AUD176.3 Project 3:

Final Audio Production

Student Name:

Student Number:

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1. Session Plan

Project Overview

We will record the Meat Puppets song ‘Oh Me’. Our mix will consist of two acoustic guitar tracks, an electric guitar and electric guitar solo, and a bass guitar performance from George. This mix will also include a drum performance with a 5 microphone setup. George will also perform lead vocals. We will be referencing both the original Meat Puppets version and the Nirvana cover.

Tracking Schedule

Date	Time	Sound Source
3/8/23	1:00pm - 5:00pm	Harmonic elements: 2 x acoustic acoustic guitar and electric and bass guitar tracks.
10/8/23	1:00pm - 5:00pm	Drums and Vocals

Input List

Sound Source	Microphone Choice	Justification
Acoustic Guitar	NT2A x 2	Due to the super low noise floor and multiple recording configurations, the NT2A is the best for recording guitar with a single mic (MSCGR, 2017). To add more body, ambience and fullness to the acoustic guitar tracks we will use two mics. One will be pointed at 12-14th frets and the other at the body of the guitar itself.
Bass	DI Box	DI box for a clean signal that can be enhanced in the mixing process with an amp simulator, EQ, and compressor.
Vocals/Backing Vocals	NT2A	The microphone has an impressive signal-to-noise ratio, meaning that even the quietest of singers should be able to get good results with it (Kennedy, 2021).
Drums	5 microphone setup: - AKG D112 - SM57 x 2 - NT2A x 2	As the drum part in the Nirvana cover generally only contains the use of the cymbals, snare and kick we will focus our mic setup around these elements: - AKG D112 Dynamic Mic - for the kick. The AKG D112 is an “industry standard for kickdrums and has earned a solid reputation for its brilliant performance and reliability” (Waxman, 2018) - A large diaphragm condenser for each cymbal (also serving as overheads) - NT2A - SM57 for both the top and bottom snare. We chose the SM57 as it “adds just the right amount of low-end weight, while also adding presence and 'crack' to the drum” (Henshall, 2023).

Electric guitar/Roland JC 40 Amp	SM57	The SM57 picks up the complexity of an electric guitar and amplifier as it reproduces each note in great quality (*Best Mic to Record Electric Guitar - SM57*, 2022).

Additional Equipment

(For Example; stereo bar, instrument leads, headphone splitters, moon gel, patch leads, pop filter)

headphone splitter, headphones x 2, pop filter

Contacts

Name	Contact	Role	Notes

2. Evidence Of Process

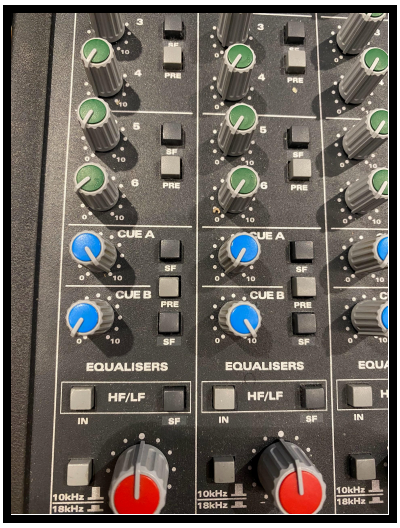
Preparation/Prior to Recording

- In our session, we created arrangement markers at each bar where a new section begins.
- This guided us and helped avoid confusion as we recorded, edited and mixed.
- Prior to our first studio session we also set the tempo in the session similar to the Nirvana live recording - 70 bpm.
- We also made a click track.
- This preparation allowed us to focus mainly on the recording process throughout our session and ultimately saved time in the studio.

Session 1:

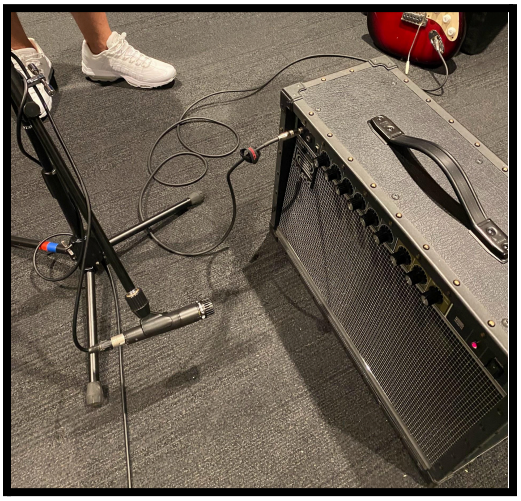
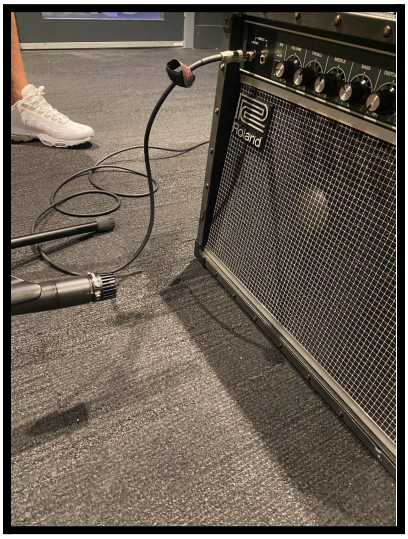
Acoustic Guitar


- We used a spaced pair of NT2A microphones to record both acoustic guitar parts/tracks
- This adds body and depth to the recording
- One mic was pointed roughly at the 12-14th fret. This approach, with a one microphone setup, was successful in project 2.
- The other mic was pointed at the body/hole of the guitar.
- Both mics were set to cardioid with no eq adjustments.
- The guitar was tuned just before recording
- George used a pick to add rhythm and clarity to the tone of his performance.



- We created a stereo headphone mix.
- Each NT2A was on a different side to achieve the stereo image for George to play to.
- This mix was used for tracking the electric guitar.

