New Paradigms in Sound Design: As an Effective Medium for Story Telling in Visual Media

Tharupathi Munasinghe

මේ පර්යේෂණ පත්‍රිකාවෙන් විමර්ශනයට ලක් කෙරෙන්නේ, ශබ්ද පිරිසැකසුම්කරණය භාවිතයෙන් වඩා ආකර්ශණීය ලෙස අධ්‍යක්ෂකවරයාගේ අධ්‍යාශය ශ්‍රාවකයා හෝ ප්‍රේක්ෂකයාට සන්නිවේදනය කළ හැකි දියුණු ක්‍රමවේදයක් සොයාගැනීම යි. මේ විෂයයෙහි දියුණු පර්යේෂණ ක්‍රමවේද හඳුන්වාදෙන එමා රොඩෙරෝ ගුවන් විදිලි මාධ්‍යයේ ශබ්ද භාවිතය සම්බන්ධවත්, ලෝපේස් සහ පොලේටෝ දෘශ්‍යාබාධිතයන් සඳහා වන ශබ්ද චිත්‍රපටයක සහ ශබ්ද පිරිසැකසුම්කරණ විධි සම්බන්ධවත්, මාර්ක් අණ්ඩවුඩ් නිශ්ශබ්දතාව, ශබ්දය, සහ සංගීතය නිර්මාණාත්මක භාවිතයක් ලෙස යොදාගත හැකි ආකාරයත් විමසුමට ලක් කරයි. ගැරී ෆෙරින්ටන් රේඩියෝ මාධ්‍යය ශ්‍රාවකයාගේ මනස් රඟහල ලෙස හඳුන්වයි. ශබ්දය සහ එහි නිර්මාණාත්මක භාවිත සම්බන්ධ ව සිදු කෙරුණු මේ පර්යේෂණ සියල්ල, ශබ්ද පිරිසැකසුම්කරණයේ නව භාවිත ලෙස හැඳින්විය හැකි ය.

සංස්. පී. ඒ. අමිල මදුසංක, ජයමල් ද සිල්වා, දිල්ෂාන් මනෝජ් රාජපක්ෂ, චන්දන රුවන් කුමාර, එච්. ඒ. ගිහාන් මධුසංඛ, නන්දුලා පෙරේරා
'ප්‍රභා' ශාස්ත්‍රීය සංග්‍රහය, සිවු වැනි කලාපය - 2014/2015
මානවශාස්ත්‍ර පීඨය, කැලණිය විශ්වවිද්‍යාලය

Introduction

Sound designing for many aesthetic or experiential purposes is not a new idea in architecture, acoustics, or various forms of mediated art. Since Walter Murch credited the term 'sound designer' to portray his work on Apocalypse Now (Coppola, 1979), it has also converted more common to think of sound as designed in narrative film as well as in television drama. To consider arbitrated sound in non-fictional genres (such as news, sports, reality television, etc.) as results of intentional design processes is less common. One may contend that the same applies to 'live' video in common, where one may not expect sounds to be 'produced' and designed as in post-produced fiction film. Sound design customarily encompasses the manipulation of formerly composed or recorded audio, such as sound effects and dialogue.

The following studies in sound design, discusses the methods their methods improve the storytelling. These fit:

Mariana Julieta Lopez and Sandra Pauletto's "The design of Audio Film" (Lopez and Pauletto, 2009)

- Emma Rodero's "Creating a mental image through the sound effects and sound shots" (2012)
- Mark Underwood's "Designing silence, sound and silence" (2008)
- Ananya Misra, Perry R. Cook, Ge Wang's "A new paradigm for sound design" (2006)
- Gary Ferrington's "Radio and the listener" (1993)
- These works have explored the aesthetic power of 'sound' through their sound practices, underlining the effectiveness of the sound itself.

The Design of Audio Film

Mariana Julieta Lopez and Sandra Pauletto (2009) created an audio film for visually impaired people to access films, based on Ronald Dahl's *'Lamb to the Slaughter'* (1954). They used the term *'audio film'* for two main reasons:

1. The final work is to be experienced in a cinema environment,

2. Certain fundamentals of the filmmaking practice might be adjusted for the conveyance of a story from the sound, fabricating an experience comparable to the cinematic experience.

