MASTERING REPORT

Audio Mastering

VEPT30010

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Contents

1. Technical Justification

1.1 System 6000 #1

The system 6000 is an 8-channel outboard processor that can be used for mastering, broadcast, film, and music (Canford, n.d). Its mastering side houses some high-quality real-time mastering tools like limiters, equalisers, and compressors. TC Electronics discovered that software plugins that were compressors or limiters did not always work like their analogue equivalents and many limiters at the time added a subtle distortion that would be difficult to notice when mastering but would cause serious playback issues when the tracks hit radio or a CD players. (Owsinski, 2005).

Doug Mountain is a re-recording mixer and sound designer who has been using the system 6000 since it first came out and has been using since, most noticeably on the US Grammy Awards for the national academy of recording and sciences and he goes on to state (T.0:53) that at the time in the industry there was no other boxes that could contain a 5.1 mix with multiband compression. He later goes on to say one of the most important tools the System 6000 had released was the unwrap feature which was a great addition at the time as it allowed for engineers to out-mix from stereo to 5.1. (TC Electronic, n.d)

Mark B. Christensen is a mastering engineer based in New York and he uses the System 6000 for this masters and he mastered the album, Shaolin vs. Wu-Tang by Raekwon (TC Electronics, 2011) (Allmusic, n.d). Mark states (2011, T3:35) that he uses three engines in the system 6000 at the start of his signal chain and afterwards it goes through a load of analogue based equipment but at the end of his chain he goes back through the system 6000's converter to get it back to digital as he believes it to one of best analogue to digital converters out there. (TC Electronics, 2011).

Pete Doell a mastering engineer based in California, and he is a system 6000 users, he stated that, (2015, T0:10) the System 6000 is an absolutely necessary tool for mastering engineers. He mastered the album Re:(disc)overed by Puddle of Mudd (Allmusic, n.d) Pete Doell goes on to say that when he has a mix that requires little correction he often find himself using purely just the system 6000 and says that the tools inside the system 6000 is very musical tools and addresses the brickwall limiter, he compliments the brickwall limiter for its very subtle approach and it being a very great tool. (TB Electronics, 2015)

1.2 Samplitude Pro #2

Samplitude is a DAW typically used for mastering as all of the effects are built to work best for mastering tasks, they built it to have such things like, peak, loudness, frequency, and phase are accurately and easily visualised within the DAW. An interesting feature of Samplitude is the ability to have multiple different sample rate and bit depth tracks within it at once as simply allows for more freedom when working with tracks. (Magix, n.d) Samplitude plugin thrive when it comes to quality instead of quantity, as ammunition, Samplitude's compressor/limiter, supplies a crisp, clean compressor that gives a subtle volume boost and adds no ugly colouring. (Blum, 2008)

Lukas Drozd is a mastering engineer from Poland, he uses Samplitude for his mastering projects, compositions, and mixing. He has mastered The underground man's no secrets track (LukasDrozd, 2020)

Josh Bonati is a mastering and vinyl cutting engineer based in Brooklyn, New York. Josh uses Samplitude for his mastering projects but also for vinyl cutting, stem mastering and restoration/ remastering work (Magix, n.d) (Aes, n.d) Josh has mastered WOLF!'s album WOLF!, as well as Ava Luna's album Infinite House. (Allmusic, n.d)

Siegfried Meier is a mastering engineer based in Canada, he uses Samplitude for his mastering projects and has gone on to say that no other DAW works as fast and the sound from Samplitude is the best. He has mastered Gypsy Chief Goliath's album New Machines of the Night (Allmusic, n.d) Siegfried has stated (n.d) that he would not hesitate to use other DAWs for his mastering, but Samplitude is a very powerful tool and is so easy to use. He continues to say how the object editor and ability to burn straight from Samplitude are great assets for him, as well as its handing of ISRC codes and other CD text. He finishes by saying the editing workflow is fantastic, snappy, and responsive. (Magix, n.d)

1.3 Lipinski L-707s #3

The L-707 loudspeakers are Studio monitors built by Lipinski sound (Figure 1), they are designed with components that have little distortion and supply maximum damping, with a wooden core foil inductor which has a resistance less than half of a wire-wound foil inductor. The material is a 1-inch thick MDF with strong internal bracing that gives no audible colouration or resonance. (Lipinski Sound, n.d) (Katz, 2004). (Figure 2 & 3) shows the specifications, acoustic crossover, and frequency response of the L-707, these show that the quality of the L-707 are extremely high and that these monitors are not your average loudspeakers. (Lipinski Sound, n.d) (Greenhill, 2005)

Figure 1 L-707 Monitors

L-707 Monitor

One 1" (25 mm) Neodymium Ring Radiator tweeter,
Two 7" (18 mm) Glass Fiber Mid-Woofers in MTM configuration,
Frequency response: 56 Hz - 20 kHz ±1 dB (31 Hz - 40 kHz ±3 dB),
IEC Power Handling: 250 W,
SPL: 90 dB lW/lm,
Impedance: 4 Ohms,
Dimensions: 23.6" H x 9.4" W x 12.4" D (600 mm x 240 mm x 325 mm),
Weight: 41 lbs (18.5 kg).

Figure 2 L-707 Specifications

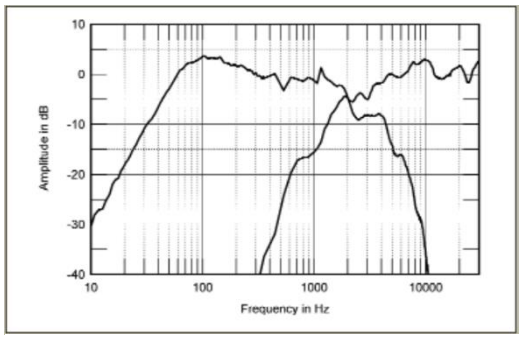


Figure 3 L-707 Acoustic Crossover/ Frequency Response

Bob Katz is an American mastering engineer. Bob wrote in 2004 a review on the L-707 where he states that (2004, pp.3) it was quite a challenge to be better than Dunlavy but after buying the L-707s he believes the L-707s are much better. He further goes on to say that he used the Reference 3As for eight years and would have never expected to change at the drop of a hat but after trying out the L-707s and hearing their ability to make it easier to notice subtle processing from compressors and equalizers and delivering masters that translate even more better in the outside world he had to get them and replace his Reference 3As (Kats, 2004). Bob Katz with the L-707 has mastered Miami Saxophone Quartet's album Midnight Rumba, Rich Walker's album Bar Hop and The Real Tuesday Weld's album The return of the Clerkenwell Kid back in 2005 (Allmusic, n.d)

Larry Greenhill is a music producer and mix engineer, he has worked on Frank Sinatra's Duets/duets II: 90th Birthday Limited Collector's edition, Willie Nelson's Collections, Vol 2, and Willie Nelson's The Songs album in 2005 (Allmusic, n.d). Larry has stated (2005, pp.6) that the L-707 loudspeakers live up the hype, Lipinski has created portable loudspeakers with high-end qualities, superb dynamic range, great detail, three-dimensional imaging, and very accurate instrument reproduction that are usually only associated with super expensive equipment. (Greenhill, 2005)

2. Reflective Evaluation

The biggest take away from this Audio Mastering Module is the ability to further analysis music with hearing and use of tools and equipment in a mastering context and general use. Being able to hear the pressure position of instruments and vocals when mastering and mixing has improved the overall quality of the work tenfold, being able to focus on the positions of all the elements in the track helps put in to perspective what needs to be done to correct the track and how far the track has got to go to become fit for commercial use.