Electric Guitar

- Our SM57 was pointed directly at the centre of the amp's left coil to get a bright and clear tone.
- We decided to move the mic slightly further away than we initially anticipated to achieve a slight amount of room ambience.
- Both electric guitar parts were recorded with this mic setup.

- We decided to use a very neutral tone on the amp so as to not commit to a sound that we could not change through mixing.
- However, as these were either lead or solo parts, I did add a slight boost to the treble and cut to the bass.

Bass Guitar

- Unfortunately, as we were rushed for time in the studio, we forgot to take photos of the recording process for the bass.
- We used a DI box plugged into the back of the Audient Console.
- This process went very smoothly and was successful

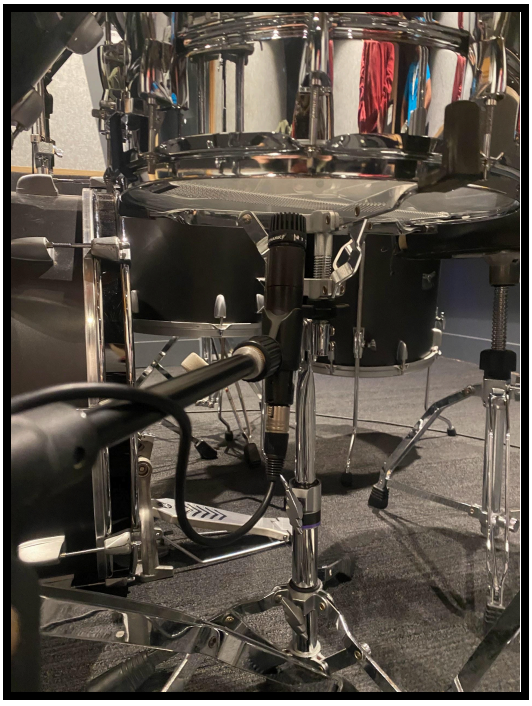
Session 2:

Preparation for Recording

- Before micing the drums we organised our inputs and outputs for both the audient console and ProTools.
- All tracks except the click track were moved to outputs 1 and 2 to make space for the 5 additional drum tracks. We used two outputs to keep the stereo image.
- We then marked the console with a marker and masking tape to avoid confusion and keep a good workflow.

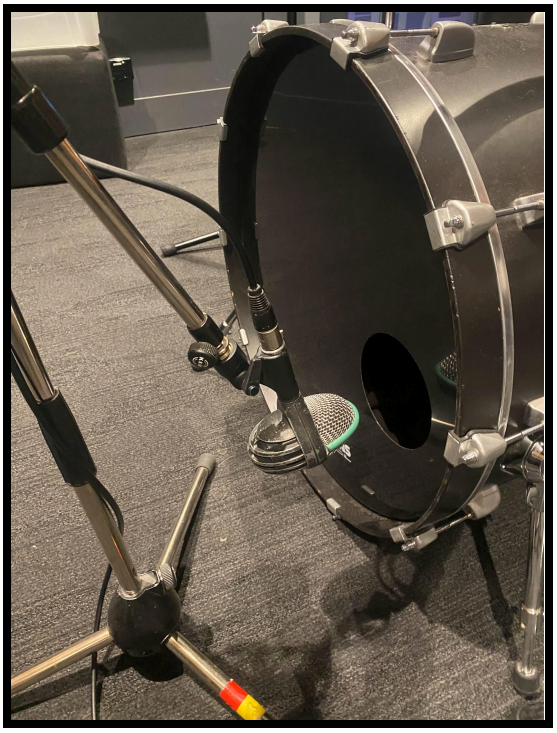
Drums Setup

- Fortunately the drums were already set up prior to us arriving for our second session.
- We first mic'd the entire kit with our planned five microphone setup.
- We did a loose set up before our drummer arrived so as to not commit to exact microphone positions before he had made some adjustments to the kit to make himself comfortable and ready to record.
- Once he was ready we made a few slight adjustments e.g moving the top snare mic and kick mic closer.

- These were the positions for the top and bottom snare microphones (SM57).
- Both were very close to the drum.


- The crash and ride mic setup (NT2A)
- Both mics were set to cardioid to reduce bleeding from other parts of the drum kit.
- Once the drummer was ready and we had made slight adjustments we used a cable to make sure these two mics were equidistant from the centre of snare.

