

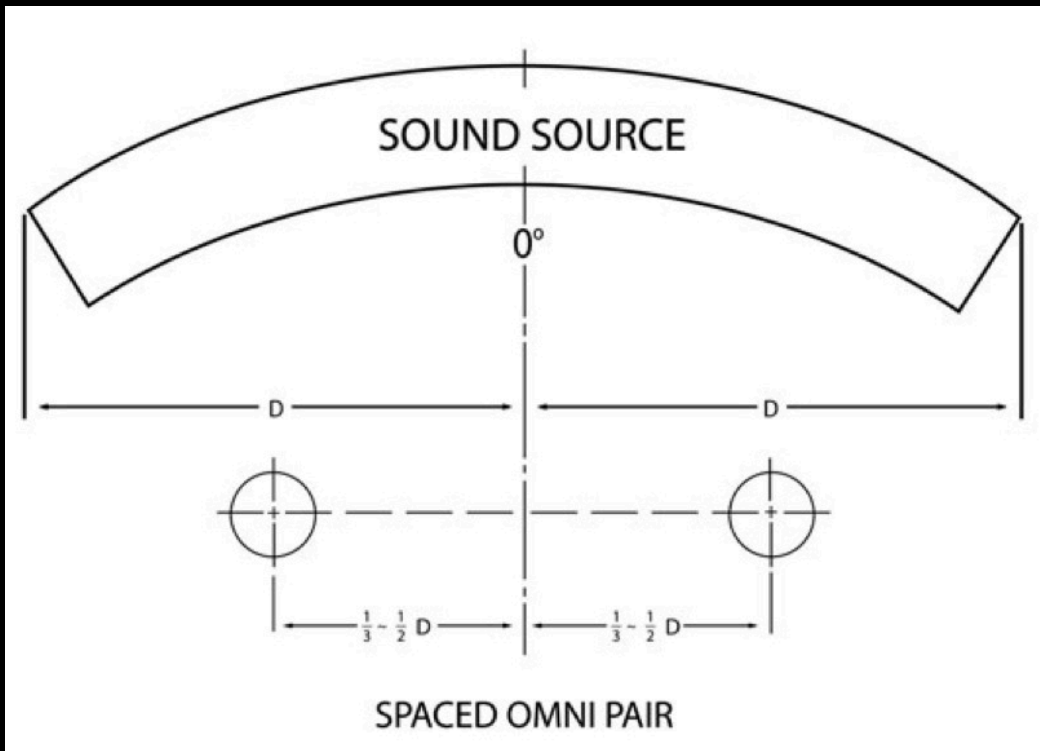
# STEREO MIKING TECHNIQUES

Improvements over mono miking:

- Sense of soundfield from left to right
- Sense of depth or distance
- Spatial sense of the acoustic environment