This new improved hearing analysis will be in part due to the Equal loudness Contour, which is what frequencies the ear hears at certain decibels of sound (Figure 4) To summarize, the ideal listening volume is 83dB due to minimal colouration from the ears (Suzuki, 2003). From learning this information all mixes and masters are to be done at optimal listening level of 83dB.

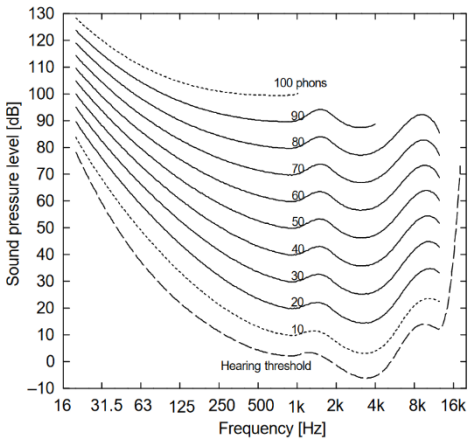


Figure 4 Equal Loudness Contours

Despite improved analysis hearing, the subtle changes from processing tools like Equalisation and Compression are still difficult to hear, especially on the M-audio AV32s at the home setup but work arounds have been developed to help critical listen to processing changes (Figure 5). By isolating the frequnecy content the subtle processing changes can be more noticeable.

Figure 5 Using Multiband Compressor to Isolate Frequency content of Lil Backpast

Further understanding compressors has been a definte improvement in the mixes and masters done, understanding the subtle but important relationship between each control parameter has made it clear how to properly approach compression and to get the best out of a compressor, it is still difficult to hear the changes completely and even harder to avoid the visual aids of the compressors but due to knowing how to use the compressor gives the confidence to know the compressor is set correctly. (Owsinski, 2017)

The processes taken to begin mastering start with a V1 (Version 1) first judgements (Figure 6), processing path (Figure 7), processing outcomes (Figure 8) and Transfer path (Figure 9), these are done so you know exactly what the goal is when undertaking this master, instead of messing around, it helps gives context to what needs to be correct, how to do it and potential errors after correction is done. It also makes it easier to make a logging sheet afterwards. It is a very organised method of mastering but by doing this it ensures the best outcomes and allows for correction if something goes wrong. (Owsinski, 2017)

Lil Backpast

First Judgements V1

- Verses dynamic
- Bass is weak
- Good stereo spread, side information weakfish
- Snare weak
- Chorus main vocals weak
- Sibilance

Figure 6 First Judgements V1

Processing Path V1

1. Manual Compression to control each section
2. Linear phase eq first to remove low end noise and high-end noise
3. Downwards compression to help boost the vocals and bass in verses (parallel)
4. Downwards compression to help boost the kick and snare (parallel)
5. Add compression for bass and vocals
6. Manual compression, split *bridge* into own track to avoid automation lag, compression for *bridge* vocals and Upwards compression on *bridge* for phone sounds
7. MSE ON
8. Add compression for vocals
9. 1dB compression for side information
10. MSE OFF
11. Fabfilter eq to remove sibilance

Figure 7 Processing Path V1

Processing Path outcomes V1

1. Manual Compression to control each section (RAISE LEVEL FOR EACH SECTION TO GET EQUAL LEVEL THROUGHOUT)
2. Linear phase eq first to remove low end noise and high-end noise (REMOVES UNWANTED/ HARMONIC DISTORTION FROM TRACK/ IMPROVES RMS)
3. Downwards compression to help boost the vocals and bass in verses (parallel) (MAKES QUIETER ELEMENTS LOUDER, MAY OVER POWER OTHER ELEMENTS OF TRACK THAT ARE NOT COMPRESSED)
4. Downwards compression to help boost the kick and snare (parallel) (MAKES QUIETER ELEMENTS LOUDER, OVERCOMES VOCALS AND BASS OVER POWERING THE DRUMS.)
5. Add compression for bass and vocals (REDUCES DYNAMICS)
6. Manual compression, split *bridge* into own track to avoid automation lag, compression for *bridge* vocals and Upwards compression on *bridge* for phone sounds (REMOVES AUTOMATION LAG, COMPRESSION TO CONTROL DYNAMICS AND LEVEL. UPWARDS COMPRESSION TO REDUCE PHONES SFX LEVEL)
7. MSE ON
8. Add compression for vocals (FURTHER CONTROLLING DYNAMICS, MIGHT BECOME TOO LOUD COMPARED TO REST OF THE TRACK)
9. 1dB compression for side information (STEREO IMAGE BECOMES WIDER)
10. MSE OFF
11. Fabfilter eq to remove sibilance (CLEANS UP VOCALS, REDUCES MASKING)

Figure 8 Processing Path Outcomes V1

Graphical Transfer Path V1. Red for MSE. (Clean) for digital tools, (Analogue) for analogue tools.

1. (Clean) Manual Compression to control each section
2. (Clean) **Fabfilter Linear phase EQ** first to remove low end noise and high-end noise (low end - 34Hz, -20dB, 36dB/oct Shelf) (Manley massive passive high end - 27kHz, -6dB, Shelf)
3. (Clean) **Weiss Ds1** Downwards compression to help boost the vocals and bass in verses (parallel) (threshold at -27, ratio at 4.00:1, knee at 60, attack at 630ms, release at 800ms, parallel compression bottom at On)
4. (Clean) **Weiss Ds1** Downwards compression to help boost the kick and snare (parallel) (threshold at -26, ratio at 2.53:1, knee at 10, attack at 0.32ms, release at 160ms, parallel compression bottom at On)
5. (Clean) **Dyn3 compressor** for bass and vocals (1.25 ratio, knee 6.2, attack 157.6ms, release 830.2ms, threshold -22.5dB, makeup 1.8dB
6. (Clean) Manual compression, split bridge into own track to avoid automation lag, compression for bridge vocals and Upwards compression on bridge for phone sounds

7. MSE ON

8. (Clean) **Dyn3 compressor** for vocals (Mono only) (ratio 2:0:1, knee 3dB, attack 194.1ms, release 800ms, threshold -22.4dB, makeup 2dB)
9. (Clean) **Dyn3 compressor** 1dB of compression for side information (ratio 3:0:1, knee 0dB, attack 104.3ms, release 872.9ms, makeup 3dB, threshold -27.6dB)

10. MSE OFF

11. (Clean) **Fabfilter Linear Phase EQ** to remove sibilance (bell, -5.82dB, frequency 6454.7kHz, Q 6.9, 12dB /oct)
12. (Clean) **Ableton POW-r 1** dither

Figure 9 Transfer Path/ordering and Tool Type

During the processing applying part of the master session, references from Owsinski's mastering handbook were mostly used as this book goes in to detail on most mastering tools and how to use them properly. Some additional from Savage's Mixing and mastering in the box book, as well as audio mastering Lynda series and mixing and mastering Lynda series. The Lynda series helped visual their application of the processing tools.