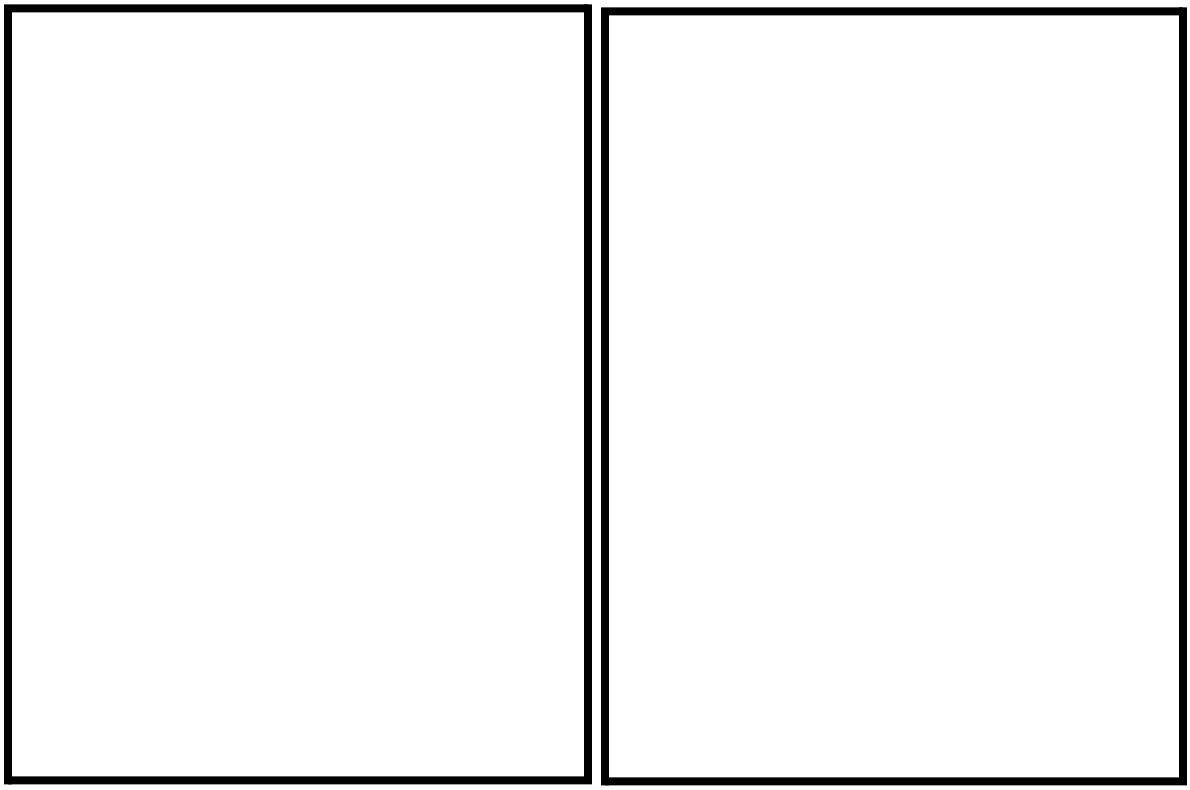


- The kick drum mic positioning (AKG D112)
- This mic was only a couple inches from the drum and was moved closer just before recording.
- Pointed directly at the hole.

Recording the Drums

- Recording the drums went smoothly.
- We did a couple practice recordings and finally did three takes
- All takes were usable.
- Two takes were performed with drumsticks and the final recording was performed with brushes.

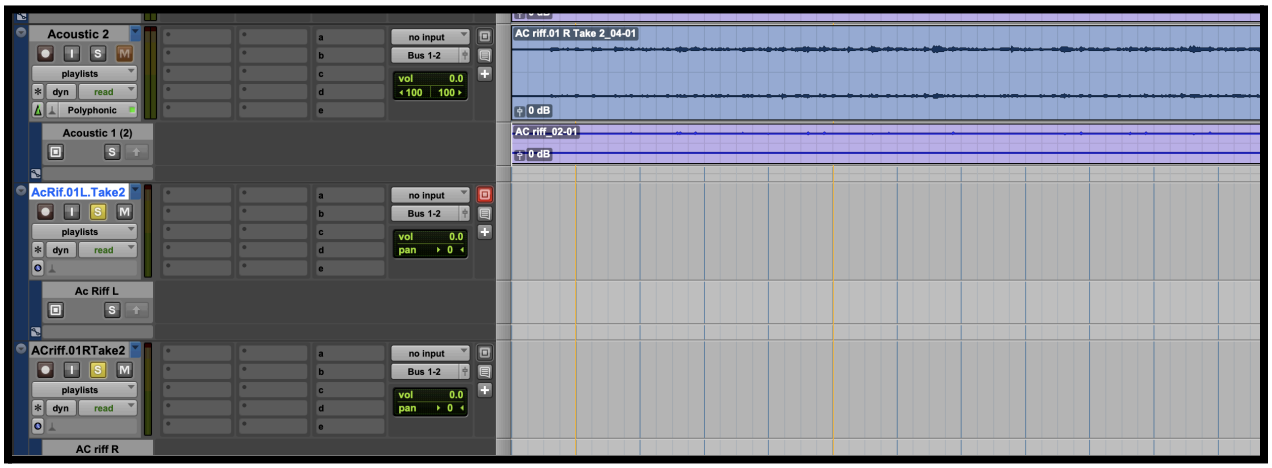
Vocals



- Once the drums were done we moved on to vocals.
- We used one of the NT2As from the drum setup.
- We made sure to bring a pop filter to diminish overpowering plosives (we forgot to do this for project 2)
- George performed the vocals roughly 6 - 8 inches away from the mic but adjusted his distance for points at which the vocals were particularly loud.
- The lights were turned off for recording to add more of a mood to the atmosphere.
- We did 4 takes which all went smoothly.

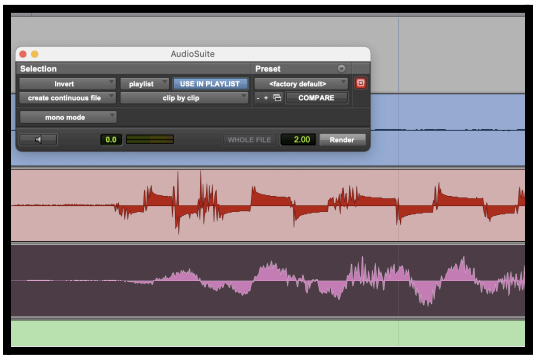
Editing

Mono to Stereo Tracks



- We summed together each mono track from the acoustic guitar recordings into one stereo track (with multiple playlists/takes).
- At first, there were four mono acoustic guitar tracks: two for the first acoustic guitar part and two for the other.
- Ultimately, we had 2 stereo acoustic guitar tracks (also including their, now stereo, playlists)

