

DESN 275 Final Exam Questions

Winter 2010 - Tuesday Mar 16@2

Reading / Lecture study questions Sound Design Chapter 1

Physically, what is sound?

Physically, what is meant by production, propagation, and perception?

What causes *resonance*?

What is *psychoacoustics*?

What is *pitch*? What is *loudness*?

Are *loudness* and *amplitude / level* the same thing?

Loudness is perceived and depends on many factors such as frequency, whereas amplitude is simply the maximum sound pressure compared to neutral atmospheric pressure.

What is the fundamental frequency of a sound?

In typical musical tones, what % of the total sound heard is represented by the fundamental tone? (50%)

What is the fundamental frequency range of a typical male voice (baritone)? *110-425 Hz* Of a typical female voice (contralto)? *200-700 Hz* Of a bass guitar or double bass? *40-200 Hz* Of a piano? *28-4100 Hz*

What is the timbre of a sound?

Quality given by the amount and type of overtones.

What do overtones look like on a waveform?

What is a periodic waveform? A complex periodic waveform?

Explain sound frequency using the term "cycles."

What are Hertz (Hz)?

Why does it make sense to measure sound intensity in **decibels**, considering it is some logarithmic math thing that sounds kind of complicated?

If you want sound 1 to seem to be twice as far away from the listener as sound 2, how much quieter should sound 1 be in dB?

What is the relationship between wavelength and frequency?

Explain the parts of a sound envelope: attack, decay, sustain, release.

If you were preparing sound for a scene in a subway, basement, bedroom, log cabin, etc, would you mostly want to create the effect of reflection, scattering, or absorption?

Explain why sound sources that are either in-phase or out of phase change the amplitude of the sound.

Vocabulary from Class. Be able to explain each.

Cycles, Waveform, Wavelength, Frequency

Interference of sound waves, Beats

In phase, out of phase

Formants, Harmonics, Overtones

White and Pink noise

Loudness

LAME

Amplify

Clipping

Sine waves and sawtooth waves

Questions on Monitor Speakers

Terms: near or close-field,
de-coupling the speaker,
frequency balance,

What dB levels do professional engineers recommend listening to your mixes?

What are the characteristics of a good mixing / listening room?

Sound Design Ch 2 Analog Recording and Reproduction

What are three significant differences between a *dynamic* microphone and a *condenser* microphone?

What is *phantom power*?

What are *ribbon* microphones famous for?

What do these microphone directionality terms mean?
Omnidirectional Cardioid

What does a *pop filter* do?

What is the difference between *balanced* and *unbalanced* cables? Which one has 3 connectors? Which is better?

What is the definition of *frequency response* for microphones? For speakers (monitors)?

Sound Design Ch 4 The Computer and audio

p108 Why are zero-crossing points important when editing?

p110 What is reverb really? What is pitch shift?

p111 What is a noise gate? What is a compressor?

p114 What is normalizing?

Alesis USB Manual.

How to set levels. p8

What do each of the controls do on the "channel strip"?
gain, level, pan/bal, peak LED, aux, EQ

What is phantom power? p14

What is a simple recording setup? p17

From drbraukmann's Notes Online

The recording process flow charts

Mixing Engineer's Handbook Ch 2 Mechanics of Mixing

What do "tall, deep, and wide" mean in a mix?

Low to high frequencies are still present

Reverb places elements front to back

Stereo pan

What are the signs of an amateur mix?

No contrast (usually verse to verse)

Holes without fills (focal point)

Noisy mixes - breaths, clicks, rattles

No clarity nor punch - not distinct

No intimacy - too much reverb

Inconsistent levels

Boring elements - overused stuff?

Mixing Engineer's Handbook Ch 3 Balance

How can two elements "fight one another"?

Same freq range + same pan position

How do you keep elements from fighting?

Turn one off - move apart in pan

EQ uniquely

Limit the number of elements

Turn one down

What is a *foundation* in pop music?

Usually bass and drums

What is a *pad*?

Long duration holding instruments

Synth, horns, vibe chords etc

What is a *lead*?

