Audio Design: Creating Multi-Sensory Images For The Mind

Author: Gary Ferrington

Abstract

When television, in the 1950's, replaced radio as the principle medium of home entertainment, the listener no longer had to use his or her imagination. Favorite characters and their actions became visually detailed. Society has increasingly relied on images created by others to give form and definition to the world in which all live.

Passive viewing has become the routine of both the family at home, and the students in the classroom. Creating images within the mind has become a skill no longer taught as an important aspect of the school curriculum.

Fortunately, there are many individuals who are rediscovering the role that audio can play in stimulating the imagination. Working in an audio medium provides the producer with the opportunity to rediscover the power of human imagination. This article explores the concept of the "theater of the mind", and the design factors which need to be considered in the creation of audio works for the ear.

Introduction

Given the amount of talk, rock, and western music, emanating from the nation's airwaves there would seem to be little room for imaginative informational, documentary, dramatic, and experimental audio. But that is not the situation. Producers in Europe, Canada, and the United States, are designing audio works which are not only broadcast on national radio systems, but are also widely distributed on cassette and compact discs.

Audio design is the process of creating meaning through the use of aural imagery. The sound designer recognizes the uniqueness of the medium and works with its symbolic language to effectively communicate ideas, concepts, and emotions (Zaza, 1991). Understanding the storytelling nature of audio and the power of the human imagination to generate mental images, is critical to effective audio design.

The nature of audio

Audio is a participatory medium which actively engages the listener in the on-going processing of aural information. This requires that the listener be able to discriminate between audio stimuli, employ aural decoding skills, and generate meaning for a perceived message.

The symbolic language of audio is purely auditory. It includes the spoken word, music, noise, and silence. Given that there are no other channels of information except sound, there is the potential risk of ambiguity in message design and interpretation (Crisell, 1986).

The audio designer recognizes the limits of the medium and strives to engage interaction between the sound stimulus and the listener's interpretive ability (Zaza, 1991). Frequently, the perception of a message is greatly influenced by the listener's ability to create multi-sensory imagery within the mind. These mental images are formed in response to an analysis of the signal received, and the personal experiential background the listener has with the subject or content. In effect, each individual fills-in details beyond the limited audio information provided (Crisell, 1986).

Sound and imagination.

The ability to form mental images of objects and events not immediately available to the senses is the essence of human imagination. This unique attribute of the mind makes possible the ability to seemingly see, smell, hear, and feel things which do not exist in the present tense.

Through imagination we experience a personal world created from our emotionally charged remembrances, dreams, and fantasies. The sound of a Christmas carol, for an example, may bring a flood of images to mind. The smell of fir boughs, the taste of rich holiday foods, the sparkle of colored lights, are but a few of the multi-sensory memories a holiday melody may stimulate within the mind.

Theater of the mind.

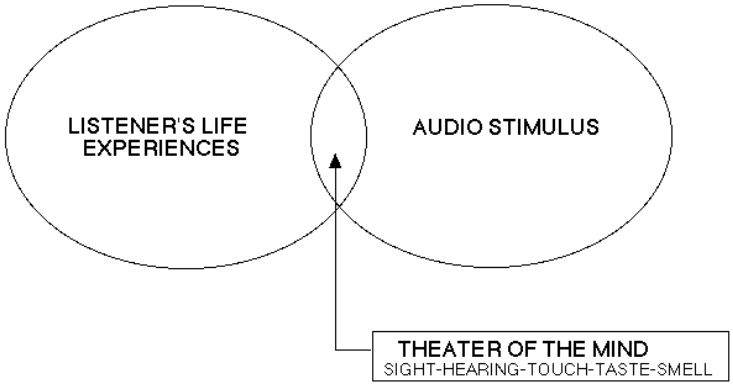
The power of the silent film, as a "mute" medium, was its ability to provoke human response through carefully composed images, the non-verbal action of actors, and the effective use of visual montage. Similarly, as Rudolf Arnhiem notes, audio is a "blind" medium. It lacks the multi-channel characteristics of other audiovisual media relying only on the elements of sound and silence to communicate information or emotional content. This "blindness" is both the weakness and strength of the medium (Arnhiem, 1986).

An effectively designed audio work may facilitate a listener's integration of life-based experiences into a 'movie' created within the 'theater of the mind'. Each individual becomes his or her own movie director with no two people having the same imaginary experience.

The following narrative illustrates the point.

Auditory Scene.
Heavy reverberating footsteps are heard as a person approaches from down a long hallway. The footsteps stop, a door opens and rapid gun fire is heard . The door is then slammed shut and the footsteps quickly retreat down the hallway.

Each listener will generate the missing "visual" details within this scene. For example, the gender and size of the person walking down the hallway, the style of clothing, the architectural space in which the event takes place, the smell of gun powder, or other information that may complete the scene, is all created within the mind of the listener as illustrated below.



The imagery generated by the listener comes from highly personal psychological resources. A dinosaur that a child creates while listening to a science fiction drama, for example, is not the same as one manufactured for him or her by Hollywood. It is a very personal dinosaur which comes from that child's joys, fears, and emotionally enriched experiences.