Drums

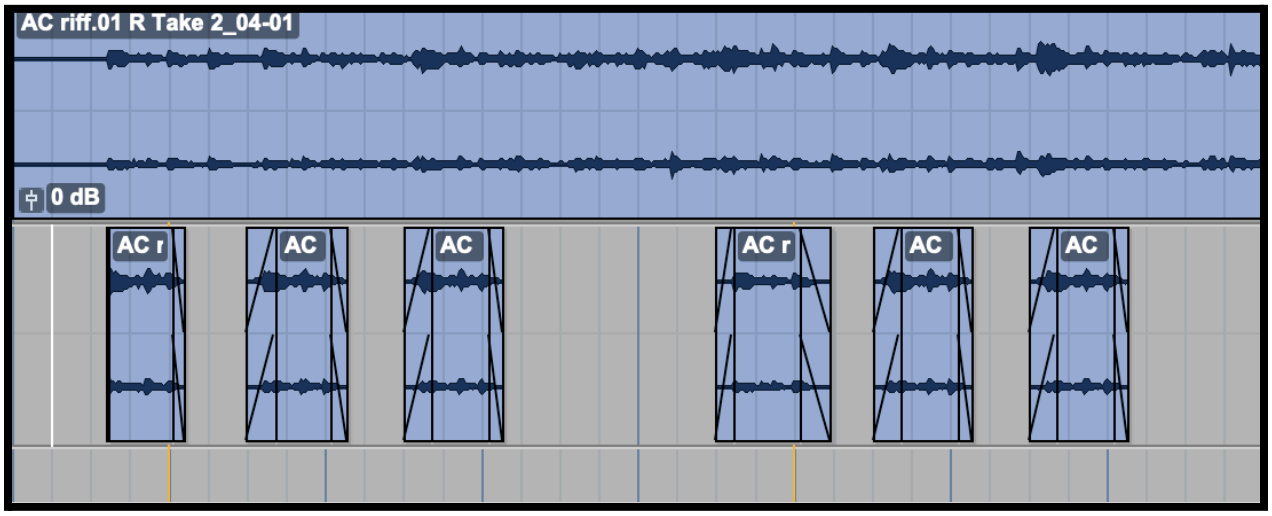


- We decided to go with the third take of the drums (with the brushes)
- The drums were not edited other than deleting the dead air before and after the start and finish of the song.
- This was done to keep the natural/organic feel of the song.
- We inverted the audio clip of the bottom snare to avoid phase cancellation.

Dead Air

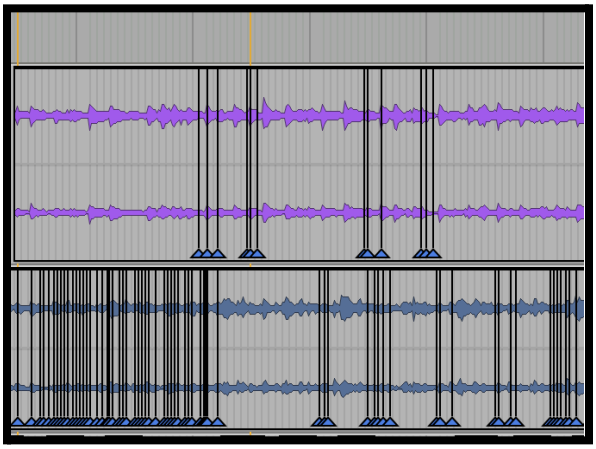
- We deleted dead air/space that wasn't needed
- This applied to every track
- You can see above the electric guitar tracks have been cut down to where they start playing.

Doubled Guitar Riff



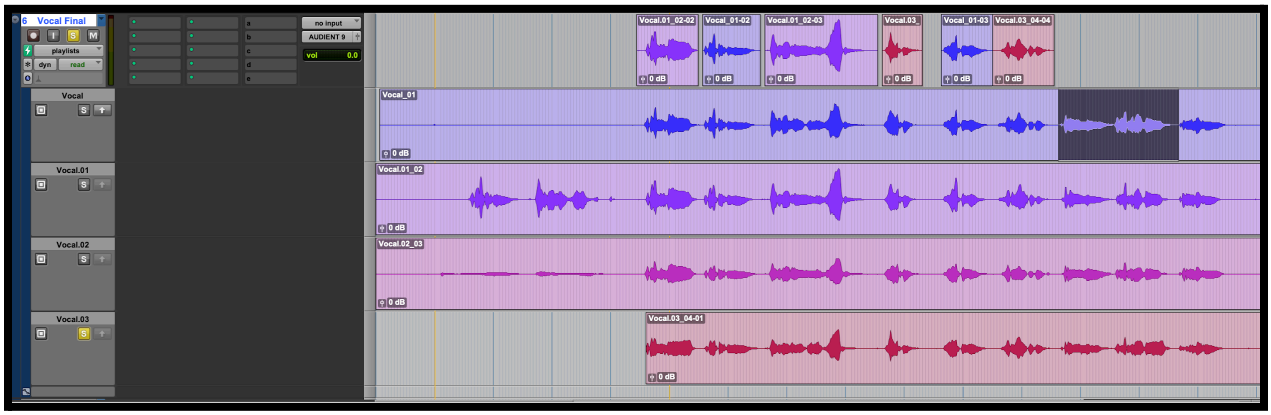
- During editing we also made a creative decision to double the acoustic guitar riff.
- We did this by cutting and copying just the moments when the riff occurred from the original guitar track.
- Then pasting them on the a new track called Guitar Riff
- As we didn't want the copied riff to be the exact same as the original (this would have just made the riff louder with no new tonality) we just took the best versions of the riff and copied it throughout the entire song
- This means that as the riff on the original is played differently each time - the copied one is consistent
- This allowed the riffs playing together to be slightly different and bring out a new 'phasey' tonality.
- We then faded
- the start and end of each of these copied riffs.

Elastic Audio



- We used elastic audio editing software to adjust some of the timing on mainly the bass and the more complicated acoustic guitar track.
- As you can see in the track view selector we went to warp and set the bass to monophonic.
- Prior to this, the tracks were generally in time but it sounded a little bit too loose and slightly messy.
- This cleaned up the sound of the session a lot.

