

Principles of Sound Design

What is “Sound Design”?

- *Communicating the right messages*
- *Creating the overall sound character for the video, film or game project.*
- *Supporting the visual elements.*
 - *Beginning in the planning stages of the project, a sound landscape is developed to support the thematic material presented in the visual side, including action and object sounds, environmental sounds, Foley sounds, dialog, and music.*

2

People Involved in Film Sound

- Production Recordist
- Sound Editor
- Sound Mixer

Production Recordist

- Person who is recording during the actual filming of the movie
- He'll have a microphone on the set, and will gather dialogue and some sound effects if they are available during the actual shooting.

3

4

Sound Editor

- Person back in a studio who generally has a collection of sounds
- Able to go out with a portable tape recorder and bring them back and edit them and fit them into and add them onto the soundtrack of the film itself.

5

Sound Mixer

- Person whose job is to blend together all the different sounds that make up the soundtrack including music, dialogue, and all types of sound “effects.”

6

Sound Designer

- Might do all the above
- A new kind of person who is in on the planning and involved with the director in making sound an integral part of the content delivery.

7

Sound and Image

- Direct correlation between the soundtrack and what occurs on-screen
- This interplay creates the complete emotional spectrum of a film or other media type
- Learning to build soundtracks
 - Listen to dialog, special effects, and music

8

Sound Map Elements

- 1) **Environment** – nighttime, city, etc
- 2) **Actions** – walking, falling, things the actor does
- 3) **Objects** – wind, siren, crashes
- 4) **Clues to Emotion** – positive, negative, hurried, etc
- 5) **Moments of physical or dramatic transition** – things are changing for better or worse.

9

Sound Production Sequence

- 1. **Collaborate with director.** What is s/he trying to communicate?
- 2. **Sound Asset Collection**
 - Buy or record or build?
 - Build Example -mix an organic sound with a non-organic. Common in Star Wars
 - Inventing/recording Original Sounds
 - High quality and consistent level, tone
 - Make as dry as possible
 - Musical score if budgeted.
 - Loop editing is the least expensive. Can be OK+

10

Sound Production Sequence

- 3. **Sound Processing**
 - Compression, layering, EQ, Normalizing
- 4. **Mix and Mastering the tracks**
 - Avid and Pro Tools heads of the class
 - Final Cut Pro, Tracktion, Cubase, Etc.

11

Sound Design Working Principles

- Use Sound To Support the Images
 - *Collect sounds that match the action, set the scene, create the feeling, tell the "back story".*
- **Music**
 - Use reoccurring themes for characters -leitmotifs
- Use pitch intervals to suggest emotions, etc.

12

Sound Design Working Principles

- *Mixing-Editing*
 - Timing, volume, location, compression, etc.
 - Rule of 4 plus or minus 1 elements.
 - Separate frequency ranges of potentially competing or masking sounds
 - Also making communicative intervals out of non musical sounds that occur together in time.

13

Sound Design Working Principles

- Make the **key sound elements** easier to notice/hear
 - Frequency range
 - Placement in sound field
- **Focus points** in the production
 - We have a sound we want someone to notice:
 - It can be or become “louder.”
 - level or relative level or frequency
 - We can open a hole in the tracks.

14

Pre-Production Documents

- A Rough Outline or **Concept**
 - Statements by director
- **Story Board**, Design Document, Website Proposal
 - A formal proposal, scope of work
- **Sound Blueprint**
 - A sort of formal sound map to be approved
 - Adjectives describe sound, including Innocent, sinister, pulsing/driving dramatic, dark, magic light, magic dark

15

Pre-Production Documents

- Technical Playback Considerations
 - Platform?
 - DVD, PC, Xbox, PS2, Nintendo
 - Compression?
 - MP3, OGG, Dolby, THX, DTX etc
 - Sample rate? Resolution?