After all the steps have been written down and the processing have been done and everything is going to plan, then it is worth making a V2 and reviewing the V1 master and seeing there is any more processing that can be done to achieve a commercial ready master.

For future development, training of the ears would be vital for being able to hear the subtle changes from processes as well as fully understanding the processing tools, further experiment would be good, set goals to achieve with a particular tool and try to do it.

3. Appraisal of Audio Tracks

3.1 Gunship – Tech Noir #1

Tech Noir was mixed by Carl Bown and Jim Pinder. Both work at Treehouse studios, they have mixed tracks such as Bullet for my Valentine's Gravity, Machine Head's Bloodstone & Diamonds album and Trivium's In Waves. (Bandcamp, 2015) (Treehouse Studios, n.d). Geoff Pesche is a mastering engineer working at Abbey Road Studios. He has done masters for artists such as: Gorillaz' Feel Good Inc., Basement Jaxx's Hush Boy and Kylie Minogue's Into The Blues. (Abbeyroad.com, n.d) (allmusic.com, 2019) (Bandcamp, 2015).

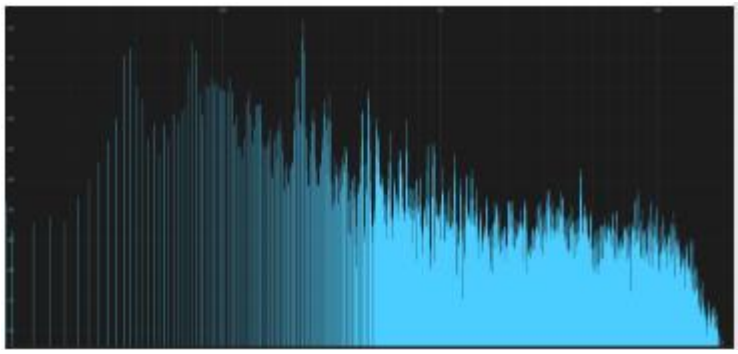


Figure 10 Frequency Spectrum Graph

This Spectrum graph shows that the song's 400Hz and below frequencies are louder than everything else above 400Hz. (Figure 10). This helps the track's low end be audible through playback devices that lack low end, so listeners still enjoy the music. (Owsinski, 2013). 400Hz and above is flat, resulting in a frequency balance that will help the track be played on many devices and still sound good (Owsinski, 2013) (Figure 10). This flatness is in line with the Cube system, which is the process of making the width, amplitude and frequency content fit in a cube to be properly transposed to one device to another. (Formation Audio, 2015)

Another element of this track that is well mastered is the stereo image. As shown in (Figure 11), the track has good width to the song and has a good phase relationship. This is evident in the orange phase meter which averages around -3, this shows that the track is in phase, as it does not sound weak. The stereo tool also shows that the song is not one-sided, which is shown in the off-white meter above the phase meter. It shows that the song has an average equal level on left and right. Which is essential for any good master. (Owsinski, 2013).

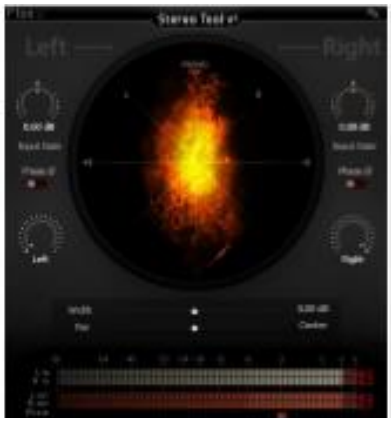


Figure 11 Stereo Tool

Gunship – Tech Noir EBU Grade.

Comments	Parameter	1	2	3	4	5	6
A clear, large and acoustically balanced reverberation. The low end is clearly perceived and not muffled by the reverb. The reverb is very large and unnatural. (2:25 to 2:33, vocals and percussion elements for example)	**Spatial Impression**						x
Good width, great spacing of toms and backup vocals. Great directional balance, the song does not feel one sided. Location accuracy good, the vocals, bass and drums are positioned accurately and given space to breath.	**Stereo Impression**						x
Sound definition is good, the chime-like synth and female vocals at 1:36 are defined well despite sharing frequencies. Very intelligible.	**Transparency**						x
The loudness balance of each track is good. The dynamic range is great, as the track's chorus' and bridge average at 1.5dB while the rest of the song is averaging at -1.5dB, which really gives the chorus' and bridge a huge, epic sound. And the song has retained a lot of its dynamic range despite being mastered for commercial release.	**Sound Balance**						x
The attack of the drums is great, as well as the transients on the cymbals. Every other track in the sound has good attack and transients also. The vocals feel sharp and warm, the female vocals are very light and crisp.	**Timbre**						x
The song is sonically impressive, excellently mixed and mastered. Everything is clear and easily perceivable. The dynamic range is great.	**Main Impression**						x

3.2 The Contortionists – Reimagined #2

Jamie King produced, mixed, engineered and mastered The Contortionists' album Clairvoyant, which contains Reimagined. He has produced, mixed, engineered, and mastered Scale The Summit's album The Migration, Soften The Glare's album Making Faces and Thomas Giles' album Don't touch The Outside. (Jamie King Audio, n.d) He owns the studio Basement studios in North Carolina, USA. (Jamie King Audio, n.d)

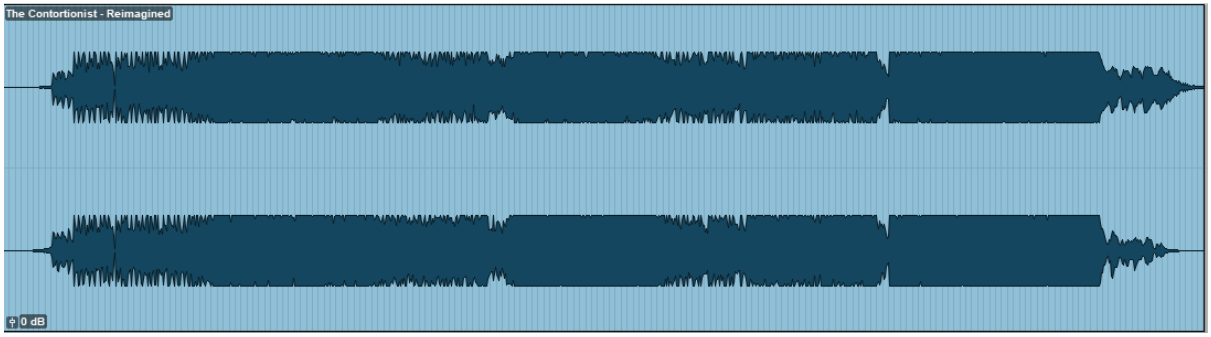


Figure 12 Reimagined Waveform

(Figure 12) shows that Reimagined is on the border of being hypercompressed, when listening to Reimagined it is apparent that there very little dynamic range. This decision to do this to the track falls in line with competitive level, which is competitive nature of trying to make songs louder due to customers gravitating towards more louder music. (Owsinski, 2017) This decision may has not been from Jamie King, as he states (n.d) that his primary goal is ensure the expectations of client are met, where that be the artist, record label, and/or management so there is a possibility that he just doing what they have asked for. (Noisecreators, n.d) (Owsinski, 2017) It is worth noting that this will translate well on many devices. (Owsinski, 2017)