Vocal Comp

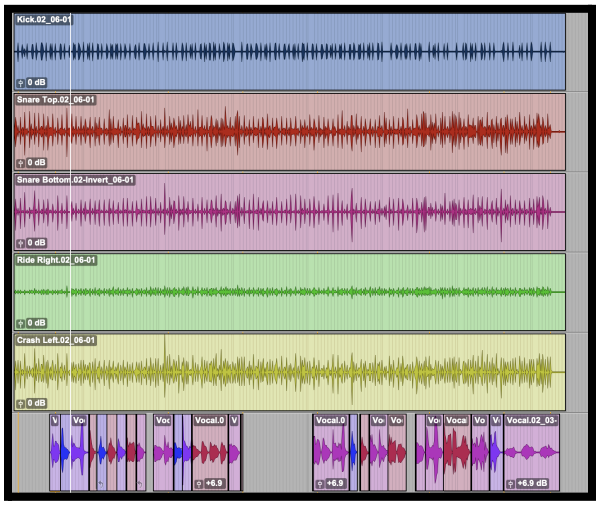


- We comped the vocals.
- Playing through every phrase of everytake and picking the best of each to be promoted to the ‘Vocal Final’.

Vocal Gain Match

- After comping the vocals we gain matched each phrase to achieve an even overall level.
- We still tried to keep the natural dynamics of the final performance so some adjustments were made after listening back to the initial matching.

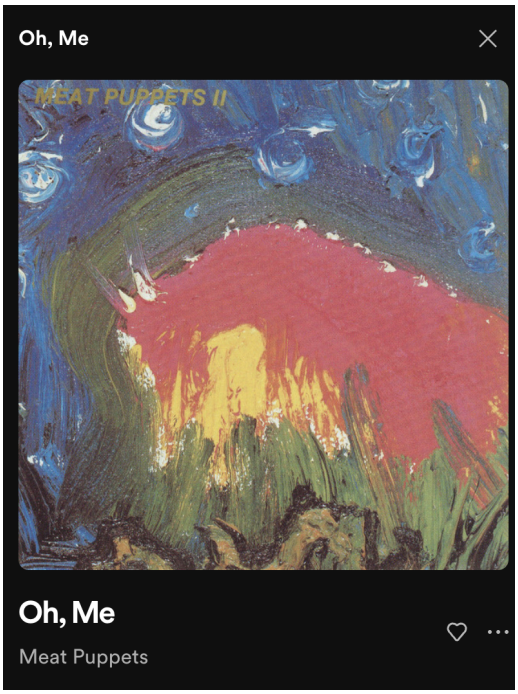
Coloured Tracks



- All tracks were assigned their own colours
- This made the mixing and editing process clearer and more efficient.

Mixing

Referencing

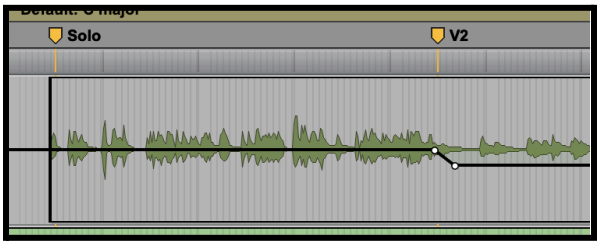


- I used both versions of Oh Me to referencing through my mixing process.
- These guided my choice of tone particularly of the acoustic guitars.
- I used Spotify on a separate tab next to protools to play these songs.

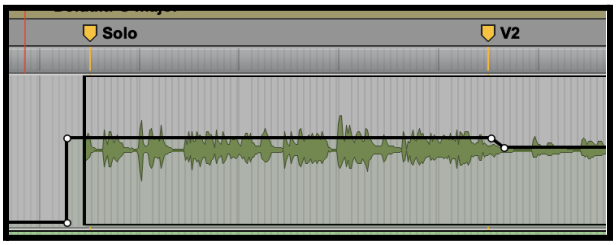
Levels and Panning

- **Snares** were set lower as they bled through quite a lot in the overhead tracks and I didnt want them to overpower the mix - roughly -18 dB. They were also panned slightly right to emulate the drum setup in the studio.
- **Overheads** were brought up higher just above 2 dB. Ride was panned to the right while crash was panned left to create an accurate stereo image of the drum setup.
- **Kick** was getting lost in the mix so I brought it up to -2.4 dB. Centre pan.
- All **Acoustic Guitar** tracks were set similarly with the doubled riff brought up a bit higher to -5.2 dB to accentuate the riff even more and give it a bit of punch. The rhythm acoustic was panned slightly to the right while the ‘plucked’ acoustic was set slightly the right.
- **Bass** was brought to -2.5 dB which seemed quite high but was done to avoid it getting buried and to sustain that low end foundation of the mix. Pan pot kept in the centre.
- **Electric guitar and Solo Electric Guitar** were brought to -7.3 dB and -8.9 dB. Sitting closely with the other guitars. I wanted them all to ultimately work together as a harmonic scaffold for the vocals and solo (there was panning and volume automation on the solo guitar track which I will discuss later)
- **The Lead Vocal** was brought to -2 dB which allowed it to lead the song as it sat slightly above the other tracks but not overpower the mix.
- **The Back Up Vocal** was set quite low at -14.2 dB as I do not believe it was a great take (however it still adds colour to the chorus) and I did not want it to take away from the lead vocal.
- All aux sends were kept at zero and send levels were adjusted individually on each tracks send faders
- Drum bus was slightly lowered in final touch ups.

