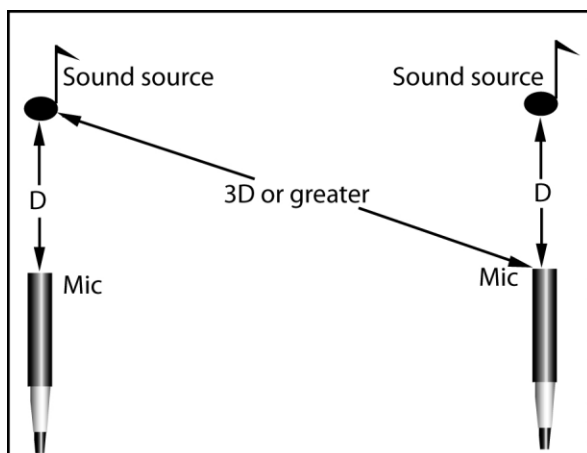


THE THREE-TO-ONE RULE

Suppose you're recording a singer/guitarist. There's a mic on the singer and a mic on the acoustic guitar. When you monitor the mix, something's wrong: the singer's voice sounds hollow or filtered. You're hearing the effect of phase interference.

In general, if two mics pick up the same sound source at different distances, and their signals are mixed to the same channel, this might cause phase cancellations. These are peaks and dips in the frequency response—a comb filter—caused by some frequencies combining out of phase. The result is a colored, filtered tone quality that sounds like mild flanging.

To prevent this problem, follow the **three-to-one rule**: space the mics at least three times the mic-to-source distance (as in the figure below). For example, if two mics are 12 inches apart, they should be less than 4 inches from their sound sources to prevent phase cancellations. The mics can be closer together than 3:1 if you use two cardioid mics aiming in opposite directions. The goal is to get at least 9 dB of separation between recorded tracks.



Continued...

What if you pick up an instrument with two mics that are panned left and right? You don't get phase interference. Instead you get stereo imaging.

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