is the new media public artwork Lowlands, which won the Turner Prize at the Tate Gallery in London in 2010, as shown in Figure 3, which consists of the following components: contextualization, site environment, and non-verbalization.



Figure 3: Lowlands by Susan Philipsz

The sound element is missing. Glasgow's George V Bridge has become a famous local suicide site due to the countless people who come to kill themselves every year, filling the area with a horrific, icy atmosphere. The essence of such a suicide shrine is changed when it is surrounded by Scottish folk music and crowds of people looking at artworks. Originally written in a Nazi concentration camp in 1943 by Pavel Haas, a Czech composer of Jewish descent, Lowland is a slow and gentle piece that sounds full of perseverance and stoicism, and speaks to the composer's unwavering and fearless heart. Artist Susan Philipsz reworked the ballad score, installing speakers of the chanted song in three separate locations, spatially in stereo, under Glasgow's George V Bridge, creating a soundscape through which to convey her own spiritual realization. Altered background sounds, the artist's distinctive voice, the traffic on and off the bridge, the crowds, the sound of the river flowing, all intertwined as one, became parts of the sound in the work, like a

symphony orchestra, responsible for their own parts, both regular and improvised sounds, the whole work is very full and malleable, mysterious. Susan Philipsz (Susan Philipsz) contrasts a uniquely meaningful sound piece with a suicide resort, thus transforming the atmosphere and meaning of the space, as the George V Bridge transforms from a decadent suicide shrine in Glasgow to a place that conveys energy for living. The George V Bridge in Glasgow is transformed from a decadent shrine to suicide to a place that conveys energy for living, encouraging the viewer, or those with suicidal thoughts, to take a fresh look at themselves and their lives.

The non-verbal sound is also indispensable for improvisation. Improvised sounds are not carefully orchestrated in advance, and improvised music-making is similar in tone and meaning to verbal sound communication. Both rely on depth and flexibility in tonal levels, rhythm and counterpoint design. Both occur in real time, with spontaneous communication and acute listening. Improvisational sounds add more drama, variety, and extension to a work of art than it already has. For example, French artist C este Boursier-Mougenot's work "This Place is in Your Ears," shown in Figure 4, consists of 168 Spot-breasted Meadowlarks, gravel, grasses, arranged stringed instruments, and acoustic effects. As the birds move freely and in an unorganized manner on the instruments, the vibrations are transmitted with the electric current and accompanied by the birds' chirping to produce a wonderful musical score, giving the viewer a unique audiovisual enjoyment. "In a later press interview, Celeste said that a sense of live improvisation is important in his work; it is not only a visual sense of the scene, but also an aural improvisation. Most composers' final productions are written in advance." 10 But he believes it is important to improvise to express the moment. In the work Here In The Ear, there are sounds made naturally by the birds and instruments, sounds made by the birds interacting with each other, sounds made by the audience interacting with the birds, and elements that might have seemed to mix as a mishmash are harmonized with the echoes of the instrumental music. This live interspersed contrast gives a greater sense of context and extension, attracting the audience to interact more, and in the process of the original interaction by generating a new chain of interactive sounds, the sound is born.

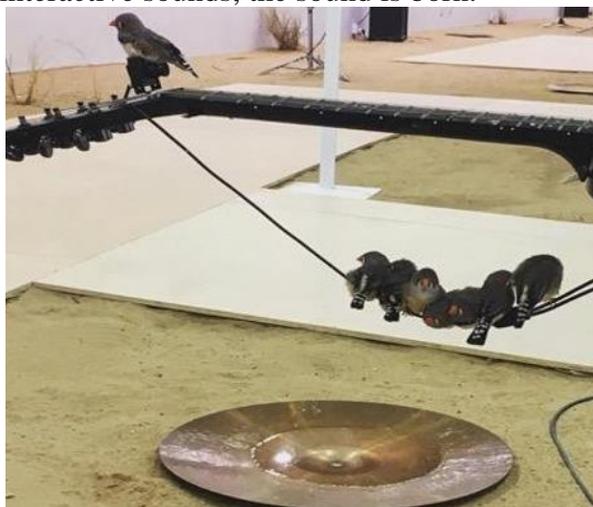


Figure 4: C este Boursier-Mougenot's "This Place is in Your Ears".