Electric Guitar Solo Track Automation



Panning Automation

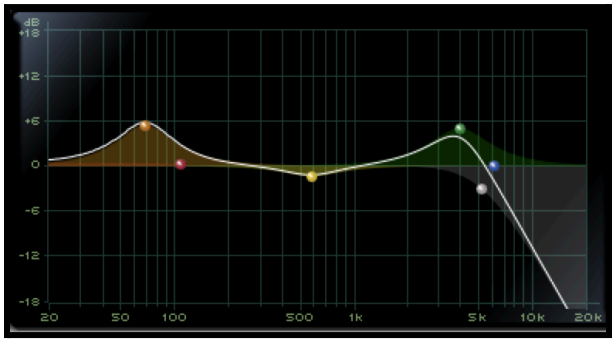


Volume Automation

- The electric guitar solo part essentially becomes another lead guitar part after the solo section
- I saw the solo as taking of the role of the lead vocal so I set this tracks pan as centre when it begins and had its volume at a clear level to pop out of the mix
- However, after the solo section I wanted this track to blend back into the mix similar to the other electric guitar track
- To achieve this, after the solo section, I automated the track to pan to the left slightly and for the volume to lower to fit modestly in the mix.

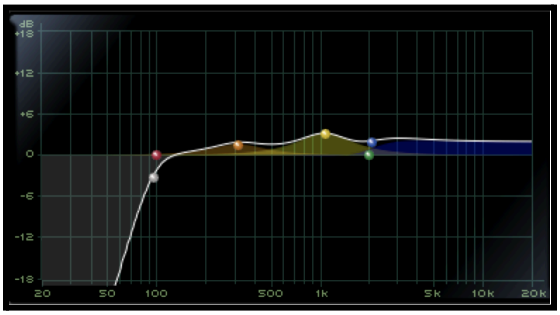
EQ (gain matching applied to all)

Bass



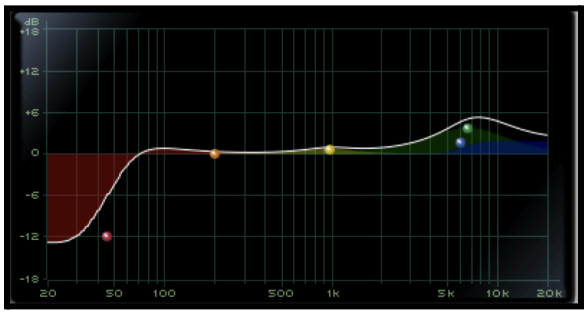
- Low end was brought up to further establish its role as bass and give it the drive to carry the song
- Mids cut very slightly.
- Highs brought up to accentuate the slap/pick of the bass performance.

Acoustic Guitars



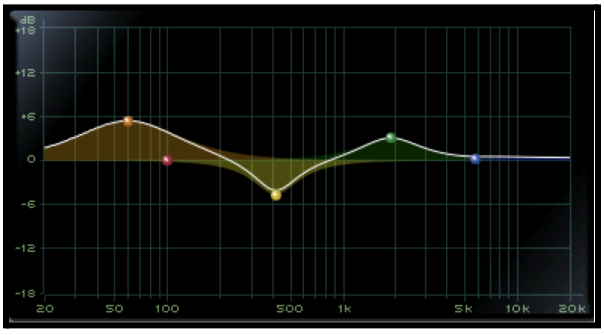
- Unnecessary low end information was cut with a high pass filter.
- Mids and highs were slightly boosted to bring out the brightness of the guitar.
- All acoustic guitar tracks had a similar EQ.

Vocal



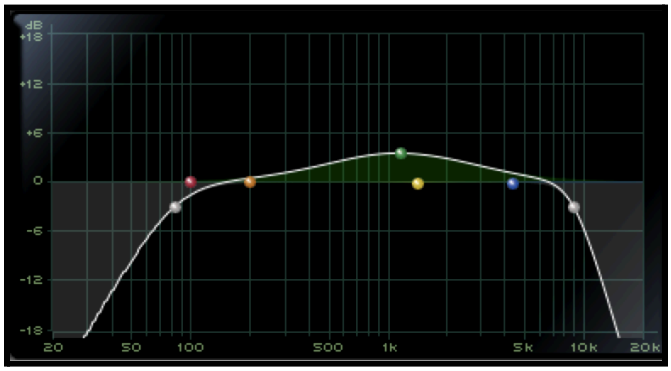
- A little bit of unnecessary low end cut.
- Highs slightly boosted to add some brightness.

Kick Drum



- Low end boosted to add the thud of the drum.
- High mids slightly boosted to accentuate the slap/kick.
- Mids cut.

Electric Guitar



- EQ carving for high and low end.
- Mids boosted as this is where most of the frequency information sits for this instrument,

Reverbs/Aux Sends

Vocal

- Auxiliary send track created
- Both lead and backup vocals sent to it.
- D-Verb inserted to Aux Send
- 100% wet - adjusted in send fader for each track
- Pre-Delay: 46 ms
- Decay: 3.3 sec
- Diffusion: 72%
- Reverb sends fader on lead vocal set to -6.8 dB to have moderate mix of dry and wet.
- I didn't want the vocals to be washed out but I did want some colour and some of the space in the mix to be filled.

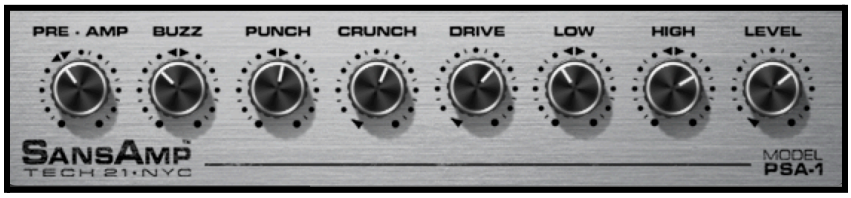
Electric Guitars

- Aux send created Solo and Electric Guitar sent.
- D-Verb inserted.
- Decay: 1.4 seconds
- Pre-delay: 0ms
- Diffusion: 80%
- Both faders set to roughly 2dB
- I kept a short delay time so as to not lose any of the punchy rhythmic or melodic aspects of each performance.