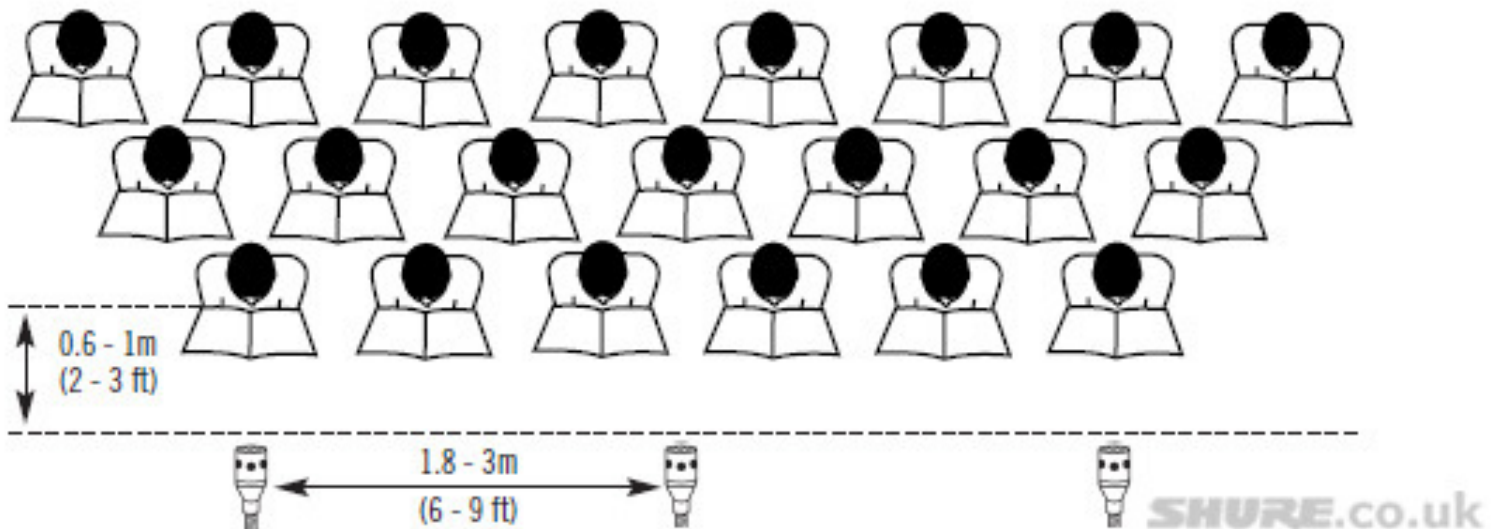
# SPACED PAIR

- Two identical mics placed several feet apart
- Omnidirectional mics work best
- The greater the spacing, the wider the stereo spread



# THE 3:1 DISTANCE RULE

When more than 1 mic is used, it's generally good to place a mic at least 3x as far away from the other mic as it is from the sound source.



# SPACED PAIR

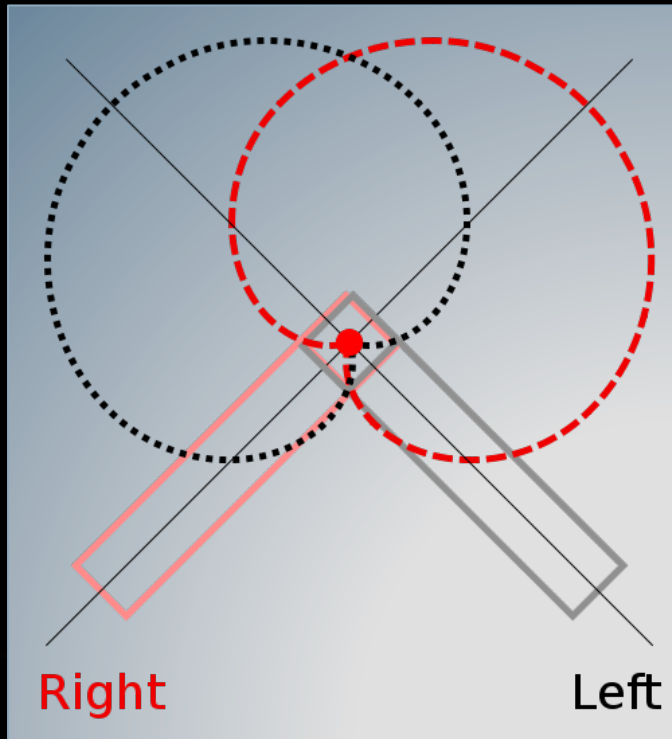
- The spaced pair method creates stereo imaging because the microphones are different distances from the sound source; therefore, they pick up sounds at slightly different timings.
  - When the time differences reach our ears, they have a stereo effect.
- Problems
  - Phase cancellation can also result whenever there are timing differences
    - Always check for mono compatibility
    - The 3:1 distance rule helps with this issue as well
  - The stereo imaging created by a spaced pair is not that precise
    - Sound tends to 'blur' between the speakers rather than forming an exact phantom center or panned image

# COINCIDENT PAIR

- Two microphones placed as close as possible but at different angles
- Side-steps some of the phase and imaging issues of the spaced pair
- Pioneered by Alan Blumlein in the 1930s