The aim of their project was to design an audio film – a 'format of sonic art'. Sonic art is an alternative to audio description, because narration is not used. It is valuable because,

Solutions need to be found for effectively portraying storytelling information and characters. (Lopez and Pauletto, 2009)

In here specifically, every movement happens over the sound, without a narration.

They used sound effects and a 6.1 surround sound system to convey the story with the cinematic experience and showed that this format could successfully convey a story without the need of visual elements or a narrator. Further, Lopez and Pauletto explain,

A cinema in particular has very distinct sound characteristics: it is acoustically isolated from the sonic world that surrounds it; the sound reproduction is conveyed through high quality speakers with a wide dynamic range and frequency spectrum. The degree to which the environment provides acoustic immersion plays a fundamental role in how well the film captivates the spectator. (Lopez and Pauletto, 2009)

Further, they have chosen this cinema environment as media for their project due to particular characteristics embedded with this medium, such as,

Going to the cinema is also a social experience that we share with friends and strangers, in a nondomestic place, where we cannot do anything else than watch/hear the film. (Lopez and Pauletto, 2009)

They used a cinematic environment where,

The sound designer can manipulate the audience's perception of the sound world in detail, allowing him/her to tell the story by driving the imagination, expectation, understanding and emotions of the audience. (Lopez and Pauletto, 2009)

They followed Chion's (1994) three listening modes of,

Causal listening (listening to gather information)
Semantic listening (listening to a code to understand a message)
Reduced listening (focusing on the traits of the sound itself)

They also used interpersonal cinema language to create emotional states in the listener, and cuts through sound.

To create this cinematic environment, Lopez and Pauletto used few elements sound processing stage in audio film as follows:

1. Voices:

The Space Designer plug-in I used to digitally reverberate the voices in Logic Pro 8, and different settings were assigned to each space.

2. Footsteps:

They considered this is an important element in audio film. Because of that belonging to different characters and used as a character identification sign. They differentiated it using Channel EQ plug-in of Logic Pro 8.

3. Sounds Heard Through Windows:

They created this effect using Space Designer plug-in and equalisation was applied to reduce the low frequencies and boost the high frequencies.

4. Sounds Heard From Other Rooms:

This effect was achieved by employing the Space Designer plug-in. This effect was of particular importance at the end of the audio film.

5. The Back Voice:

The back voice was used in the design of the murder scene.

6. Specialisation – Visualisation and Panning

his approach is used to create the cinematic environment through dialogue, music and sound effects. Further, they explain the dialogue, the majority of sound effects, music is created to hear from the front speakers, and only some effects and ambiences are coming from the surround speakers.

As they have used these six elements in the *audio film* sound processing stage.

Lopez and Pauletto compare their *audio film* with radio as follows,

The concept of audio film bears some resemblance to radio drama. The main differences are that an audio film does not

use narration and employs surround sound to convey information. (Lopez and Pauletto, 2009)

Their challenges: the sound needed to be informative and unambiguous, and the aesthetic aspect of the sound had to be 'considered in depth'. Throughout, they did not want to underestimate the ability of listeners to piece sound effects together to construct meaning. They used sound layering, internal sounds, utterances, footsteps, breathing, verbal exclamations, music, voices, and reverberation, among other things.

The Creation of a Mental Image Through Sound Effects and Sound Shots

Emma Rodero's aim in her study (2012) was to ascertain incidence of two characteristic radio stimuli, sound effects, and sound shots. In the creation of visual images, and in listener attention when they are applied to a fictional audio story. Using a dramatised radio story, as in her context, she explains the difference between the sound effects and the sound shots,

Sound effects are better able to identify the nature of the sound source... Sound shots focus on the relationship and movement-taking place between these objects. (Rodero, 2012)

Rodero's study corroborated her three hypotheses as follows:

Hypothesis 1: A fictional radio story, which contains sound effects of a descriptive nature, will both create mental images in the mind of the listener and increase his or her degree of attention more than a dramatisation.

Hypothesis 2: A fictional radio story that employs sound shots to characterise space, action, and characters will create mental images and will increase attention more than a dramatisation. Without these resources, it will be a dramatisation.