Another example of audience interaction through non-verbal improvised sound is the work of the creative group panGenerator, Spiralalala, shown in Figure 5. They transformed a spiral staircase into a giant sound sensor. At the top of the staircase, the audience puts a small ball that can be used to record sound into a special microphone and makes any sound they want to the ball.



Figure 5: Creative Group panGenerator's Work "Spiral Sound/Spiralalala

4.2 Linguistic Voices in New Media Public Artworks

Some of the new media public artworks that employ speech sounds use language to emphasize the dramatic tension in the work. The role of speech sounds is to contrast with the visual or to inform and influence each other on a psychological level, and the characters in the artworks often produce repetitive movements that make it easier for the viewer to feel mesmerized, or are repeated at the same time and in conjunction with each other.

Artist Zhang Yunhan's work *American Dream*, exhibited at UCCA Beijing in 2018, is shown in Figure 6. In the video, a male storyteller in folkloric costume, with a thick voice, recites a repetitive narration while making repetitive body language, and the narration's almost undulating tone resembles an incantation more than a call to arms, and the use of these voices and sounds has the effect of paralyzing or exhilarating, and the use of both superimpositions strengthens the narrative nature of the work. The use of the two overlays reinforces the narrative nature of the work, leading the audience to empathize or identify with it. Played through speakers at three different angles, the work creates a thick, three-dimensional sense of presence. The image on the left is through the language sound design, the method of language elimination, that is, in some cases, the characters in the picture are talking but the viewer can not hear them, will also bring a certain degree of infectiousness, the language elimination needs people's interactive participation. And in the space of the sound environment, small display space if the artist does not need to create a sense of emptiness through the sound, usually there can only be a major source of language sound.



Figure 6: Zhang Yunhan's work "American Dreams

This ritualistic language sound has also been used by Canadian artist Janet Cardiff, as shown in Figure 7 of her 2001 work *Forty Part Motet*. She recorded the voices of 40 individuals singing the hymns and placed each voice on a separate microphone and then arranged them in a choir array.



Figure 7: *FortyPart Hymns* by Janet Cardiff (*FortyPart Motet*)

5. Conclusion

As technological advances change the mediums we use on a regular basis and propel us forward, sound design is hidden in the progress. The electronic medium provides deeper, richer and more diverse possibilities for the expression of new media public art. The use of sound brings valuable opportunities for further reflection and exploration of artworks. In this paper, we start from the basic properties of sound, and simply divide sound into linguistic sound and non-linguistic sound to give examples, analysis and argumentation with the background of new media public art works, but in fact, we can also dig deeper from a deeper linguistic point of view, i.e., the expression of sound as a kind of abstract "language" in the new media public art.

References

- [1] Joel Beckman, Tyler Gray. Translated by Guo Xue. *Sonic Boom: The Scenic Impact of Sound [U.S.]* Beijing: Beijing United Publishing Company, 2016.
- [2] Andy Farnell. Translated by Xia Tian. *Designing Sound [English]* Beijing: People's Posts and Telecommunications Publishing House, 2017.
- [3] Floyd E Toole. translated by Zhou Li. *The reproduction of sound - a guide to the construction of an ideal listening environment [U.S.]* Beijing: People's Posts and Telecommunications Publishing House, 2016.
- [4] Fred Carlin. Translated by Liu Zhi. *On the Soundtrack - A Guide to Modern Film Scoring [American]* Beijing: People's Posts and Telecommunications Publishing House, 2017.
- [5] David Sonuszaien. Translated by Wang Xufeng. *Sound Design - The Expressive Power of Language, Music, and Sound in Cinema [American]* Zhejiang: Zhejiang University Press, 2009.
- [6] Li Jinyun. *Introduction to Film and Television Music*. Beijing: Peking University Press, 2014.
- [7] Jin Jiangbo. *Characteristics of Contemporary New Media Art*. Beijing: Tsinghua University Press, 2016.