12 Recording

12.1 Mono vs. Stereo

• A mono recording uses one microphone. This gives a flat sound without any special imaging. This can be very useful for projects where instruments will be recorded, analyzed, and the sound processed and later spatialized.
• A stereo recording uses at least two microphones and thus creates a much better sound image. As a consequence, stereo takes twice the computer memory and processing, and stereo recordings can also be harder to mix in a multi-track project since constructive/destructive interference can drastically change the sound of the recording when both channels are summed together (when panning, for example).

12.2 Stereo Mic'ing Techniques

Stereo recording attempts to emulate the way humans hear. In other words, a stereo recording will contain, at least in part, the information we need to locate sounds in space: inter-aural time differences (ITD), inter-aural intensity differences (IID), and in the case of binaural recordings, head-related filtering (these are further discussed in section 8). There are many ways to record in stereo, but the following four techniques are the most common:

• **Coincident pair (a.k.a XY pair)**: Two cardioid microphones are at the same place, typically pointing at an angle between 90° and 135° to each other. Captures IIDs only.
  • Pros: Mono compatible since it eliminates phase cancellation problems. Sound very focused in the center.
  • Cons: Stereo less precise than other techniques.

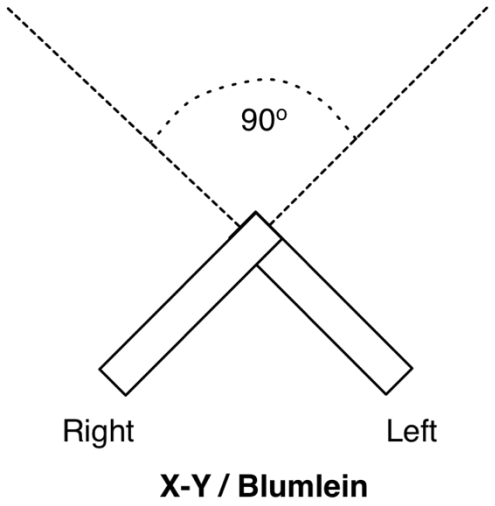

Figure 12-1

• **Near-coincident pair**: Two cardioid microphones typically placed 10-25 centimeters apart at an angle of between 90º-110º. Captures both IIDs and ITDs.

- Pros: More precise stereo image than XY.
- Cons: Mono compatibility less good than XY.
- Common varieties: ORTF (17 cm apart, 110º), NOS (25cm apart, 90º)

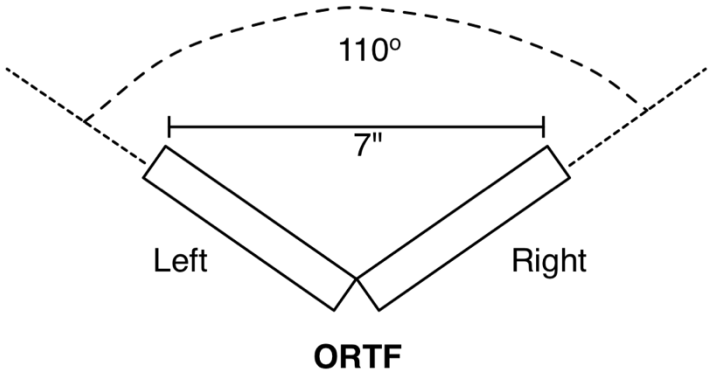

Figure 12-2

• **Spaced pair (a.k.a AB)**: Two omni microphones placed in parallel 20” to 10’ apart. The distance depends on the size of the sound source. Captures only ITDs.

- Pros: Very simple setup. Provides very wide sound field.
- Cons: Mono compatibility is poor. Because it captures a lot of room sound, the technique is only as good as the room you’re recording in.

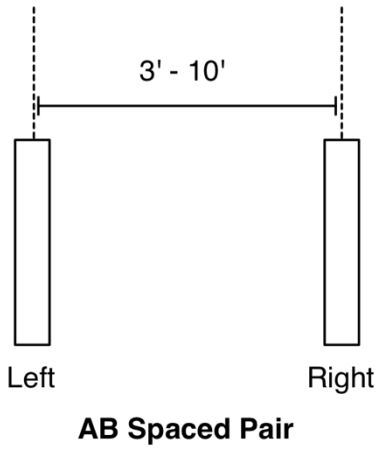

Figure 12-3

• **Binaural (a.k.a dummy head)**: Two very small omni microphones are places inside the ears of a dummy head. Captures IIDs, ITDs, and head-related filtering.

- Pros: Extremely realistic sound reproduction, even for sound in back of the head.
- Cons: Only works if listening to the recording with headphones; complicated setup