

## SOUND DESIGN FOR ANIMATION

*"To the degree that animation can create a flow of patterns, the medium appears to mirror the nature of musical expression."*

*"A truth whispered among animators is that 70 % of a show's impact comes from the sound track."*

Michel Dougherty in *The Animation Book* by Kit laybourne

The purpose of sound design is to augment the visual elements and/or narrative of a piece by the creation, manipulation and organization of sounds (usually not related to music). You can use sound effects for conveying setting and place, action, atmosphere, plot twists, character mettle or foible, story nuances, etc. Some animators animate their visual elements first before considering the audio elements; others create animation synced to an audio track; while still others plan their animation and soundtrack simultaneously. Although an animated film does not require an audio accompaniment, music, sound effects and other audio clues can greatly enhance the experience of the viewer (and the animator).

The animator has complete control over the visual and audio elements of their animation. Whether editing in film or digital video, an image or sound can be accurately placed within the timeline allowing for greater synchronization than is possible in live-action motion pictures.

Because both animation and music are both "art in time", they share a basic mathematical foundation and (generally) progress at a determined speed. A song will randomly sync up with a piece of animation, adding another layer of meaning - regardless of whether or not the animation was intended to be associated with the music. (Try it at home! Watch Cartoon Network muted and play some music.)

The sound design process can begin as soon as a piece is conceived. What purpose will sound serve in your animation? Will there be dialogue? Music? Ambient noise? Sound Effects? If the purpose of the audio is to set the pace of the animation, as with dialogue or rhythm, the audio should be compiled first (pre-synch) and the animation "shot to track" - that is, shot synced to the time of the soundtrack. Sound effects are usually added in post-production as they generally do not affect the pacing of a scene. The images are shot before the sound (post-synchronous), and the sound effects are incorporated to complete the spatial and temporal settings established by the visuals. Sound effects can be cut in at the appropriate frame as determined by the animation. If the piece is purely experimental, it may be a detriment to begin locked down to a soundtrack. In that case, waiting until the animation is complete before adding music or creating a soundtrack will likely be preferable, as it can be matched more accurately to the action and tone of the animation.

The first draft of the sound track, a "scratch track", can be created when the storyboard is completed. First, one must determine what sounds are needed. Most likely, this oc-

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curred as you were storyboarding the project. Go through your storyboard and write down the sounds you will need to collect or effects you will need to create.

Collect the raw materials, either by field and/or studio recording or utilizing libraries of pre-recorded sound effects. These raw materials can be used to create a scratch track. A scratch track is like a rough draft of a sound track, with key elements or dialogue placed in the track at time they are supposed to be heard. Scratch tracks can be synced to the timing of an animation or used to work out the timing of an animation. You can sync the scratch track with an animatic of the storyboard to get a feel for how the visuals and audio work together.

(Although CD's of sound effects are convenient and offer great variety, recording your own sound effects has it's own rewards. Besides being unique, your sound effects will better suit your animated visuals. Action in animation tends to be more compact than the live-action simulations in the libraries. You can find these CD libraries at the Sound & Image Library: [www.evergreen.edu/media/sail/](http://www.evergreen.edu/media/sail/).)

Voices are usually recorded pre-sync, before the visuals are animated. It is the best way to achieve precise synchronization between image and sound. Pre-syncing also solves the issue of pacing for the animator. Once a voice track, or music, has been recorded, analyzed and logged, it establishes when the key actions must occur.

Acquire raw sound in the field by taking your portable audio recorder, microphone(s), wind socks (to reduce wind noise) and extra batteries out into world and look for sounds you think are rich and interesting, full of life. Record sounds close up and at various distances, even with different microphones. Keep everything you record - you never know when you might be able to use it.

*Exercise:* At different parts of your day (when appropriate) close your eyes for ten minutes and just listen. Write about what you heard in your journal. How are sounds different indoors and outdoors? What are the similarities or differences of various sound sources? Walk around you home and discover the different sounds you can make with your house-hold items. Each sound you hear has the potential to serve as a sound effect.

Sound effects mark an event and should follow through to complete that action. They consist of a beginning, middle and end. Foley is the art of creating sound effects in a studio or controlled setting that mimic the action that occurs onscreen. One must remember that there is no actual connection between the object shown and the origin of the sound. Horses do not go "clip-clop", half-coconuts do.