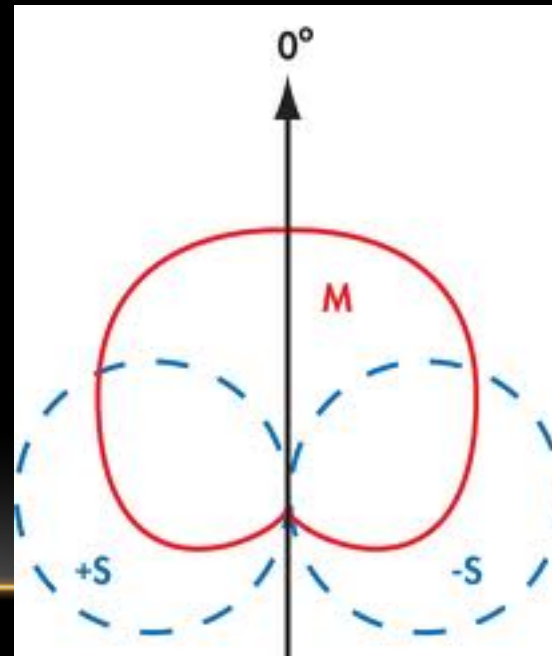
# X/Y

- Requires two identical *directional* microphones (usually cardioid)
- Mic capsules are placed as close as possible at a 90° angle
- Minimizes phase cancellation



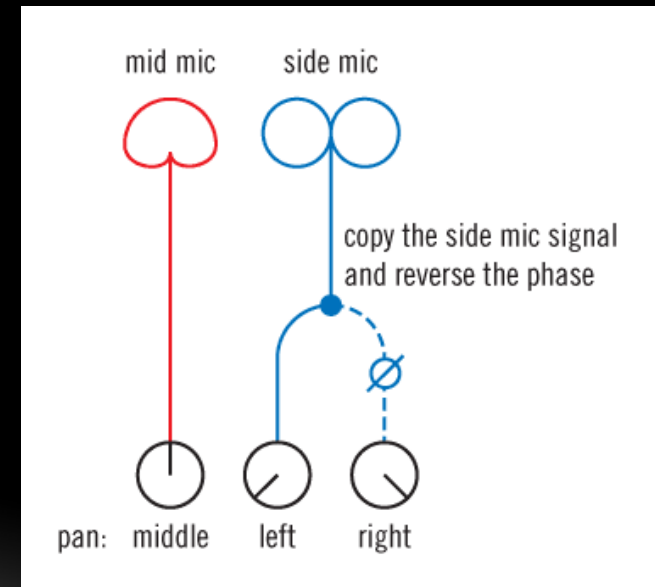
# M-S (Mid-side)

- Directional (or possibly omni) mic pointed toward the source and a figure-8 mic pointed toward the sides
- Gives you more control over the stereo width
- Minimizes phase cancellation *even better* than X/Y technique



# Mid-side

- Requires *decoding*:
  - Theoretically, the two sides of the figure-8 mic are 180° out of phase.
  - To re-create this effect, split the signal from the figure-8 mic into another channel with reversed phase. Then hard-pan each.
  - The result represents the two sides of the figure-8 mic's pickup pattern.
  - Keep the mid channel panned center.
  - You can control the stereo width by changing the level of the side mic (and its copy)



mid - cardioid



side – figure 8



stereo

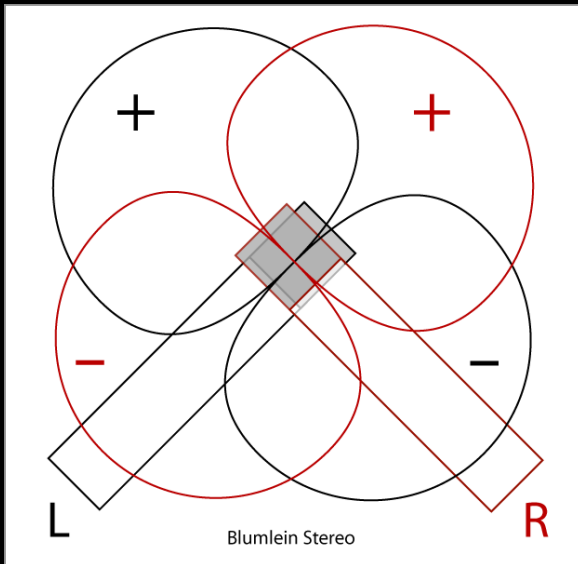
Hear the sound examples [here](#)

Perfect mono compatibility!



# BLUMLEIN ARRAY

- Two figure-8 mics set at a 90° angle
- Best results when close to the source
- Higher channel separation than the X/Y pair
- Picks up sound all around the setup



# NEAR-COINCIDENT PAIR

- ORTF
  - Stands for *Office de Radiodifusión Television Française* (the Office of French Radio and Television Broadcasting.)
  - Accurate sound localization
  - Greater sense of space than coincident pair (because of the distance between mic capsules)
  - Distance between mics roughly the same as distance between the ears

