

The Three-to-One Rule

Another problem arises in smaller studios where players are often seated closer together than is desirable. [Figure 14.28A](#) shows what is called the “three-to-one” rule. That rule states that, when using omni microphones, the distance from a microphone to its target sound source should be no greater than one-third the distance from that microphone to the nearest interfering source. Violations of this rule result in comb filtering, which is a series of notches in the resulting frequency response. The three-to-one ratio will reduce the level from the interfering source by an average of 10 dB. This results in the depth of the resulting comb filter notches being reduced to about 1 dB, which is usually acceptable. When one instrument is significantly louder than the other, then the adjustment shown at B must be made. Obviously, depending on orientation, cardioid microphones may diminish interference problems all the more.

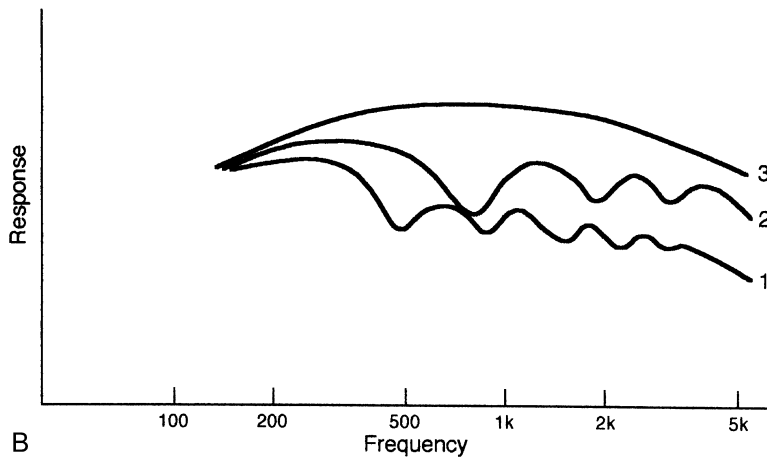
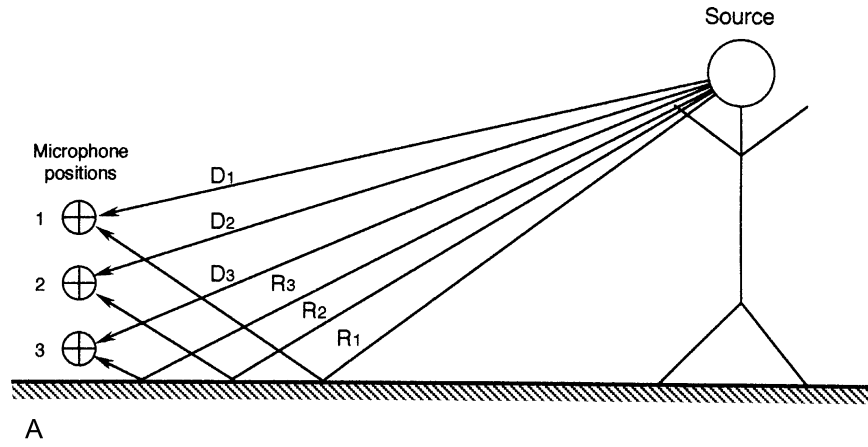


Figure 14.26
Reflections in the studio: microphone positions (A); response (B).



Figure 14.27
A directional boundary layer microphone. (Photo courtesy of Bartlett Microphones.)

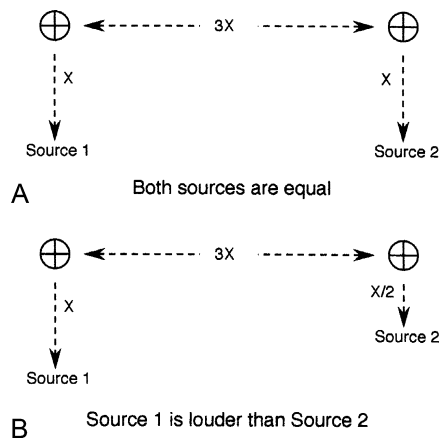


Figure 14.28
The “three-to-one” rule in omnidirectional microphone placement: both sources about equal in level (A); source 1 louder than source 2 (B).