

Column by Renzo van Riemsdijk (Masterenzo): Why do headphones sound different from speakers?

Nowadays we listen to music differently from 20 or 30 years ago. The classic hi-fi set is somewhat expelled by soundbars, portable Bluetooth speakers and most of all earbuds and headphones. Fortunately the resurrection of vinyl has become the salvation of this classic listening experience.

Because we mostly consume music through earbuds or headphones, the way we listen to music has also changed a bit. Previously we listened to albums on CD or vinyl. You had to actually listen and put up new music as the record is spinning and comes to an end. Today we mostly listen to playlists with a continuous flow of new songs through music streaming services. This allows us to do all kinds of other things while listening to music. We don't need to actually pay attention because the playlist ensures there's always music playing.

But salvation is on its way! Many youngsters pay regular visits to local record stores to get a hold of that fancy album on vinyl. Vinyl is actually booming. I see it as the saviour of a high quality music experience. And besides there is another vast difference when listening through earbuds or headphones.

Imagine playing a vinyl record in your living room. Warm analogue sounds are coming from your excellent speakers (at least, I may hope so). Your ears perceive those sounds with goosebumps as a result (at least, let's assume so). Of course, the same can be achieved while listening to music via headphones.

And yet there's a major difference: when listening to music via speakers your ears perceive the music from both speakers (left and right) with both ears. This works different with headphones. Since the earcups from your headphone are in direct contact with your ears, the left ear only hears music played in the left channel, while the right ear only hears music played in the right channel (assuming you wear your headphones properly; L on left, R on the right).

But what's the difference? When listening through speakers your left ear also perceives music coming from the right speaker and vice versa. In short: the stereo image is becoming diffuse (strictly speaking). The 100% channel separation achieved with headphones and earbuds is being released when listening through speakers. That's not a bad thing. In our daily lives we also hear things simultaneously with both our ears.

We could say that listening through headphones doesn't do right to a realistic listening experience. But still we experience music through headphones or earbuds as intense. This has to do with another essential difference between listening through speakers and headphones: listening distance. While listening your favourite record through speakers your ears don't sit very close to the speaker drivers (at least, I may hope so). You'll need some distance to perceive a proper stereo image when listening through speakers.

When listening through earbuds the distance between the driver (sound source) and the (inner) ear is only a couple of centimetres. This causes an intense listening experience as well as some extra low end perception. The extra low end is caused by a phenomenon called "proximity effect". The proximity effect is regularly used by tracking engineers to achieve extended low end when recording vocals or other sources with a microphone. As a microphone is placed closer to the sound source, the low end increases. This effect also applies to headphones. The closer the driver to the ear, the more low end is perceived.

But which of the two is better? There are no winners or losers here. Anyway, vinyl cannot be played on a mobile device (at least, I've never seen it before). After all it depends on the mood you're in and how you'd like to listen to your music. With stereo image on which I've worked effortlessly (vinyl) or with extra low end (on which I've also worked effortlessly), through earbuds. I do get a little nervous when drivers are that close to my ears (that's probably me), so my preference is listening through speakers. And with speakers turned up your neighbours can also thoroughly enjoy your excellent taste in music...

Renzo

Renzo (Masterenzo) is a Rotterdam based Dutch mastering engineer. As the owner of premium mastering studio Masterenzo Mastering he has worked for many independent artists like Voncken, Black Nazareth and Hédi Carlee (Charlie Dée).

More info about mastering and about Masterenzo can be found on [the web](#).