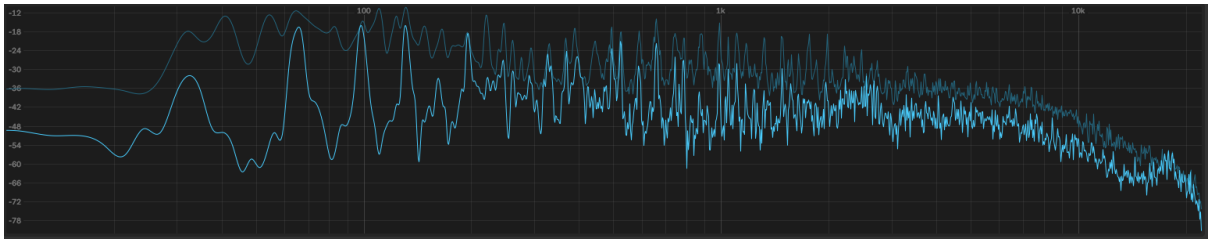


Figure 13 Reimagined Frequency Spectrum analyzer

(Figure 13) shows the spectrum analysis of the loudest part of the song (T:2:28), and it shows that the track is fairly flat with nothing being overly peaked or troughed (Owsinski, 2013) this also falls in to the cube system, even more so than Tech noir due to having less of a dynamic range and lower level bass frequencies resulting in a track that fits better in to the cube system. (Formation audio, 2015)

The Contortionists – Reimagined EBU Grade.

Comments	Parameter	1	2	3	4	5	6
The spatial image is nice, chimelike and large, but a reasonable size. Fits the track's tonality. Also not too over bearing, the track still has its weight.	**Spatial Impression**						x
Nice stereo image, good and even directional balance, width is not too wide or too narrow, a good even width. The stereo image is mostly taken up by reverb, especially at the subtler sections.	**Stereo Impression**						x
Great clarity and definition, the bass guitar especially, throughout the track the bass has a nice, rich, weighty tone and it consists through the entire track even when the bass is not the focus. Vocals have great definition.	**Transparency**						x
Has a good, even loudness at the expense of the dynamics as song is on the boarder of Hypercompression. Everything is clearly perceived throughout the track. Maybe too much compression in the goal of loudness.	**Sound Balance**					x	
Superb tonality, sounds warm and light while also sounding dark at some sections with the great bass sound and vocal performance.	**Timbre**						x
The track sounds great, tonality is amazing with every elements within the track sounding great and with great definition. The track would benefit from less compression and more dynamics.	**Main Impression**						x

3.3 The Midnight – River of Darkness #3

Tim McEwen mixed and produced River of Darkness; he is also the vocalist of the band The Midnight. He had produced The Wanted's Word of Mouth album. (Allmusic, n.d) (Discogs, n.d) The track was mastered by Anders Schumann, a Danish Mastering engineer based in Copenhagen. He owns a studio called StudioC4 (Figure 14) (Bandcamp, 2017) (StudioC4, n.d). Anders Schumann has mastered Darkness Falls' Dance and Cry album, Laid Back's Cosyland album and Men Among Animals' Buried Handsome album. (Allmusic, n.d)

Figure 14 StudioC4

It is interesting to note that side information for River of Darkness mostly consists of the reverb and delays, when muting the sides the song loses most of its reverb and spatial image. It is also worth noting that the Left and Right balance are well balanced (Figure 15) This helps the song translate on multiple devices and stay neutral, as then the only difference from the left and right will be due to the playback system the track is played on. (Owsinski, 2013)

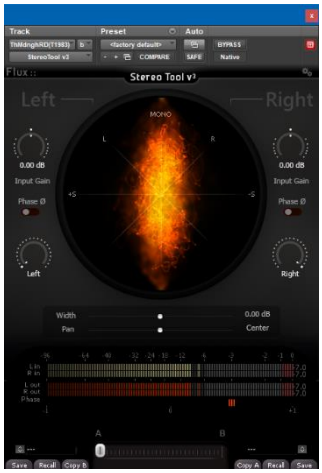


Figure 15 Stereo Tool

What is very interesting is that all three of the references track follow this modern mastering technique for competitive loudness, as all three tracks have a very large amount of compression on them (Figure 16)

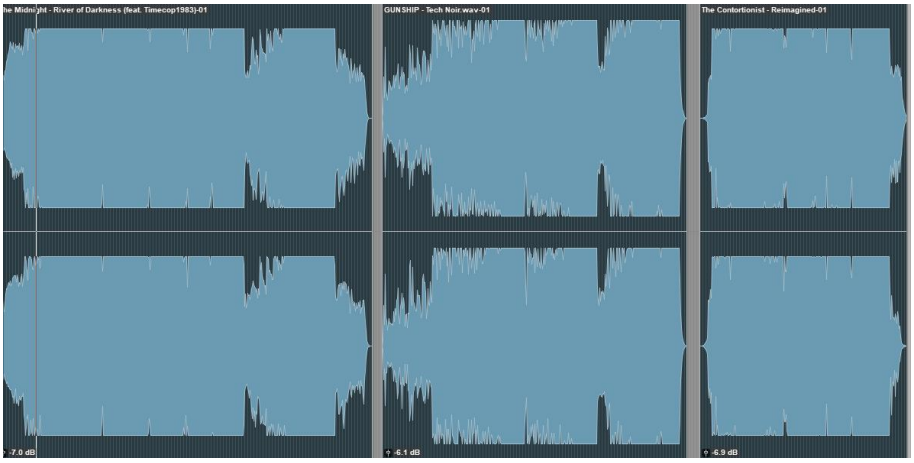


Figure 16 Competitive Loudness level

This falls in line with what Owsinski stated (2017, pp.66) The loudness war that we experience these days started back in the 50s in the vinyl ear. It is also worth mentioning that Owsinski also mentions (2017, pp.66) that many top mastering engineer pride themselves on being able to create mastered that are maxed out on level and also do not distort. This is one separation from a professional master and an amateur. All three of these tracks have no unwanted distorted at all, showing proof of their validity (Owsinski, 2017)

