

Acoustic Recordings, Gershwin and Diamond Cut

Amazingly, we find a way to tie them all together!

When CDs first came out, LPs continued to sell in large numbers for several years. When stereo recordings first hit the market, mono recordings continued to be made for years after that. In fact, most advances in audio technology took several years to really dominate.

But there is one big exception and that's with Acoustic Recordings. When newer electrical recording technology was invented, BAM; acoustic was as dead as a doornail! Seemingly within hours, the main recording method was dead and the new one took over. As far as we know, this has never happened before or since in the audio world.

Acoustic recording and playback on cylinders was invented by our old friend Thomas Edison. Basically, it worked like your ear does. Sound waves are captured as they travel thru the air and were used to excite a stylus which inscribed these sounds on a wax cylinder or record. This method worked well as long as no better one existed, but it did have it drawbacks. It was fine for recording speech or, say a piano player, but it was very difficult to record an orchestra or any large group of musicians. A group would have to squeeze into a small recording studio and all gather round the recording horn in order for their instruments to be recorded. Also, musicians couldn't play too quietly or too loudly - one would get lost in the noise floor and the other would cause distortion. The result was that both the public and the recording community rejoiced when modern microphones and amplifiers were invented (by Bell Labs, of course) - now they could play naturally in a concert hall setting if they wanted.

Many musicians rushed back into the studios in the late 1920s and 1930s to re-record their music with the new electrical systems. These systems just sounded so much better, it was an obvious thing to do.

But there are recordings that could not be done over. In some cases the musician had died, in others there was no demand for the music. But in some cases, the recording could not be redone simply because the moment for it had passed.

Such is the case with the 1924 acoustic recording of George Gershwin playing Rhapsody in Blue. Gershwin wrote this piece in three weeks and performed it before he even wrote down his own piano parts. The piece caused something of a sensation and he rushed into the studio to record it - acoustically of course. The resultant recording is starkly different from what we hear today on the United Airlines commercials. It's a true piece of 1920s music with a crackling energy unlike any later recording that was made after the music was much better known. You only get one chance to perform it the first time for recording, and we're lucky to be able to hear this. Notice how the opening clarinet part dissolved into musical laughter.

You can listen to this in two parts if you'd like:

<http://www.archive.org/details/rhapblue11924>

<http://www.archive.org/details/rhapblue21924>

Why is it in two parts? Because the records of the day could not hold the entire piece.

Now that you know a bit more about acoustic recordings, we should consider how they might be improved with Diamond Cut. As you can hear on these, acoustic recordings have a very high level of a continuous type surface noise. You'd think the CNF filter would do the trick here - and it does do a good job on this type of thing, but the speed regulation of some of these recordings causes our frequencies to go up and down and we don't always get good noise reduction without Artifacts.

A better approach to something like this is to use the Auto Spectrum CNF under the continuous noise filter. This is an adaptive filter so you have to approach it a bit differently than most. First, we want some good resolution, so we'll set the FFT size to 8192. This should yield good results. Next, we'll start the preview and we'll let it continue for 30 seconds or more as the filter "learns" the noise. Set your attenuation about 1/2 way as you do this. You'll hear the noise decline as the filter learns about it. Once the filter has reduced the noise fairly dramatically, we click the "freeze" button. This stops the adapting and allows the filter to continue to remove the noise its identified. Now just click run filter and you've got your cleaned version.

If you download one of these files, remember that these have been damaged by encoding them as MP3 files. We can still remove about 50% of the noise quite well, but doing more than that will causes artifacting problems.

So, there you go - a lesson in Diamond Cut, information on the history of acoustical recordings and a music review all in one article! They said it couldn't be done.