

Remastering The Beatles



by [Andrew Low](#)

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Roughly four years ago, Allan Rouse got the call from EMI that the entire Beatles catalogue needed to be remastered. Like Hannibal on the A-Team, Rouse needed only to make the call and his men sprang into action. The years between then and now have comprised long hours spent by a meticulous team that worked from the original masters and laboured over every detail at each step of the process.

The team consisted of Rouse as project co-ordinator, recording engineers Guy Massey, Paul Hicks and Sam Okell, mastering engineers Steve Rooke and Sean Magee, and Simon Gibson, Cedar Audio restoration engineer.

With the men assembled and plans in place, Guy Massey began the process for the stereo versions while Paul Hicks tackled the monos. Hicks explains: "We wanted to make the recordings sound the best they could, very respectfully. Our first process was spending a lot of time going through quarter-inch machines and a range of EMI test tapes from over the years."

Loading the tapes

After trying out several machines, the team chose a Studer A80 tape machine with a 1972 test tape. Each song was then loaded from the original analog tapes through Prism Sound's ADA-8XR multi-channel modular ADA converters into Pro Tools. Massey states: "Pro Tools was treated as a master machine and we didn't use any plugins. The songs were formatted to 24 bit/192kHz and video referenced. The speed of the tape machine was always watched to make sure it was running at the right speed.

"The tapes are still in great condition – nevertheless we loaded everything track-by-track, cleaning the tape machine heads and rollers between each song.

"The original transfers were done in 1986 when digital was in its infancy. I am not knocking the original transfers, but I think from the point where we re-transferred and archived the master tapes, we were already a step ahead because the technology has come on in leaps and bounds. What some people may perceive as an added eq is actually the result of better transfers, especially in the low end and the high top. Upwards of twenty tracks were not eq'd at all because we didn't think we could improve them in any way."

The team at Abbey Road was very conscious of not affecting the spirit of the songs from their original versions. As such, they performed A/B listening tests with the existing CDs and vinyl at every step of the process. Hicks comments: "It's not a project where we could forget the past. We had cutting notes from the originals so that we could see what they were actually doing."

"Once we archived the masters we would get a print out of the lyrics and timings and listen to each track on a separate basis three or four times, make detailed notes of technical noises that we felt we would like to remove or reduce," Massey explains. "We only addressed things that we considered to be extraneous to the performance, such as clicks from mics and faders, tape drop outs, bad edits, mic pops and sibilance.

"We then took the master 24-bit/192kHz file to Simon Gibson in the restoration suite and he used Cedar Retouch to fix anything we wanted to change. We then chopped those fixed bits back into

the master file so that we had a new, edited master file. The whole team deliberated every change and we were determined to keep the audio as pure as possible.”

Massey states that de-noising was a bit of a contentious issue, thus it was used for less than one per cent of the entire catalogue – five minutes of the 535 total minutes. “De-noising was used for things like intros or if hiss was enough that it was excessive, but we have only taken it down very subtly.”

Mastering

Once all the edits were made the files were taken to the mastering suites at Abbey Road where Steve Rooke and Sean Magee handled the stereo and mono recordings respectively.

“It was an analog process from that point on,” Rooke comments. “The tracks came out of Pro Tools through the Prism AD8s into the analog domain and were then injected into the studio’s 1972 EMI TG mastering console. We then eq’d and transferred them to a Sadie Series 5 PCM 8 DAW at 24-bit/441kHz. The main carrier was going to be CD so we kept it at 44:1 to avoid the extra process of sample rate conversion, therefore keeping the signal as pure as possible. Once each album was compiled we did a digital capture through a Jünger DO1 digital limiter, the limiting was done afterwards to give us more flexibility. We didn’t want to limit as we eq’d because it would have been difficult to change at a later date. The team listened to them post limiter.

“When we were capturing the final mastered version, we played the songs out of Sadie in the digital domain through the DO 1 limiter into a Prism AD-124 AD converter for noise shaping. All the songs were noise shaped and dithered back into 16-bit and then captured back into the Sadie at 16-bit/441kHz, which is what we made the masters from.

“During the mastering process we listened to each track and decided where we wanted to go with it, if we wanted to add or remove eq to help instruments or vocals. We went through each track, made the adjustments and then recorded into Sadie.

“The next day we listened to the tracks in Studio 3, talked about it and made notes for changes. The changes were made and we started the entire process over again until we were all happy with the tracks.

“We mostly used the eq on the TG desk, but it is in dB steps so any additional eq’ing was done on a Prism ME2 to hone into something with finer steps or target certain frequencies. Different parts of certain songs were treated in different ways. If a chorus was a bit bright ...

le we would adjust that accordingly. This was especially apparent on a song like Yellow Submarine because the sound effects were so bright. I am the Walrus was another tricky one because it was so different from the rest of the catalogue.”

Limiting

“All modern day CDs are limited very heavily because everyone wants to be the loudest,” Massey states. “We spoke about this at the very beginning and it was unanimously established that the stereos would be limited slightly because they are aimed at the modern market. The monos are more for the collectors so they were not. The stereos are probably three to four dBs louder than the original, so a lot of the time the limiters are not working.”

Rooke adds: “It is just the very fast transients that would normally show over level on the digital metres that it took down. There are still waveforms to be seen. We really wanted to keep the dynamics.”

“We liked a bit of limiting because we felt it made the recordings a little more exciting, but not to the point where we would be upsetting the original dynamics,” says Massey. “Some modern recordings really shout at you and we didn’t want to do that to these songs. This is a back catalogue that has never been remastered before and everybody knows The Beatles. We knew that fans were going to be inspecting the catalogue through a microscope and we wanted to get it right.

“The purist might ask why we didn’t just transfer the songs straight from the quarter-inch machine straight into Sadie, but we felt that we wanted to address anything that they would have wanted to remove. When I do a recording I don’t want to hear pops all over the vocal – it annoys me. If The Beatles were recorded today I’m sure they would have addressed those same issues.

“With all the changes that we made, if we felt it interfered musically we wouldn’t do it. For instance,

the chair sound at the end of A Day in the Life or Ringo's squeaky drum peddle – they are part of the history and vibe of the song so we didn't want to remove those things.”

“It takes a lot of time to get the confidence to get your head down and go for it on a project like this,” Hicks states. “I have to be happy and then the team has to be happy and then Rouse and then Apple and The Beatles and then that is where it stops. It is just too big.

“If you went into the project thinking about all the people who are going to analyse the waveforms you would never get anything done. We did what we thought was right and hope that everyone likes it.”

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