The Midnight – River of Darkness EBU Grade

Comments	Parameter	1	2	3	4	5	6
The spatial image of the track is large, unnatural and bright, this qualities add to the tracks tone and provides a great sounding atmosphere.	**Spatial Impression**						x
The stereo image is interesting as the side information houses mostly just the reverb and delays, this is not a bad thing; instead, it adds to make a stereo image that is wide and clear. The stereo image is not busy, and it benefits from it.	**Stereo Impression**						x
Everything has great definition even with a large reverb, the definition is not lost. Everything has a weighty, rich texture that supplies an excellent tonality to the track. Maybe the snare is a little boomy.	**Transparency**						x
The balance of the tracks elements is superb, everything is clear and where they should be in the mix. Small dynamic range but at all flat. Does not sound overly compressed and has not audible distortion.	**Sound Balance**						x
Being a synthwave track, the instruments do not portray natural characteristics, except the saxophone, but this is due to most of the instruments being synths and drum samples that are either 80s inspired or from the 80s. So, in terms of having 80s music characteristics, this track has that.	**Timbre**						x
This track is well mixed and mastered, everything is clear and sounds great. The definition of the instruments are superb, especially the saxophone.	**Main Impression**						x

4. Contextual Analysis of References

The EBU method of subjectively analysing music is very well crafted, the options given cover all bases and allow the reviewer to focus on those elements which results in a review not taking very long. The three graded EBU sheets within this report are examples of that, it was straight forward to pick apart the track and make a judgement on whether the tracks were good or not. There was an attempt to make each EBU sheet unique from track to track but in a good way it can be difficult to do that being how narrow and straightforward the criteria are.

When crafting the EBU sheets for this report, it is an interesting train of thought as the EBU sheets are well developed and when writing these EBU sheets it felt natural to be relaxed, calm and not necessarily in the frame of mind someone would consider when trying to be critical but the EBU sheets design helps with that as there is not much thinking on the reviewers part as they just need to go through the sections, listen to the music and make a judgement and the easy nature of the EBU sheets provides good judgements due to this.

There is an argument to be made that maybe it should not be so handhold-like as this can result in reviewers not going in depth with the EBU sheet, and also not considering something that does not fit in the sections specificness. But it could also make more complications and annoyance if the reviewer has nothing to go off and might cause over thinking.

5. Statement of Approach

See Appendix (1) for Excel Logging sheet

5.1 Lil Backpack – Lil Backpast #1

Manual Compression was done to equalize the level between each section and to avoid automation since it lags the audio and make the compressors processing more effective. (Figure 17) (Formation Audio, 2015)

The Fabfilter Equaliser was set to Linear Phase and with a low shelf (Figure 18). The Manley Massive Passive was set to a low pass shelf (Figure 19) The Fabfilter was selected for its Linear Phase function as this helps keep the EQ clean and subtle (Owsinski, 2017) (Figure 18). The Gerzon shape used was to increase the more audible low end and being simpler to apply than to apply two separate shapes. (Bent, 2000).

The Manley Massive Passive was used due to being a clean, passive EQ and it being able to cut frequencies above 20kHz. Which helped remove harmonic distortion and noise. (Owsinski, 2017) (uaudio, n.d)

Three compressors were used, two Weiss DS1s set to parallel compression, one for the vocals and bass and the other for the drums. (Figure 20) Figure 21) The last compressor was a Dyn3 set to slightly compress the bass and vocals again, these processes were done to increase the micro dynamics and give more detail. (Figure 22). The Weiss was used for its flexible, transparent compression and its parallel function. (Katz, 2003) and the Dyn3 was used due to equipment limitations and due its straight forward and basic but effective nature (White, 2009) (Owsinski, 2017).

An MSE used to isolate the mid and side information for better processing and control of the track. (Owsinski, 2017) (Figure 23)

(Figure 24) shows the compression used on the mid information for the vocals, this was done to reduce the dynamics of the vocals and also bring it up in level. (Owsinski, 2017) The reason for applying it after the MSE was so the vocals were more easily focused by the compressor. (Owsinski, 2017).

The side information was weak, compression was applied to help bring it up in level, which helped improve the stereo image. (Owsinski, 2017)

The reason for using the Fabfilter Equaliser instead of Pro tools' de-esser was due to it being awkward and creating an overall negative effect by reducing the snare and hi hat in level. Whereas the equaliser's isolation feature gave the ability to find the sibilance and reduce it solely without negatively effecting other elements of the track. (Figure 26) (Owsinski, 2013)

After feedback, in V2, an Equaliser was applied with a shelf to boost the low end since it was under control but slightly weak. (Figure 27) (Owsinski, 2013)

5.2 Near Mrs – Crooked #2

When analysing the track, it was obvious that the first section is vastly different, thus different processing would need to done for each section. So in order to make the processing part easier, a manual split of each section was done so the processing would be separate. (Figure 28)

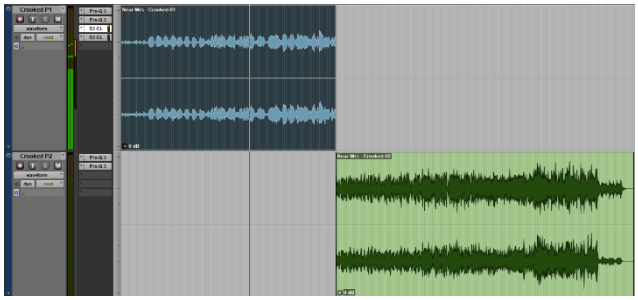


Figure 28 Manual Split of Track's section

A Fabfilter EQ was used to apply a low shelf and high shelf to remove any noise, unwanted weight, and harmonic distortion from the track. The Fabfilter was used due to being the best parametric EQ available with its simple, yet effective design. (Figure 29) (Owsinski, 2017)

Another Fabfilter was used to balance out some of the harsh/weak frequencies (Figure 30). Feathering was used as this helped keep the processing smooth and allowed for further reduction of the frequencies. (Owsinski, 2017)

After applying the MSE, a Fabfilter EQ was applied to the side information to reduce some of the level of the lead guitar, to make this not obvious, the feathering technique was applied. This resulted in the lead guitar losing some of its pressure and sitting further back in the mix. (Owsinski, 2017)

The last MSE side processing was a upwards compressor, this was done to further reduce the level of the lead guitar as it was still overpowering the track. (Figure 32) By doing this the guitar sat further back in the track which reduced the masking from the guitar and allowed for the other elements of the track to shine. (Owsinski, 2017)

The last processing in V1 was originally a parallel compression process to raise up the micro dynamics and reduce the overall dynamics of the track, but after this was applied and judgement began for V2, it actually caused more problems due to raising the noise floor in the quiet section, thus it has to be removed to negate the noise. (Owsinski, 2017)

After removing the Parallel compression and beginning the V2 processing, a compressor was applied to reduce some of the dynamics of the entire track. After listening to track with this processing applied the dynamics were futher under control. (Owsinski, 2017)

5.3 Jimbo – Chains #3

Two Fabfilter Equalisers were used to remove the noise and harmonic distortion, and to balance out the frequency content. (Figure 34) (Figure 35). The tracks frequency content is fairly flat to begin with, so a feathering processing was applied to raise the high end as it was the only major trough. (Owsinski, 2013)

Afterwards some manual compression was done as the track had very inconsistent level changes between sections, doing this helped keep the level consistent and made all the dynamic processing work more effectively. (Figure 36) (Formation Audio, 2015)

An MSE was applied to address the mid and side information of the track as the side information was too load and the vocals were not the focus of the track. So the side information was simply turned down (Figure 37). This was done instead of any processing due to not needing it, there is not much of a point to process it with a compressor when simply turning it down can do just as good as a job, especially when the goal is to turn down the whole thing instead of the peaks.