Hypothesis 3: A radio story that employs descriptive sound effects and sound shots, which stimulate largely the creation of mental images, and will increase listener attention, compared with a story based solely on dialogues or which only uses one isolated element.

Rodero tested her hypotheses by creating a dramatised radio story, initially containing only dialogues, which two variables were added: sound effects and sound shots. The resulting combinations produced four stories.

As Rodero explains, the construction of her radio drama was carried out with maximum regard for the structural and textual conventions of a dramatic narrative. First, the plot itself sought to stimulate mental images in narrating the story of a boy whom, wishing to let his imagination run free. He shuts himself up in a wardrobe in his home to have different adventures. Next, the story was completely dramatised. That is, supported exclusively by dialogues to avoid stylistic interference from other textual typographies. Third, Rodero strove to adhere to the peculiarities of oral-radio language.

Rodero's findings demonstrate that the inclusion of descriptive sound effects, especially the sound shots in a fictional radio drama increase mental imagery. There is a relationship exists between this increase in mental imagery and listener attention.

Sound effects are sounds that, in radio production, represent objects or environments, while sound shots are used in the cinema or in television to determine position...Sound shots are elements aimed at identifying the relation-ships in terms of space between sound objects in the location… (Rodero, 2012)

Hence, the sound effects have a bearing on the identification of sound objects while sound shots focus on the relationship and movement-taking place between these objects.

Musicality in Sound Design

Mark Underwood (2008) uses the term of 'musicality in sound design' to explore the connection between the music and sound design. Further, he studied how to use sound metaphorically and impressionistically in film sound tracks. He explains the sound and film music in the following:

This is such a logical way to work, and in fact it is the way any music would be constructed. The sounds (or notes) must have room to be heard and a space in which to play out. The mix for this film was both easy and successful, with the score and effects creating a truly homogenous soundtrack. Anyone who has seen this film will usually comment on the sound and will largely not be able to discriminate sound from music, both are truly interchangeable. (Underwood, 2008)

Concerning making a sound track he discusses the two variable techniques:

1. Musique concrete
2. Electronic music

He explores 'Musique concrete'[1] (French: 'concrete music'), which is the technique, composers and sound designers use in the development of film sound: it is an experimental technique of musical composition using recorded sounds as raw material. The work of the 'Musique concrete' composers is interesting to the film sound development for five reasons.

1. The use of real-world sounds or found sound is the basis of almost all film sound.

2. The non-literal nature of film sound lends itself to techniques of montage.

3. The use of temporal and spatial adjustment of sound.

4. By deconstructing sounds, composers are beginning a process of new awareness of sounds. The connotative and objective properties of individual sounds are becoming more apparent.

4. The juxtaposition of literal 'real' sounds i.e. dialogue in a film context or perhaps an instrument in a concrete work, and tape construction.

Electronic music[2] grew alongside the *concrète* revolution. Electronic scores started with the Alfred Hitchcock's 'Birds' film. Hitchcock set out with the specific intention of using an electronic score for The Birds. He felt the new technology provided depth and new scope by 'spotting' the sound for a picture once the cut was finished. He decided that there would be no conventional music, only electronic sound.

Then, he used this electronic sound as both signifier and contactor. The 'Birds' were given a series of semi-literal sounds in electronic form that represented the real-life sounds of birds, 'orchestrated' by Bernard Herrmann.

Finally, Underwood promotes Burwell's definition of the purpose of film music,

It tells you about character, it tells you about plot, mood and by the use of motives that recur, it creates connections either subliminally or consciously for the audience...Surely our goal as designers is to strive for this: for this definition of music to in fact become our definition for sound. (Underwood, 2008)

As Underwood, suggest using background music to create connections either subliminally or determinately for the audience.

Additionally, Underwood's suggestions relate with the start sequence from Apocalypse Now by Francis Ford Coppola. It leads from the very beginning with the song 'The End by The Doors'. Audience see the explosions but do not hear characters in the film, the helicopters are flying by, but audience overhear acoustically changed helicopter sounds, which do not counterpart the visuals in perception or the cadence. Then, audience see Captain Willard lying on his bed and we discover the opening images are visuals from a nightmare he has been having. While looking at the ceiling fan he hears meta-dietetically transformed helicopter sounds. This mood is invaded by the sound of a real helicopter, which comes through Willard's window, and he is prompted to waken up from this oneiric state while the music slowly fade out into a distant reverberation creating a hypnopompic transition to reality. He gets up and looks through the window talking to himself in an internal monologue: "Saigon, shit..." This monologue continues and as he talks about jungle, even though we see him in a hotel room, jungle ambiance sounds are introduced, subjectively portraying Willard's drunken aural imagination. I would like to conclude stating that, regardless of the category, film sound is trying to create a hyper real aural representation of the plot which can make the audience transcend the limitations of cinematic medium and believe the conceit presented before them.