The main vocal or instrument to listen to.

What is a *fill*?

Something you put in the pauses in lead

What are the rules for Arrangements?

3-5 elements at once are enough usually

Everything in its own frequency range

What are a couple of elements that most mixers generally agree they start with?

Bass + Drums

or Vocal/lead

Mixing Engineer's Handbook Ch 4 Panorama

Why do film soundtracks prefer a center channel?

Keep the phantom center from moving

What is usually panned to (near) the center?

Lead vocal - kick - bass

What should you pan all the way left or right?

Probably nothing! (nothing important)

What is different about panning for dance mix?

Anything all the dancers right and left need to hear should be nearer to center.

What is Joe Chiccarelli's technique: panning for clarity.

When does he do it?

Toward the end of the balance process

Fine tuning pan can yield increase in clarity

Mixing Engineer's Handbook Ch 5 Frequency Range

What are the three primary goals of EQing?

Make element clearer, better defined

Make element sound bigger

Make elements work together

What general frequencies represent the...

Bottom - kick drum - 63Hz

Boom - warmth - bass - 125Hz

Fullness - mud - 250Hz

Honk - body - boxy - 500Hz

Upper voice - crunch - brightness - 2kHz

Edge - 4kHz

Sibilance - brittleness - sparkle - 8kHz

Air - 10-16kHz

The more elements/instruments in a mix, the more... *bass boosted OR bass cut on each?*

Should the Q be wide or narrow when...

cutting? narrow!

boosting? wide!

If you want something to stick out, roll off the...

bottom!

If you want something to blend in, roll off the...

top (treble)

Discussion Questions on EQ - Equalizing Sound

What are the six general uses for EQs?

Which frequency range would you try to adjust if the sound was too harsh, too brilliant, too heavy/boomy, or not warm enough?

too harsh 500 Hz too brilliant 10K Hz

too heavy/boomy 40 Hz

not warm enough? 200 Hz

What is usually better with EQ, *cutting* or *boosting*, and why?

If you were given a sound file that needed EQ help, be able to sketch an EQ "curve" that would roughly match one that you would use on Audacity's EQ tool to solve the problem, and provide the EQ help.

What does a *spectrum analyzer* tell you?

Import MIDI files and assign to a synthesizer;
Render;

Mixing Engineer's Handbook Ch 6

EQing reverbs

How to make it stick out, or blend in
How to make it fit, to fill in a space

How to time delays to the track tempo
Calculating the delay time

Discussion Questions on Spatial Effects

Describe *delay*, *echo*, and *reverb* (also called *reverberation*).

What do these settings do to a reverb sound?

Delay	Reverb Time
Damping	Bandwidth
Dry – Wet	Hall – Room – Plate

How can delay and reverb help you simulate room size and surface types?

What does reverb do to an instrument or object sound's *placement* in a stereo mix?

Does reverb change the original sound? Explain

Mixing Engineer's Handbook Ch 7

What is dynamic range?

Be able to explain what a compressor does.

What is a threshold?

Be able to explain what a limiter does.

Be able to explain what a deesser does.

Do pop music bass guitar tracks have much

dynamic range, typically? Why?

What is gating? What are a couple examples of situations in which it would be needed?

What is the goal when adding compression to a bass guitar, a lead vocal, or a snare drum? p57

Then skip ahead to Setting the compressor p62

Compression Notes

Explain *compression*, *dynamic range*, *threshold*, *ratio*, *gain* *make up*, and *attack*

What are the main uses for compression?

What does a limiter do to a track?

What does a gate do to a track?

Tracktion (and typical editing software):

How to import sound files;

Set up a folder and organize files for a project;

Add EQ and Compressors;

Use high and low-pass filters;

Use Aux sends and returns for reverb;

Add automation to a basic function like level;

Add overall effects as comp, to the whole mix;

Cut, move, align, crossfade, clips;

Garage Band (and common to all loop editing software):
how to choose tempo, type of rhythm, time signature; how to select and loop an instrument; how to edit a loop; the differences between a "software" instrument and "real" instrument; how to move and arrange measures in the timeline; how to adjust levels, pan, and add effects such as reverb and compression; how to add a track, change a track's instrument, how to drag in an audio file created in another program; and how to export the final rendered file to iTunes.