Record in a controlled setting, in a space without a lot of room noise (preferably an audio studio). The size of the room will affect the quality of your recording - a larger room will provide you with a more open sound. If recording in a smaller room, you can dampen the walls with foam or blankets to control the acoustics and provide a more studio-like recording. If you are recording voice, use a pop filter (or panty-hose pulled

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over a circle of wire and placed about 2-3 inches in front of the mic). Many Foley sounds effects are sounds that have been altered and/or layered in post-production.

Here are some classic Foley sound effects:

- Punch - thumping a watermelon, smacking a piece of meat with a meat tenderizer, a heavy telephone book rolled and taped up
- Bones Breaking - Breaking a bunch of celery, a head of frozen romaine lettuce
- Footsteps in snow - squeezing cornstarch in the bow or in a leather pouch
- Kissing - kissing the back of your hand
- Flapping bird's wings - a pair of gloves
- Grass or leaves crunching - balled up audio tape (walk on it)
- Creaking sound - use an old chair that creaks, a water soaked rusty hinge placed against different surfaces
- Crackling fire - cellophane
- Gun - a heavy staple gun and a piece of metal
- "Whoosh" - swinging a thin stick or arrow
- Horse's hooves - coconut shell cut in half and stuffed with padding
- Wet Squishy Sounds - Flubber, gelatin, dish soap
- Voice - any sound you can make or imitate

Backgrounds are sounds not synced to events onscreen - distant traffic noises, birds chirping, the humming of machinery. They set the mood, define place and reinforce the visuals. Ambience, a type of background, is a continuous recording or loop that sets a mood without calling attention to the soundtrack. A good ambient track can cover chop-pily edited dialogue, making it sound continuous. Room tone is a special type of ambience. It is essentially a recording of a room with no specific sound. Room tone can be very useful for tying together other elements in a scene. Specifics, or "stingers", are short elements placed at certain times to augment the ambient track and sometimes in conjunction with an action onscreen.

Once you have recorded your source sounds and organized them in your system, you can apply effects and layer them with sound editing software much like you can manipulate images in PhotoShop. You can simply clean up the raw sounds you've collected or layer them, apply effects & distort the sounds to your heart's content. (Just never destroy your source material! You may want to use it again later.) When ready, the audio elements can be integrated into the project and revised as necessary until you are satisfied or out of time.

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### Pre-synchronous

Music, key sound effects are recorded before the images are produced and the animation is shot to the soundtrack. In pieces with lip-sync, dialogue and voices are always recorded pre-sync. (In Fleischer Brothers *Popeye* cartoons, dialogue was shot post-sync.)

### Post-synchronous

The animation is shot first, then audio added later in post-production. Sound effects are used to complement the spatial and temporal settings established by the visuals.

### Non-synchronous

Sound-track or music has not been carefully timed to fit the picture. Music and animation are both "time arts" and will thus eventually synchronize at random points.

### Equalizer (EQ)

EQ alters the "tone" of a sound and can be used correctively and creatively. It allows you to choose what frequencies (high, low or mid-range) of the sound to enhance or inhibit. You can use the EQ to give the same voice a different spatial effect or during the process of creating your own unique sounds.

### Discrete (Spot) Effects

Foley Effects are spot effects, intended to indicate individual events and specifically placed and timed for a single action.

### Wallas(Crowds)

The "walla walla" of many people without distinguishable words or voices.

### Pitch & Time Shifting

An old-school technique from the day of analog, audio tape and reel-to-reel recorders. The sound designer would speed-up or slow-down the playback of pre-recorded sounds altering the pitch and duration of playback.

### Worldizing

Playing sounds on speakers and re-recording them with microphones. This process can make a significant change in the texture of the sounds. *Try this:* play back room ambience at double speed, re-recording it on a mic at double speed. Play the new recording back at normal speed, The "size of the room" sound will have doubled. Also, try moving the mic around in front of the speaker while re-recording and see what effects that may have.

### Sources

*The Animation Book* by Kit Laybourne

[FilmSound.org](http://FilmSound.org)

[DigitalProSound.com](http://DigitalProSound.com)

[GreatNorthernAudio.com](http://GreatNorthernAudio.com)