Acoustic Guitars

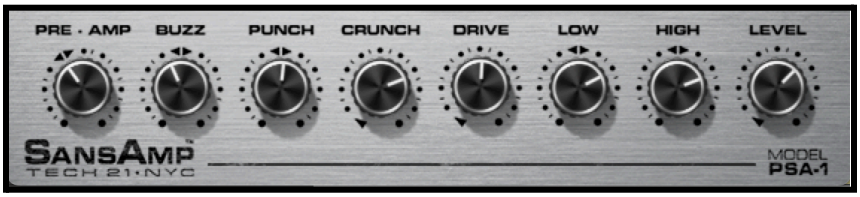
- Decay: 892 ms
- Pre-delay: 8 ms
- Diffusion: 65%
- I was aiming for a somewhat subtle ‘room’ reverb.
- I wanted the punchy and rhythmic aspect of the acoustic guitars to still be very clear whilst adding a bit of colour and space with the reverb.
- Track send faders were relatively low at roughly -14 dB

Electric Guitar Amp Simulator



- Though we had recorded the electric guitar parts with a microphone and amp (opposed to a DI box) I still felt that they sounded weak/dull
- I decided to insert the Sans Amp simulator on both tracks to give them an extra punch/drive/excitement.
- The solo guitar track used this insert more aggressively than the lead electric guitar track as I wanted the solo to be particularly exciting allowing it to lead the song for that section.

Bass Amp Simulator

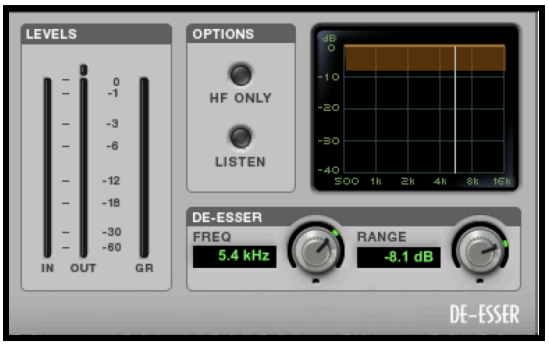


- As the bass was recorded using a DI box I felt it necessary to use an amp simulator.
- This gave the bass its drive and colour just like a real amplifier would.
- Low and High end were boosted along with the crunch setting.
- I didn't want a ‘heavy’ bass sound but I did want the excitement of a live recording.

Vocal Compressor

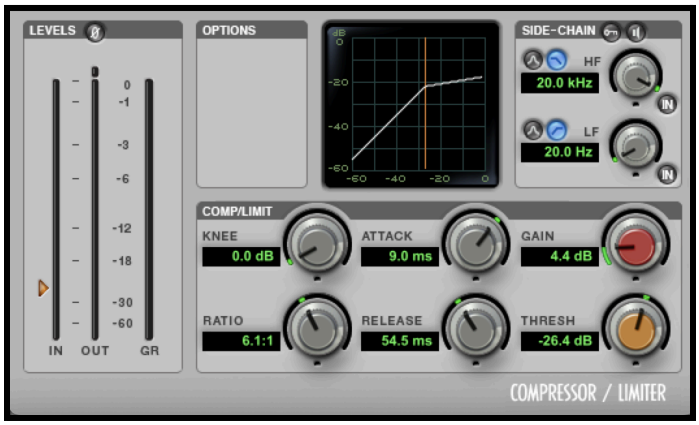
- I inserted a Dyn3 compressor on the Vocal Final track.
- This levelled out the dynamic phrasing to avoid any moments being lost behind the other elements of the mix.
- This allowed the vocal track to lead the song with more power and clarity.
- At first I copied the settings from a compressor settings guide online but adjusted everything to more effectively fit my mix and vocal performance.
- Threshold: -29.7 (was set to reach roughly 6 dB of attenuation)
- Ratio: 2.5:1. This was initially around 5:1 but I felt I was squashing the vocal at points and I wanted its effect to be more subtle.
- Attack: 25.3 ms
- Release: 36.5 ms
- Knee: 0 db
- Gain was set to 3.9 dB to match the output to the input signal.

Vocal DeEsser



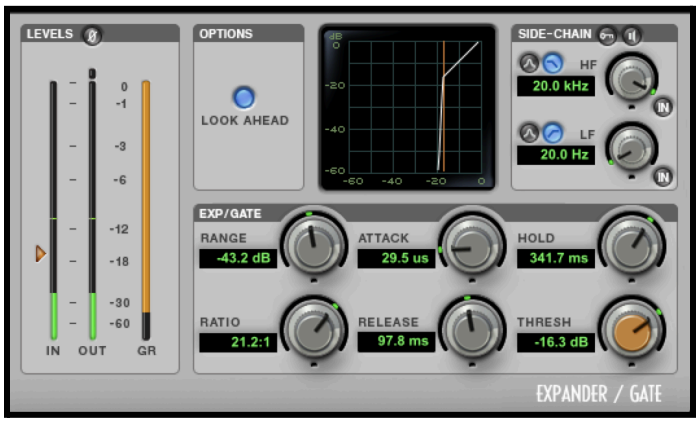
- I inserted the Dyn3 DeEsser on the Vocal Final track.
- I found which frequency these moments of sibilance were loudest which was 5.4 kHz.
- Threshold was set to -8.1 dB

Bass Compressor



- Dyn3 compressor inserted on Bass track.
- The settings I chose ultimately allowed every note to reach an equal level which I was satisfied with.
- This let the bass further play its role as a solid low end foundation.
- As there were very strong transients creating a very large dynamic range I set the ratio to 6.1:1.
- The threshold was set to -26.4 dB which resulted in a bit of 6 dB of attenuation.
- Gain set to 4.4 dB to match input
- Attack set to 9 ms to allow some of the strong transients to pass through keeping the rhythmic aspect of the bass intact.

Kick Gate



- Dyn3 Gate inserted on Kick track.
- This successfully eliminated almost all of the bleeding from the snare and cymbals.
- Threshold: -16.3 dB. This allowed just the kick drum to pass through clearly.
- Hold: 341.7 ms. and Release: 97.8 ms. This allowed the kick drum to naturally ring out and not get harshly cut off.

