

## Whatever Happened to OMNI?

There was a time, long, long ago when we had microphones which would operate in omni and figure of eight patterns. It seems that with the advent of multi-track recording, the omni pattern microphones got shelved. Too bad!

We still have a variety of multiple-pattern microphones that we still use but the selector switch seems to be stuck on cardioid. I think that this was a direct result of multi-track recording where the fear of leakage into the microphone from other instruments made it the safe way to go. Also, as the recording venues got smaller and smaller, it became more important to try to microphone-isolate as much as possible.

The natural pattern of ribbon microphones is figure of eight since the jaws of the big magnet block sound from the sides as well as the fact that the ribbon (and it is a corrugated, very thin aluminum foil ribbon) either faces forward or backward, 180 degrees out of phase with itself. This was very handy in the ancient days of radio where two actors could face each other and be picked up by the mic with an identical sound for both. The still famous RCA 44 series as well as the RCA 77 series were designed with this in mind. Of course, as in the case of all ribbon microphones, the output is low since the electrical generating force is the corrugated ribbon vibrating between the jaws of a powerful magnet. Modern consoles generally have enough gain to compensate, but remember, with more gain, there is more amplifier noise.

To compensate for the need for greater isolation, for example, for the single radio announcer, RCA built a shutter into the back of the 77 (there is a screwdriver adjustment to make the change) to mechanically cut off the back half of the figure of eight. Unfortunately, it creates a resonant chamber around the ribbon and therefore changes the sound of the mic.

All microphones with omni capabilities sound best in omni. Wow! That's a wild, irresponsible statement. All microphones with omni capabilities sound best in omni. Along with the microphones that you buy, many manufacturers still supply a frequency response graph and a polar pattern graph, often hand drawn for that particular microphone. It is easy to read these, once you get your microscope oiled up. Different types of broken lines (dot-dot, dot-dash, dash-dash, etc.) represent different frequencies. Polar patterns are simply the response of the mic, looking at it from the top, broken into various standard test frequencies. If it is a multi-pattern mic, you will get a polar pattern print for each pattern.

If you notice the polar pattern responses and compare them, you will always get a much more even frequency response from the microphone when it is in omni pattern. The frequency response graph will also a much flatter response in omni.

For you to know the polar pattern of any of your mics will help you with mic placement. A good engineer can EQ the voice or instrument by knowing the polar pattern response of the mic. By adjusting the mic a little off axis, you can often EQ or de-ess an instrument or voice. However, you have to know your microphones.

Well! you say. This is a fine theoretical work but what do I do in real life? The bass is leaking into the vocal mic, the guitar is leaking into the bass mic and the drums are leaking into everything. How can I put my mics in omni? It would be a disaster.

Yes. Live studio spaces are getting smaller and smaller because of the economics of high rents and other operational costs. In the 60's and 70's, studios were built to be as dead as possible because of the need for isolation as multi-track recording became the way to go. It sounded as it was - dead. Then live-end, dead-end studios became popular to try to compensate for the dead recorded sound. (Thank God for the EMTs). A little tape hiss and some ambience managed to creep in, and with analogue recording of that time, with good high frequency response, some excellent sounding recordings were made.

A lot was forgotten about microphones, and good mic techniques had fallen on the altar of multi-track recording. The large diaphragm mics, which were designed to be used 20 feet back from the sound source (recording symphony orchestras) were now being used two inches away from the singer's tonsils. We got 'proximity effect', a boost in the base response on cardioid mics as a result of their being used improperly. True, the singer live and on stage, generally swallowed the hand-held mic, but in the studio, did we have to imitate the stage mistake? How many times did I put up a dummy mic a few inches away from the singer with the active mic where it belonged, a few feet back?

Now, there has been a return to the 'airy', 'warm' sound of vacuum tubes. Because of the horrors of digital recording, we have spent the last 15 years trying to correct that mistake. Perhaps if you try to record with more omni pattern mics, some of the 'airy' and 'ambient' sound can be recaptured.

Leakage? I was never too concerned with leakage - for the most part, all of the tracks will be combined anyway. Gobos are a partial answer. These are movable, sound absorbent walls of various dimensions that can be put behind and around the omni mics to block some of the leakage. Room positioning of the instruments is also quite important, like not putting the drum kit with the drummer's back to a corner of the room. If you can't go omni with the group, at least try omni on the overdubs. You will get a much more natural sound, if that is what you are going for.

The way that we use microphones has evolved as the industry has changed. In the process of changing, many of the good attributes of these microphones have been forgotten. Many of the 'classic' microphones have a range of patterns switchable through various steps between omni-directional, cardioid and figure of eight. Some of these intermediate steps can combine the excellent frequency response of omni with a partial directionality. The AKG C-12 is an excellent microphone in this regard.

The mic manufacturers have given us some good tools to work with. We should learn to use these to their best advantage. To leave all of your mics stuck in cardioid for all time may be cutting into the quality of your recordings. In omni, the airyness, ambience and musicality might be enhanced.

Try it. You might like it.

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