

## **DESN 275 Digital Sound for Week 2**

**On-Line Reading:** follow “web resource links” on drbraukmann.com, and examine:

1. Using Audacity Equalization (You Tube)
2. Audio Equalization – Media College
3. Audacity Guide: Reverb

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### **Assignment 1: Create a Scene with Sound**

Using object sounds from the course website, plus music (also available on course website), and short dialog tracks in the assignment files link, create a sound track for the following sound-only scene.

You are giving Dr. Braukmann a tour of a building, and he provides comments as you two walk along.

1. Start with typical street ambience. Nothing special or unusual is heard: just typical cars and street sounds. We hear a character's footfalls on the sidewalk (for about 8-10 seconds).
2. The character turns in to an alley. The street ambience diminishes, as the footfalls reflect off the narrow alley concrete walls. To heighten the perception as an out-of-the-way place, a dog barks in the distance. After about 7 seconds, a door (#1) opens.
3. Footfalls are heard as our walker steps inside a large quiet reflective space, like a small gym. The door closes behind with gentle reflections of the door closing. Long reverb time here.
4. Footsteps are heard as we walk slowly through the large room (about 50' square) with hard surfaces such as concrete or hardwood. The reverb effects on the voice and footfall tracks make it seem like we are in this type of room. After about 5 seconds, his/her voice is heard near the listener (about 5 ft away), and then s/he speaks again at twice as far away. Then we walk on for another 5 or 6 seconds.
5. Then a door (#2) is opened into a wood-paneled and carpeted hallway. (You would hear the opening door sounds reflecting the the large room we are about to exit.) The door closes. Footfalls are heard as the walker moves down the hallway. Dr. Braukmann comments. Quiet, muted and indistinct music (Use EQ to reduce the high frequencies.) is heard coming from behind

a closed door at the other end of the hallway. In this hallway, because of the wood paneling, there will be a small amount of first reflections, some short, some longer, and a touch of reverb. The music will gradually become louder as the walker approaches another door.

6. A latch is turned and the door (#3) is opened allowing the music to be heard more clearly as we enter a club. Also we hear the sounds of many people partying (use more than one track, as there are people near and far). This chamber has mixed hard/soft surfaces (typical acoustic tile ceiling, hard dance floor, etc.) surfaces. People's bodies soak up reverberation sound. So it has a *little* reverb, and a little quick early delay (almost so little you don't notice it.) The people's voices further away have less low and high frequencies than the people close to walker (use EQ). Dr. Braukmann asks a question, and then we walk through the club for about 10 seconds.
7. Another latch is turned and a door (#4) opens out into the street. The sound of music and the party folks is diminished as the door (#4) closes behind the walker. The muted sounds of the music then die away completely as the footsteps of the walker proceed down the street. (About 8 seconds)
8. The same ambience is heard as in the opening of the scene. The street ambience continues for about 5 seconds until it fades.

#### *Craft requirements for Assignment 1:*

- Avoid footfall sounds that have a “built-in” room sound.
- Don't create unrealistically loud footfalls.
- Reverb needs time to complete the envelope. You may have to insert ("Generate" in Audacity) some silence right after the foot falls, *before* you apply the reverb, in order for the reverb not to be cut off too soon. An easy way might be to lay out all the footfalls in one track, and then Track > Mix and Render that track, before applying reverb.
- Estimate for a large room about 50ft. by 50ft. Use delay, reverb, and possibly EQ.
- As doors close, the acoustics change. The door slam is being heard in the new space. So put the door closing sound in the new space.

- "Muted and indistinct" music would be dramatically limited in frequency range, especially lacking upper frequencies, because it is heard through a closed door.
- Always use short fades on all sound elements, even if the fades must be very quick.
- A "softer" room such as the carpeted hallway would not have nearly as much delay or reverb.
- Don't rush the transitions. Take a few seconds to set the scene. It takes time to open and walk through a door.