Reading Questions from Sound Design Chapter 5

When, in the process of sound design/creation for a project, do sound designers use *semiotics*?

During planning, translating adjectives and emotions to musical signs

What is a musical *octave*? How are the frequencies of two notes an octave apart related?

What is meter?

an identifier like 4/4 telling how many beats in a measure / the kind of note assigned to each beat (full, half, quarter, etc.)

How loud is piano? *soft*

How loud is forte? *loud*

How fast is largo? *very slow*

How fast is adagio? *slowly*

How fast is presto? *very quickly*

What is an *interval*?

In a 12-half-step scale (It's what we generally use in pop music) how many half-steps are there in the following intervals:

<i>second?</i>	2	
<i>flatted or minor third?</i>	3	<i>consonant</i>
<i>third or major third?</i>	4	<i>consonant</i>
<i>fourth?</i>	5	
<i>fifth?</i>	7	<i>consonant</i>
<i>Octave?</i>	12	<i>consonant</i>

What two *intervals* are typically used to build major and minor chords?

How can you apply the emotional communication of intervals to sounds that are not really musical notes, such as door slams or footsteps?

Study Questions from Class

What does it mean to *change key*?

What would you do with a sound tool called **transpose**?

Blues often use common chords built on **which notes in the major scale**? *Answer: 1, 4 and 5*

What are some typical sound track chord strategies?

Sound tracks most often go back and fourth between 1 & 4, 1 & 5, 1 & 2 and combinations of those. They do a lot of other changes, but these are common.

What are some of the *semiotic guidelines* we discussed in class to help us support visual media with musical notes?

Low Tones - heavier, more important

Rising Tones - about to happen

3/4 Time - graceful

Resolving - tension is over

Resolving - ending on the home chord

Resolving - from a suspended chord

From CFG to CEG

Resolving - from an augmented chord

From CEG# to CEG

Speeding up - rising anticipation

How does music **resolve**? In a media project, what is an example of when would you want it to resolve?

Resolving refers to getting back to the first chord. It sounds like the listener is taken "back home."

What should we remember about EQ if we have two sounds with *similar frequency ranges* that occur at the *same time* in a media project?

Loop Questions

What is a loop? What is the difference between a loop and a short recorded musical passage?

Explain "transpose" clearly. Be able to include the terms key, notes, half-step(s), in an explanation of "transpose."

What are the differences between a "software" instrument and "real" instrument? Which one can you transpose the most? Which one lets you change individual notes? Which one is an actual recording?

Sound Map Questions

What is a "Sound Map"?

What is an example of an **environment sound**?

Nighttime, busy street, etc

An **action sound**?

Footfalls, doors

Things the character does

An **object sound**?

Cars, thunder, wind, equipment

How do we use adjectives in a sound map?

As design hints

"Lively, fun, subdued, raucous, etc"

What are examples of emotions that would make sense in a sound map?

Fear, love, surprise, loneliness

What are examples of physical or dramatic transitions?

Something is about to change

Moving to a new location

From the Mixing Engineer's Handbook

What is an A/D converter?

What is meant by sample rate?

What is meant by pulse-code modulation?

Describe the following sound file formats:

PCM, AIFF, WAV and AU

TTA and FLAC

MP3 and Ogg Vorbis

WMA and ACC

Real Audio

Dolby Digital or AC-3

DTS

MIDI

What are the common file types to use if you are editing for animation?

For CD recordings?

For the Web?

Synthesis

What is an additive synthesizer?

What is a subtractive synthesizer?

What is a sampler synthesizer?

How can you incorporate a synthesizer in a multitrack project?

How can you best set up and manage your computer when recording and editing complex digital sound projects?

Mastering

How is mastering different from mixing?

If you are bringing files to a studio to be mastered, what are four good pieces of advice?