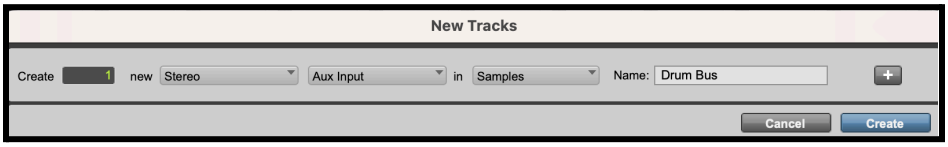
Snare Gates

- Dyn3 Gate was also inserted on both snare tracks.
- Again, this eliminated the bleeding from the other elements of the kit.
- Threshold set to -26.0 dB to allow only the snare to pass.
- As the snares were used quite dynamically they were harder to gate. There is still some of the kick drum coming through.
- This was a less successful gate than the kick drum but still, overall, achieved what I desired.

Drum Group

- Once I had achieved a balance of all the drum tracks I created a ‘Drums’ group.
- This allowed me to work with them as one entity/instrument.

Drum Submaster



- I created a new stereo aux input track called Drum Bus
- I then set its input as a stereo bus (Bus 3- 4) and renamed that input as Drums.
- This Submasters output was set to the Mixbus submaster which I will discuss later.
- All the drum track outputs were set to this submaster.
- This allowed me to use inserts such as EQ and Reverb that applied to all the drums as a whole.

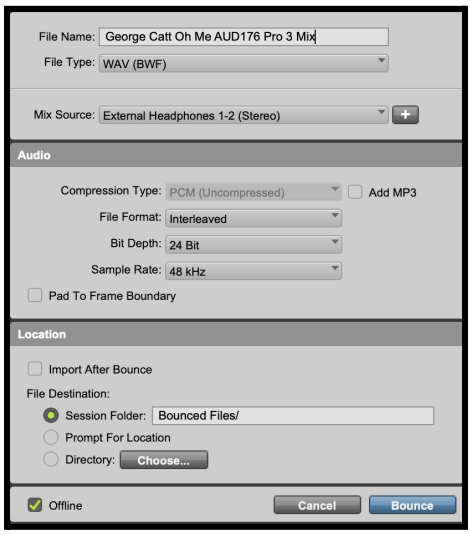
Mix Bus

- I created another submaster called MIX BUS which all tracks were sent to.
- I only used this submaster to add volume automation for a fade out at the end of the song.

Maxim Limiter

- To simply master the mix I inserted the Maxim Limiter on the master track.
- Ceiling was set to -0.1 dB
- Threshold was set to -9.6 dB which allowed the limiter to attenuate by roughly 2 dB or just below.
- This was a longer process as there was often either too little or too much attenuation as I adjusted the threshold. (Finding the ‘sweet spot’ took quite a bit of trial and error).

Exporting/Bouncing



- Finally, the mix was bounced as a WAV file with the file format set as interleaved, a 48 kHz sample rate and 24 bit depth.

3. Deliverables

Insert link to Pro Tools session folder here

Insert link to 24 Bit 48kHz WAV here

4. Project Reflections

Mid-Project Reflection

As soon as we had decided on the song we were going to record, the instrumentation and microphone choices, we booked a studio time that suited the both of us well. We also planned a time to book with Billy (drummer). Booking and planning our sessions early will keep our progress consistent and will help us stay on a good schedule to complete the project in time and with as little stress as possible. As I will be performing the guitar and vocals for the mix, I have been practising the song in my own time to ensure that we are working as efficiently as possible in our sessions. We only have so much time in the studio for each booking so we don't want to waste time on processes that could have been completed outside of the studio.

We are often asking Guy for guidance, advice, and clarification regarding recording techniques and instrumentation. This ensures we are making the best decisions and approaches for our goals within the studio and the project as a whole. Chris and I worked together for project 2. This has made our collaboration a lot easier for this project as we are more familiar with each other and how we work together. We also have each other's phone numbers (from project 2) which we will definitely be using as we continue to book studios, share files and generally work on the project.

As I continue studying through this trimester I am constantly learning new skills and techniques within the studio and pro tools. My skills within Pro Tools such as using groups, beat detective, more key shortcuts, bus sub-masters and aux sends will definitely be used as we enter the editing and mixing process. I have had some experience with compressor, gate and limiter inserts. However, I have vastly improved on my skills, techniques and understanding of these tools through our class time with Guy. I also plan on EQ ‘carving’ to clean up and enhance my mix. Carving uses “EQ to restrict frequencies that are present on a track, so they don’t conflict with other important instrument tracks that exist in the same range” (Huber, 2017, p 489).

Project-Completion Reflection

I believe overall this project was successful however I wasn't particularly satisfied with my mix. Most of the process met my expectations but there were a few disappointments when listening back to our dry audio clips e.g some accidental knocks on the body of the guitar while strumming and tone issues with the electric guitars.

I kept having issues with the snare levels and the high amount of bleeding in the overheads was frustrating. I believe most of the snare heard in the mix is actually coming from the overhead tracks. I was not sure how to solve this issue. However, for both overhead tracks, using EQ I did get rid of the kickdrum coming through and focused the track's frequencies mainly on the cymbals. I also had trouble placing the electric guitars in a spot in the mix I was happy with and their tone, though recorded with amps, was unsatisfactory. Using the amp simulator on the guitars was my main approach at overcoming this tone problem however I still don't believe it completely solved the issue.

In future I would like to take more time planning which tone exactly I would like to achieve for each instrument before recording. I would also do a bit more research on micing drums. Our time management and planning each session went very well. I would definitely repeat this process. ProTools routing techniques such as submasters, my use of inserts such as compressors and gates and aux sends are all aspects I would repeat.

5. Reference List

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