A New Paradigm for Sound Design

Ananya Misra, Perry R. Cook, Ge Wang (2006) introduced a data-driven 'TAPESTREA' system (Techniques and Paradigms for Expressive Synthesis, Transformation, and Rendering of Environmental Audio) for analyzing, transforming, and synthesising high-quality sound scenes, with flexible control over the components of the synthesised sound. Their approach based on the notion that sound scenes are composed of events. They explained that many sound synthesis techniques focus on generating foreground sounds,

which by themselves do not give listeners a strong sense of being in a real-world environment. Misra, Cook and Wang worked with the totality of foreground and the background sounds that compose a sound scene using a data driven software called TAPESTREA.

Further, using this data drove software, in sound scenes they could:

1. Identify points of interest in the sound and extract them into reusable templates,

2. Transform sound components independently of the background or other events,

3. Continually re-synthesise the background texture in a perceptually convincing manner,

4. Controllably place event templates over the background, varying the key parameters such as density, periodicity, relative loudness, and spatial positioning.

The TAPESTREA software that they employ identifies and separates foreground events from the background noise. Further, foreground events are parts of the scene perceived as distinct occurrences, and include both *deterministic events* (the sinusoidal or pitched components of a sound) and *transient events* (brief bursts of stochastic energy). The process of analysing the sound sources with TAPESTREA software that they explain is depicted in fugure 1.

Benefits of the software include,

Techniques and paradigms for template selection and extraction, independent sound transformation and flexible re-synthesis; extensions to a wavelet-based background analysis/ synthesis; and user interfaces to facilitate the various phases (Misra et al., 2006).

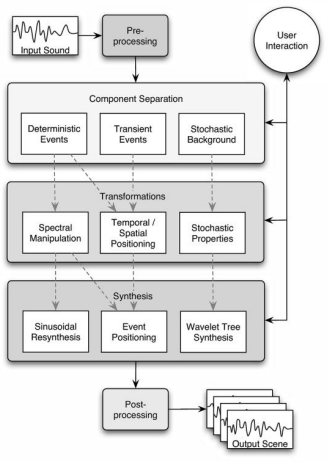


Figure 1*: Stages in our pipeline:(1) pre-processing, (2) analysis, (3) transformations, (4) synthesis.*

They separated a sound scene into the following components:

(1) Deterministic events: composed of highly sinusoidal components, often perceived as pitched events, such as a bird's chirp or a baby's cry;

(2) Transient events: brief non-sinusoidal events, such as foot- steps;

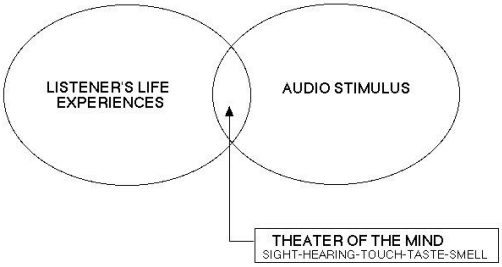
(3) Stochastic background: the 'din' or residue remaining after the removal of deterministic and transient components, such as wind, ocean waves, or street noise.

The TAPESTRA facilitates rather than many sound synthesis techniques focus on generating foreground sounds, particularly not provide robust awareness of being in a real-world environment. Further, this research initiates specifically and models for functioning with the entirety of foreground, and the background sounds that compose a sound scene.

3. Radio and the listener

Gary Ferrington (Ferrington, 1993) studied the creation of multi-sensory images for the listener's mind, and explained how,

Audio is a participatory medium, which actively engages the listener in the ongoing processing of aural information... The symbolic language of audio is purely auditory. It includes the spoken word, music, noise, and silence. (Ferrington, 1993)



As Ferrington explains, the imagery generated by the listener comes from highly personal psychological resources. Further, he describes how a purely auditory performance can build a boundless field for the listener's imagination.

