

DESN 385 Advanced Digital Audio - Week 4

Assignment 1

Stereo Imaging/Localization - DAW Exercise

Create a recording with great imaging that recreates that of a live performer in front of the listener. You are encouraged to work with a partner from class. However, for experience, record both partners' voices.

For the purpose of this assignment, assume the spread between L and R channels is 120 degrees. Create a mono wave file that uses four short voice recordings imaged so as to seem placed at about 20 degrees from left, 45 degrees from left, 75 degrees from left, and 100 degrees from left. The voice recordings should simply announce the image location, as "This sound is 20 degrees from left."

Duplicating the mono recording and panning one copy to the far right and one to the far left will set up a basic center stereo image.

Use relative levels and relative phase/delay to create the best location images possible, left and right of center. Level differences will probably be modest, within a few dB. Also, the sound of the "away" channel may be slightly down in upper frequencies. That is, if the image is supposed to appear to be left of center, the right ear would hear a bit less high frequencies from that direction.

This will require experimentation on your part. For a sound to appear 45 degrees from left, the difference in distance it would travel to each of your ears might be as little as 1" to 1.5". A sound delay representing 1" longer path would be only .000073 seconds, or .073ms. (7.3×10^{-5})

Assignment 2 - Listening and Analyzing

Listen to a recital or practice in either the Music Department recital hall or another recital hall. Move to three very different locations in the room as you listen to the performance and answer the following questions.

- 1) How does the room affect frequencies? Are some reduced? Some increased? Which location in the room had the least problems?

- 2) Are there definite echos? In which frequency bands? Which location had the least problems?
- 3) What is the reverberation time of the room? Is the reverberation smooth or colored? Which location in the room had the least problems?
- 4) Describe the room setup at the time you attended. Which curtains were used? What the audience full? Where were the performers? Did they use any electronic amplification?

Assignment 3 - Listening and Analyzing

Listen critically to the examples of recorded music featured this week on the class web site, and make notes on the following:

- What is the reverb time of the room/recording?
- What is the color (frequency balance) of the reverberation?
- Are there frequencies that are over-represented (cut) or under-represented (boosted)?
- Which recordings seemed the most like a live concert?

Be prepared to discuss your notes in class and/or to turn them in.

Study Questions

What characteristics of live sound are usually lost when we use multi-channel tracks and panning in a DAW?

What elements of binaural ("two-ear") sound affect our ears' ability to perceive a stereo image? (A well-imaged sound will seem to come from a definite direction.)

How do we perceive whether a sound is coming from in front of, or behind us?

What are an important pro and con for each of the following stereo microphone setups? Which ones can be added to produce a good mono (for TV or Radio)?

Coincident pair of cardioids

Near-coincident pair

Spaced pair of cardioids

Spaced pair of omnis

Blemllein double figure-8

Baffled pair

When might a boundary mic be a practical choice?

What must you do to mix in a spot or accent mic track so as not to interfere with a live stereo mix?

How can mics be "low noise"?

Why do we often mic ensembles on tall mic stands, often 13' above the floor?

How would a reversed (crossed wires) mic cable affect a mix?

What is the reverberation time for a good concert hall (for acoustic instruments)?

What are two options for mic-ing an acoustic guitar?

What are two options for mic-ing a piano?

What is the ideal ratio of distance-apart to distance from the sound source, for placement of spaced pairs of mics?

Explain latency in a recording system. When and why does it happen? How can we overcome it?

Why would we want to try to talk musicians into using a click track? What's in it for them is music that doesn't speed up or slow down. But what is in it for us mixing engineers?

What do we need to keep in mind about the performing musician's space?

Be prepared to make a case for recording a room with the musicians, and for making a case for eliminating the room altogether.

From The Mixing Engineer's Handbook Panorama

What is the phenomena called "phantom center"?

Why did many early stereo productions in the early 60s have the vocals in one speaker and the instruments in the other?

What is "big mono"?

How does David Pensado create his own stereo effect for a keyboard track?

What't the point of "panning in mono" as practiced by Don Smith?