Two compressors were applied to the side information, one bring up the micro dynamics of the guitar and the other doing the same for the cymbals (Figure 38) (Figure 39)

These compressors was applied differently from any compressors in any of the masters, as instead of being set to subtly apply the compression with a slow release, the release for these two were set to follow the instruments they were compressing which made the compressors compress more aggressively, which resulted in a much fuller sound and gave them the clarity they lacked (Owsinski, 2017)

The more subtle approach could have gave the same outcome but results in other elements getting compressed as well, whereas this shorter release method helped make it more focused on the guitars and cymbals. (Owsinski, 2017)

Two compressors were applied to the mid information for the bass and vocals, one was more subtle with a long release and the other had a shorter release. (Owsinski, 2017) This helped bring the vocals to the forefront and gave the bass the fullest it needed.

After the V1 was finished, The track was really controlled expect for the two peaks (Figure 40) So an upwards compressor was applied which compressed the two peaks to control them. (Owsinski, 2017)

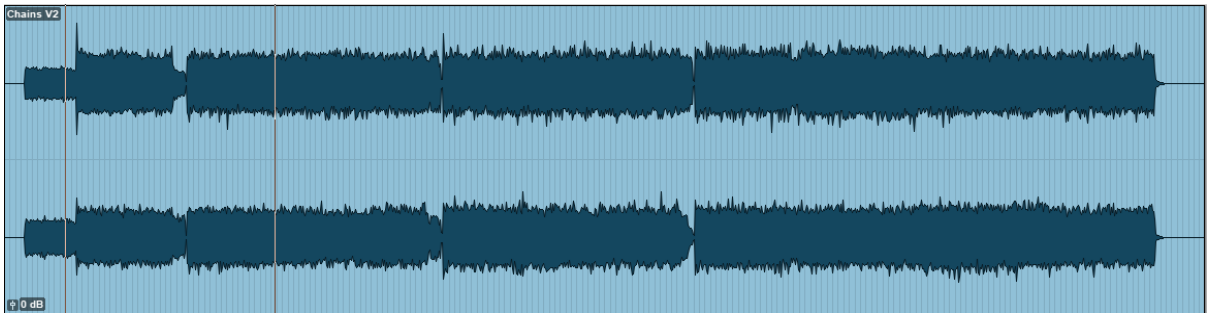
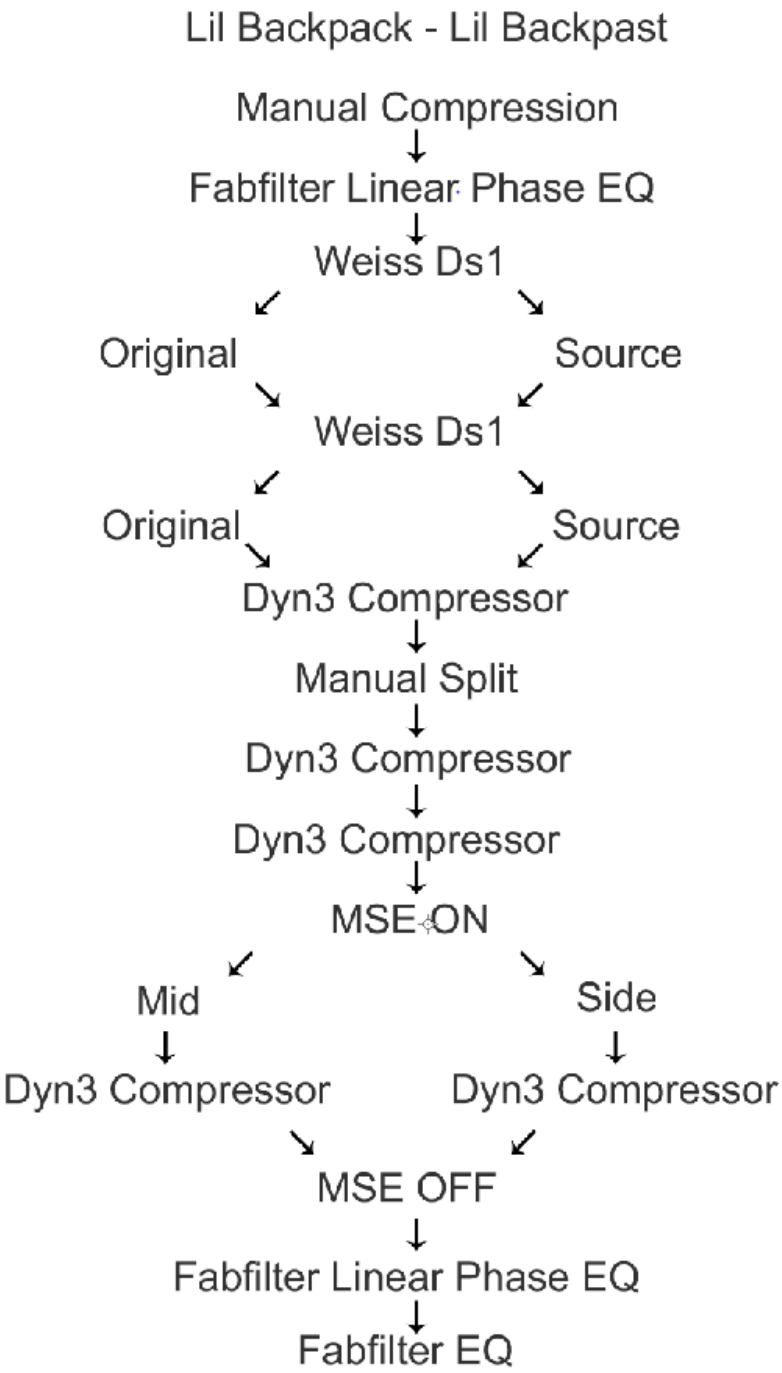