It must be noted that imagery, as discussed in this essay, is multi-sensory in nature. An individual who is congenitally blind will not have a pictorial memory upon which to create photographic-like mental images. All individuals give form and definition to the world through multiple senses. Aural cues give a blind person specific detailed information about the physical world to which a sighted individual may not attend as closely.

A blind individual, while listening to an audio work, will generate imagery based upon life's multi-sensory memories except that of sight. For example, the sound of thunder, wind and rain will give the listener an experienced sense of sky which is much different from that of a sighted person. Sound defines a sense of space for the sightless.

Good audio production design can expand human experience throughout the multi-sensory image building capability of the mind.

The elements of audio design

Storytelling is the art of oral communication and is integral to the design of effective audio. A good storyteller can relate for the listener the most recent developments in brain research as presented in an informational program; the complexity of a geological processes as found in a science broadcast; or the dramatization of life in the American colonies as explored through the use of a classroom audio tape. Good storytelling presents facts and concepts in a highly motivational manner which holds the attention of the listener.

Effective design begins with a well written script. It is through the use of words that ideas, concepts, and feelings are communicated. Understanding the power of language is imperative to the development of most effective audio products (Berger, 1990).

There are three narrative formats common to audio scripting (Thompson, 1969). The informational format presents content in a factual, 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 color and texture.

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.

The third style makes use of a dramatic or poetic presentation. Such narrative employs descriptive adjectives, use of analogies, imaginative rhythms, and other compositional elements which strive for maximum sensory response.

Though each of these narrative styles provides a conceptual framework within which to organize specific content, styles are frequently combined as needed. Scripting, regardless of the chosen format, begins with understanding the effective use of words.

Words, as used in audio, are written to be spoken and have paralinguistic characteristics which the designer must consider (Crisell, 1986) . The tone of voice, vocal emphasis, pacing, and regional accent, all have an effect on listener perception. In theatrical presentations, dialogue is accompanied by gesture and visually supported within the context of a stage setting. In an audio medium words are temporal and briefly exist in time. The listener must create continuity and meaning from the spoken narrative without the benefit of visual information.

Words can be vague. The word 'boat' for example tells us of a particular class of objects, but it in no way gives us detailed information about that object's characteristics. If one hears the dialogue line," Eric escaped from the prison using the old man's boat", the listener must imagine what that boat might look like, feel like to ride in, or perhaps even smell like in terms of age and mustiness.

The spoken word is more effective when it approximates that of daily speech compared to that of being read aloud from a printed page. Most all speech in audio is prescripted and then performed. This is true for informational, documentary, educational, as well as dramatic presentations. Prescripted speech may be elaborated upon to make the presentational flow seem more natural. Such phrasing as, "When you think of it..", "Let us consider for a minute...", or, " If we were to ..", all tend to personalize the written script. Such phrasing facilitates the illusion that the commentary is spontaneous in terms of thought, and delivery was not premeditated (Crisell, 1986).

The delivery of words through narration or acting is an important consideration when both writing and producing an audio work. The listener should feel a sense of being situated within a given scene. The human voice should sound natural in an audio presentation. Unlike on a theatrical stage, the voice does not need to be projected. However, if characters are to create the illusion of movement and other activity, then physical emphasis must be given to the delivery of a particular line. For example the line, " Help me, I can't move this crate!", will need to have added physical stress in order to create the illusion that someone is actually struggling with an immovable object.

It is sometimes difficult to discriminate between the voices of characters who have similar tonal value. This is especially so when using young children. One might consider casting voices which reflect the uniqueness of the character as well as a distinct different voice from other characters on mike.

Music plays a significant role as a design element (Zaza, 1991). It can frame or establish the boundaries of an audio presentation. Music, used at the beginning, establishes a mood or sets the stage for the events which follow. Music is frequently used to link one scene to another. National Public Radio, for example, often uses a short musical bridge to segue between news features. And, of course, music is used to bring an event to a conclusion.

Music may be used to establish a setting, enhance action, or evoke a human response. In this context, the music can only be heard by the listener and not the characters within a scene. Such use plays upon human emotional response to musical forms with imagery generated by the rhythm, melody, and orchestration of the composition.

Music may originate from within the scene itself. A marching band, the loneliness of a saxophone played in a jazz club, or someone practicing the piano are all examples of in-scene use of music.

Music can be used to substitute for real world sounds. The audio designer may use music to represent battles at sea, thunderstorms, the wind, or other events. Again, the listener's experience with musical forms will facilitate the interpretation of the message.

Many audiovisual music libraries use descriptive labels such as industrial, travel, carnival, nature, sports and others, to classify musical compositions. Such classification suggest that we have developed a contextual perception of certain musical forms and visually associate them with specific places, things, and activities.

In addition to music, noise and silence are two ambient sound elements to consider. Noise includes all non-language and non-musical sound. Silence, as we will explore later, has specific significance in that it can have either a positive or negative effect depending upon the designer's intentions.