16

“Sound Sculptures”

- Non-visual sound “stories” builds a scene in our mind
- Can be a setup before the visual
- Can be from outside the frame
- Environmental and object sounds
- Possibly action sounds

17

“Acousmatic” Sounds

- Sounds for which the source is not revealed, and it is hard to imagine.
 - The Great OZ still behind the curtain
- Opposite: “Visualized” Sounds

18

“Diegetic”

- “Diegetic” means “telling” as opposed to “showing”
 - A sound that occurs in the **action** of a film or multimedia presentation, such as...
 - **Dialog**, or **ball on bat** where you see ball and bat
- “Non Diegetic”
 - Narrator’s commentary
 - Mood music created for thematic effect as the film’s or presentation’s plot progresses

19

- On screen Diegetic
 - Voices of characters you see talking
 - Sounds of things you see
- Off screen Diegetic
 - Doorbell

20

“Synchronization”

- Footsteps with the image of a person walking
- “False synchronization”
 - Expected sound is replaced with a similar sound that is unexpected (Cable Hog)

21

“Defeated Expectation”

- Listener expects to hear a sound
 - Tire squeal usually leads to a crash
 - But no crash, just eerie silence!
- Creates tension and interest
 - Especially the next time we hear tires squeal

22

“Masking”

- One sound covering another
 - Great in an office, usually bad for sound designer
- Similar frequency, similar volume, similar placement

23

“Cancellation”

- A technical mixing problem
- Sounds with similar waveforms that are out of phase. Cancel each other out on the mixer bus or in the air.

24

“Synchronization” in Game Development

- Means something else...
- Sounds tied to programming events
- Will happen automatically when needed

25

Beat-Centered Music

- Heart rate up, Temperature up, Circulation up.
- Works with soft tranquil or loud music

26

Most Sensitive Human Range of Hearing?

- Cancellero: 2000 - 5000 Hz
- Braukmann: 900 - 5000 Hz
 - Avoid too much of it, or...
 - Use it to advantage

27

Intervallic Relationships

Table 6-6. Harmonic intervals and emotional characteristics

Interval	Emotional Quality
Perfect octave	Completeness, openness, unity
Major seventh	Spooky, eerie, off-center, strange
Minor seventh	Expectant, suspenseful, full but unbalanced
Major sixth	Peaceful, balanced
Minor sixth	A bit sad, soothing
Perfect fifth	Power, centering, strength, victory
Tritone	Horror, terrifying, scary
Perfect fourth	Ethereal, lightness, transparent, clarity
Major third	Neutral, hopeful, resolved, nonabrasive
Minor third	Uplifting, relaxed, positive feelings
Major second	Unresolved, unsettled, unpredictability
Minor second	Unclear, tense, anxious, uneasiness
Perfect unison	Peace, strength, calmness, security

28

Historic Intervallic Relationships

Table 6-5. An older view of how acoustic sound can influence emotional states
Acoustic Expression of Emotional States by Friederich Marburg (1718–1795)

Emotion	Expression Associated with Emotion
Sorrow	Slow, languid melody; sighing; caressing of single words with exquisite tonal material; prevailing dissonant harmony
Happiness	Fast movement; animated and triumphant melody; more consonant harmony
Contentment	A more steady and tranquil melody than with happiness
Repentance	The elements of sorrow, except that a turbulent, lamenting melody is used
Hopefulness	A proud and exultant melody
Fear	Tumbling downward progressions, mainly in the lower register
Laughter	Drawn out, languid tones
Fickleness	Alternating expressions of fear and hope
Timidity	Similar to fear, but often intensified by an expression of impatience
Love	Consonant harmony; soft flattering melody in broad movements
Hate	Rough harmony and melody
Envy	Growing and annoying tones
Compassion	Soft, smooth, lamenting melody; slow movement; repeated figure in the bass
Jealousy	Introduced by a soft wavering tone; then an intense, scolding tone; finally moving and singing tone; alternating slow and quick movement
Wrath	Expression of hate combined with running notes; frequent sudden changes in the bass; sharp violent movements
Modesty	Wavering, hesitating melody
Daring	Defiant, rushing melody
Innocence	A pastoral style
Impatience	Rapidly changing, annoying modulations