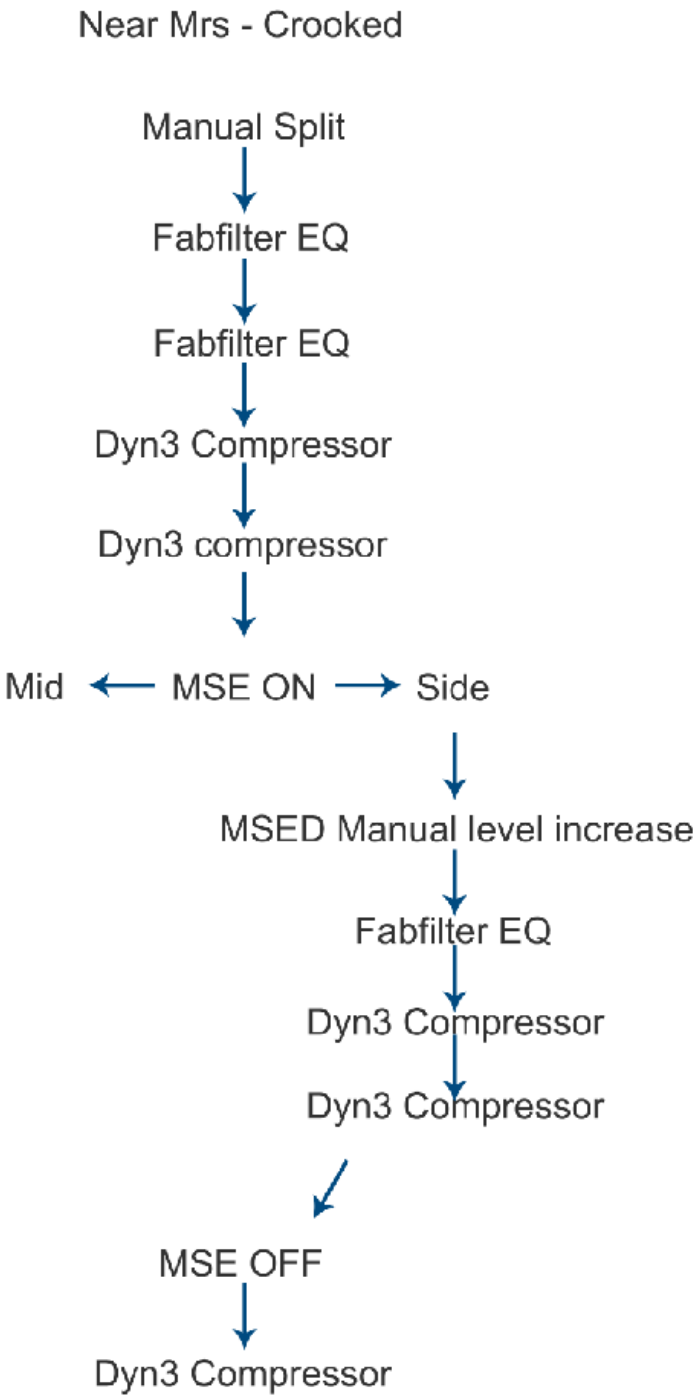
Figure 20 Upwards Compressor for control two peaks