An audio work's "soundscape environment" provides the context in which aural events happen (Schafer, 1977). The sound of an approaching car, footsteps on the gravel driveway, the echo of a river canyon, are all natural noises that provide the listener with a sense of place, or help define the attributes or actions of a character. Such sounds may take on other significance (Crisell, 1986). The sound of a train whistle may represent a melancholy mood. The crowing of a rooster might be used to symbolize the breaking of a new day.

Human sounds, other than those spoken, play an important role in aural communication. The sound of children at play, a baby's cry, laughter, the sadness of mourning, are all elements of the contextual soundscape which gives added depth and meaning to an audio production.

Silence is the opposite of noise. Silence, used as a void, creates the impression that something may have gone wrong. On the other hand it may facilitate a listener's ability to imagine completion of an action that, for one reason or another, cannot be represented through sound. For example, one character may ask of the other, " Pass me the hammer...(pause)...thank you." The silent pause will suggest that a transaction has taken place between the two individuals.

The challenge of creating acoustical space in an audio work is difficult. One is limited to the distance one can move from the microphone. There is no aural perception of up, down, left or right. The director working in a monaural medium, such as radio, must place the actor closer to, or further away from the microphone to create the illusion of depth and direction. Enhancement of relationships between characters is achieved with the use of narrative references such as, " What are you doing up there, John?", or " How can I get down to you from here?".

The director may also use selective focus to create an illusion of space. An individual, attending a typical office party, can easily isolate relevant conversations from the constant din of background sound. The creation of this same experience in an audio production is difficult and requires the director to focus the listener's attention.

Selective focus begins with prioritizing the sounds to which a listener's attention must be given (Zaza, 1991). The audio designer, replicating the office party, might mix one voice at a higher volume level than another so that it dominates the foreground. Or, the background volume might be lowered which would focus listener attention to selected conversations. It might be necessary to limit sound field to two or three representative elements of a party, thus allowing the listener to focus on specific dialogue. To create a sense of movement within the party various voices can be slowly faded in or out to suggest movement away from or toward the listener.

The use of stereo recording technology provides the designer with a directional context for spatial sound referencing. The use of two microphones, one each for the left and right side of an acoustical stage, can simulate the effect of a passing automobile, or the moving of actors across a scene. The primary effect is that of a definite left, center, and right spatial orientation in front of the listener.

Stereo surround sound extends the stereo format by providing the listener with sound from the front, sides and rear. Such sound environments are more realistic than those created with monaural techniques - though not the true three dimensional effect as the word 'stereo' might suggest.

Binaural recording technology helps replicate the most life-like of acoustical spaces. Most binaural recordings are made using a dummy head in which a microphone has been implanted within each ear canal. The listener must wear headphones in order to hear the accurate reproduction of three-dimensional binaural sound. The listener's perspective is that of being on-site where the sound was recorded.

A critical difference between stereo and binaural playback is the aural effect each has on the listener when headphones are used. A stereo recording will sound as though it is originating within the listener's head. One seemingly becomes the soprano singing all the high notes. The sound from a binaural recording will seemingly exist in a spatial field outside the head forming a 360 degree sphere of acoustical space around the listener. A knock on the door, in a binaurally produced ghost story, is quite startling.

The binaural production of audio plays has opened new production opportunities. In the ZBS presentation of Carlos Fuentes' Aura, the listener enters the dark landscape of the mind. A young man answers a newspaper ad and finds himself drawn into the lives of a reclusive old woman and her beautiful daughter who live in house devoid of daylight. The ambient sound was recorded on-site in Mexico City and the use of binaural technology enhances the listener's sense of presence's in each scene of the play.

Stephen King's The Mist, an audio production published by Simon & Schuster, effectively uses binaural sound to involve the listener. Closing one's eyes facilitates the participation in a macabre world that is so real that its hard not to believe that one is actively trying to survive the life threatening events in the story.

In the German radio play *Marianne from 7 to 7 ,* the listener becomes the principle character hearing the world from her own personal perspective. An especially effective scene is one in which the listener, as Marianne, puts on a shower cap and steps into the shower. The sound of the water falling upon the plastic cap is so real, that it stimulates the tactile sense of the listener.

Summary

Hearing and listening are not the same. Hearing is a physical process by which sound pressure waves are turned into signals to the brain. Listening is a psychological process by which meaning is given to aural input.

The goal of good audio design is to effectively engage the listener in active and attentive listening. 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.

References

Arnheim, Rudolf. (1986) *Radio: An Art of Sound.* NewYork: Da Capo Press.

Berger, Asa. (1990) *Scripts: Writing for Radio and Television.* Newbury Park, Connecticut: Sage Publications.

Crisell, Andrew. (1986) *Understanding Radio.* New York: Methuen.

Schafer, R. Murray (1977) *The Tuning of The World.* New York: Alfred A Knopf.

Thompson, James. (1969) *Instructional Communication.* New York: Van Nostrand Reinhold Company.

Zaza, Tony. (1991) *Audio Design: Sound Recording Techniques For Film and Video.* Englewood Cliffs, New Jersey: Prentice Hall, Inc.