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### **Assignment 2:**

You are given three Frank Sinatra classic recordings, and you need to prepare them to go into a single product, perhaps the background music for a film. The three recordings need to sound more similar in frequency balance. That is, they need to sound as if they were recorded in the same studio at the same time. (Sinatra recorded at Columbia, Capitol, and finally Reprise)

Your client likes the frequency balance of *Sweet Lorraine*, so you do not have to edit *Sweet Lorraine* at all. However the other two songs sound different in frequency balance. Using only EQ and your ears, see if you can edit *On the Sunny Side of the Street* and *So They Tell Me* to sound more like *Sweet Lorraine*. Don't overdo it!

Please do not post (turn in) *Sweet Lorraine*, just the two songs you edit. Please be certain your name is in the file name, like *w2a2SunnySideBraukmann*, and that **your name is in the comments box of the metadata window** (the last one you see as you export from Audacity).

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### **Study Questions**

What are the four parts of a sound envelope called?

Describe "overtones"

Describe "harmonics"

Describe "timbre"

Describe "formants"

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### **Study Questions on EQ**

What is a plug-in?

What is actually happening when a sound is equalized?

What are common uses for EQ in our mixes?

What is a shelf in an EQ? ("Shelving EQ")

What is the difference between a graphic and parametric EQ interface? (Media College)

What exactly does a low-cut filter do?

What exactly does a high-cut filter do?

How can you best use an EQ to create a clear, more-defined mix: is it better generally to boost the frequencies you want, or cut the frequencies you don't want? *Answer: If you can accomplish what you want with subtractive EQ on what you don't need to hear, do that. Boosting frequencies with EQ may work OK but it tends to also introduce some unwanted distortion.*

Which frequencies *generally* apply to the following adjectives? (Answers given)

- Airy – breathy – Chimey - 10K Hz
- Bigger – fatter – 100 Hz
- Boxy – hollow – 300-700 Hz
- In your face – 1000 Hz
- Muddy – Boomy 100-300 Hz
- Muffled – too much 100-250 Hz
- Nasally – too much 500-3K Hz
- Sibilance – 4K-10K Hz
- Thin – too much above 4K Hz
- Tinny – too much 2K-7K Hz
- Warm – abundant 100 – 400 Hz

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### **Study Questions Delay and Reverb**

What are the three stages of a sound in a space?

Sketch an envelope of a sound that includes direct, early/first reflections, and reverb, in a particular space. Where would you mark "direct sound", "first reflections" and "reverberation" on the envelope?

Describe *Reverb time*.

Describe *Early reflections*.

Describe *Damping*.

Describe *Delay*.

Describe *Bandwidth*.

Describe *Dry – Wet balance*.

Describe *Hall, room, and plate reverb types*.

Describe *Echo*.

What physical characteristics of a room affect reverb time?

How would you describe the reflections/reverb for a small room? A large room? A room with hard surfaces? With soft surfaces?

Why might you want to EQ the *reverb*?

Does reverb change the original sound? Explain

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### **Study Questions from Audacity Guide – Reverb**

What is an "early reflection"?

How should Reverb Time be set for a small room?

Which size rooms need a bigger pre-delay, large or small? A: *Large because the reverb doesn't start until the first delay or echo makes it back to our ears.*

What does a *dampen* parameter do?

A: *Reduces the high frequencies in the reverb, especially in the sustain and release parts of the reverb envelope.*

When using reverb *in Audacity*, why does the author suggest putting a 100% wet reverb on it's own track? How do you do that?

A: *On it's own track, the level can always be readjusted. In other words you can readjust reverb later. First duplicate the track you want to add reverb to. Then add the reverb to the duplicated track at 100% wet.*

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### **Questions on Psychoacoustics and dB**

What options would make a particular sound seem loud to a listener?

How many dB difference is there in the level of a whisper, compared to the level of a normal conversation?

What options do you have to fix sound masking in a mix?

Why do we use dB to measure loudness?

Does increasing level from, say 10 dB to 13 dB (+3 dB) *seem* the same amount of boost as increasing the level from 50 dB to 53 dB (+3 dB)?

What is the smallest dB change in loudness that a person can generally detect?

How many dB decrease would make a sound seem like it is coming from twice as far away?

How many dB boost would make a sound seem twice as loud?

*What is the Haas effect?*

What is the useful (to you) difference between a meter showing RMS levels, or one showing Peak levels?