6. Graphical Transfer Path

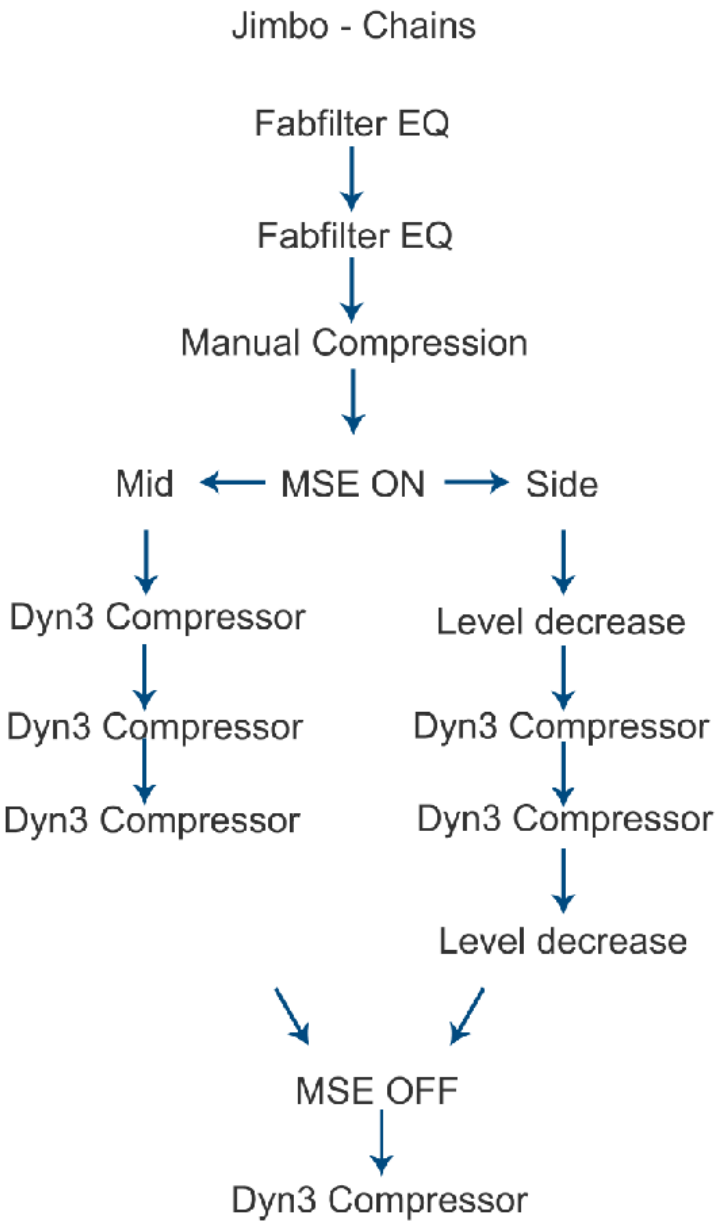
6.1 Lil Backpack – Lil Backpast #1



6.2 Near Mrs – Crooked #2



6.3 Jimbo – Chains #3



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Appendices

1. Logging Sheet, available at: <https://drive.google.com/open?id=10I9kE2NyCKLL-I6nQ7ijsWUN9Npamh5I>

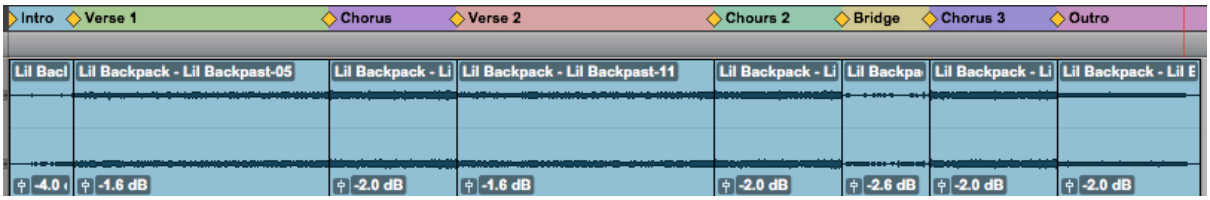

Figure 17 Manual Compression Lil Backpast

Figure 18 Fabfilter Linear Phase Low Shelf

Figure 19 Manley Massive Passive Low Pass Shelf

Figure 20 Parallel Downward Compression for Vocals and Bass

Figure 31 Parallel Downward Compression for Drums

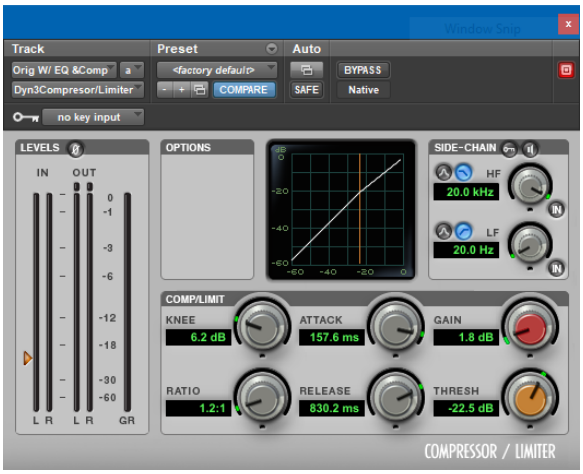

Figure 22 Compression for Vocals and Bass

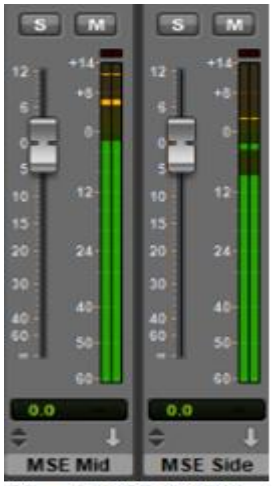

Figure 23 MSE Mid/Side Aux Channels

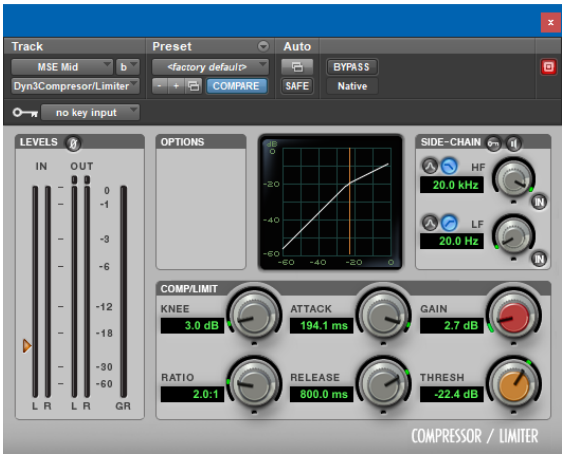

Figure 24 Mid information Compression for vocals

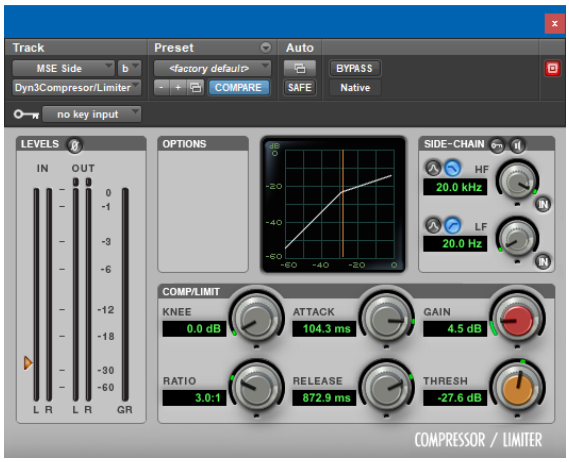

Figure 25 Side Information Compression

Figure 26 Fabfilter Sibilance

Figure 27 Fabfilter shelf boost for bass end

Figure 29 EQ to remove unwanted frequencies

Figure 40 EQ to balance out frequencies

Figure 31 EQ feathering on Lead Guitar

Figure 32 Upwards compression on Lead guitar

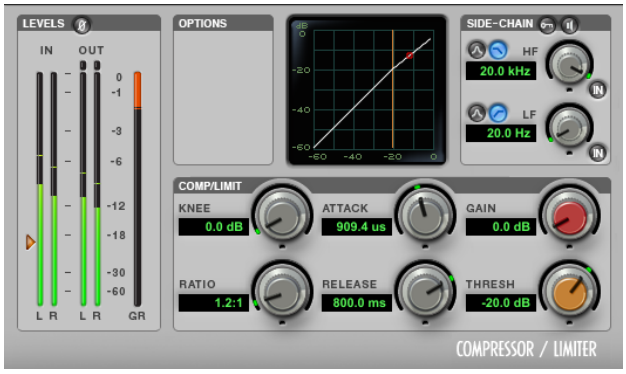

Figure 33 Compression to reduce dynamics

Figure 34 EQ to remove noise and harmonic distortion

Figure 35 EQ to balance out frequencies

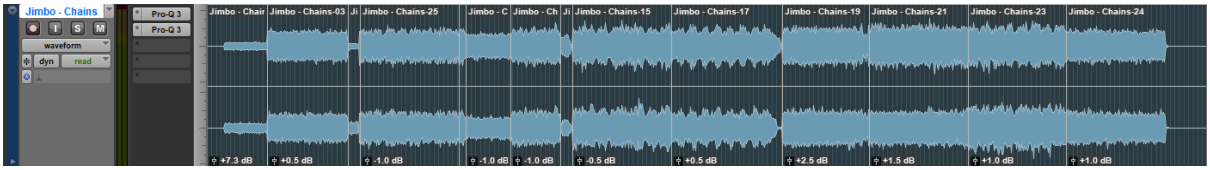

Figure 36 Manual Compression Chains

Figure 37 Side information turned down

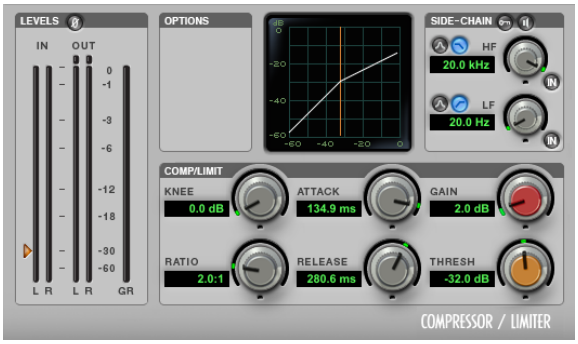

Figure 38 side guitar compression

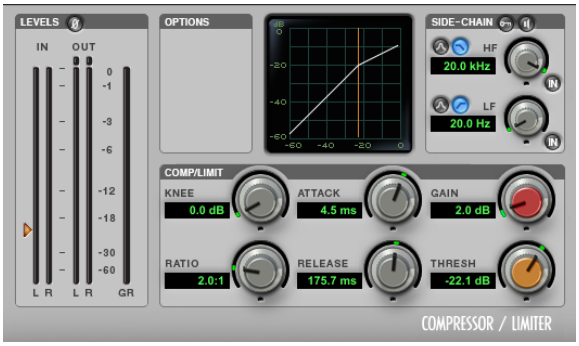

Figure 39 side cymbals compression