The audio designer recognises the limits of the medium and strives to engage in interacting between the sound stimulus and the listener's interpretive ability. (Ferrington, 1993)

As Ferrington shows, an audience can only look at one picture at a time, yet an audience can hear dozens of distinct sounds all simultaneously, and separate, process, and understand the information. The medium of audio goes beyond ordinary factual and visual processes. It creates a link between sound stimuli and a listener's interpretative ability, and is vital in informing our emotions and imagination.

'Storytelling' as an element of audio design, Ferrington explains,

Storytelling is the art of oral communication and is integral to the design of effective audio. ...Good storytelling presents facts and concepts in a highly motivational manner, which holds the attention of the listener. (Ferrington, 1993)

Ferrington explains, three narrative formats are common in audio scripting as follows:

1.News-like style-This is frequently used in instructional presentations, which guide a student through a specific process. Sentences are purposefully direct and are void of superfluous colour and texture.

2. The personal narrative strives to involve listener participation - This style is conversational, frequently acknowledges the presence of the listener, and directs attention to specific concepts or ideas.

3. Dramatic or poetic presentation - Such narrative employs descriptive adjectives, use of analogies, imaginative rhythms, and other compositional elements, which strive for maximum sensory response.

Ferrington elucidates the third style builds use of a dramatic or poetic exposition. Such narrative employs descriptive adjectives, use of analogies, imaginative rhythms, and other compositional elements, which strive for maximum sensory response. Hearing and listening are not the same. Hearing is a physical process which sound pressure turns waves into signals to the brain. Listening is a psychological process by which meaning is given to aural input.

Conclusion

The purpose of upright audio design is to effectively engage the listener in active and attentive listening. Ferrington's (1993) findings in regard to the potency of the audio media and the listener's hearing competence, when compared with the visual media,

indicated the capacity of sound effects and music to create a potent and attractive visual image in the listener's mind. Misra, Cook and Wang's (2006) study showed an effective way of using sound effects in audio media. Rodero (2012) showed effective ways of identifying and using sound effects and sound shots, and Lopez and Paulette's (2009) techniques of creating their audio film using surround sound practice helped me to expand the way to place sounds in different sound spots. Such listener participation is critical to releasing the imaginative power of the mind. It is this "imaging" that is important when thinking of audio's relationship to visual literacy.

End Notes

1. The fundamental principle of musique concrete lies in the assemblage of various natural sounds recorded on tape (or, originally on disks) to produce a montage of sound. During the preparation of such a composition, the sounds selected and recorded may be modified in any way desired - played backward, cut short or extended, subjected to echo-chamber effects, varied in pitch and intensity, and so on. The finished composition thus represents the combination of varied auditory experiences into an artistic unity. The technique was developed about 1948 by the French composer Pierre Schaeffer and his associates in the Studio d'Essai ('Experimental Studio') of the French radio system.

2. The music that creates entirely synthetically is called electronic music.

Reference List

CHION, M., MURCH, W. & GORBMAN, C. 1994. ***Audio-vision: sound on screen /*** *Michel Chion; edited and translated by Claudia Gorbman; with a foreword by Walter Murch*, New York: Columbia University Press, c1994.

FERRINGTON, G. 1993. **Audio Design: Creating Multi-Sensory Images For The Mind**. *Visual Literacy*, 1-7.

LOPEZ, M. J. & PAULETTO, S. 2009. **The Design of an Audio Film: Portraying Story, Action and Interaction through Sound**. *Journal of Music & Meaning,* 8, 1-17.

MISRA, A., COOK, P. R. & WANG, G. 2006. **A NEW PARADIGM FOR SOUND DESIGN.** ***9th Int. Conference on Digital Audio Effects***.

RODERO, E. 2012. **See It on a Radio Story: Sound Effects and Shots to Evoked Imagery and Attention on Audio Fiction.** *Communication Research,* 39, 458-479.

UNDERWOOD, M. 2008. **'I wanted an electronic silence...' Musicality in Sound Design and the Influences of New Music on the Process of Sound Design for Film**. *Soundtrack,* 1, 193-210.