



# Producing a Skate Punk Record

Pietilä Onni

Bachelor's Thesis  
December 2021

Degree Programme in Media and Arts  
Music Production

## **ABSTRACT**

Tampereen ammattikorkeakoulu  
Tampere University of Applied Sciences  
Degree Programme in Media and Arts  
Music Production

PIETILÄ, ONNI:  
Producing a Skate Punk Record

Bachelor's thesis 31 pages, appendices 1 page  
December 2021

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The focus of this bachelor's thesis is on the creation process of Moon Gravity, a full-length music album by a Finnish skate punk band Suntrace. The role of the author was to work as a producer, recording engineer and mixing engineer in the project. The goal was to create an album that would have similar sound and feel to the popular skate punk albums made in mid-1990s.

The thesis begins with an introduction to the thesis project album and the band, as well as the entire skate punk genre. After this, the thesis delves into pre-production, recording and mixing. At the end there is a discussion chapter that summarizes the whole process and talks about the final product.

Decisions and conclusions made in the thesis were based on literature on the topic, analyses of similar music, personal experience and the preferences of the author and the client.

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Key words: music production, skate punk, punk rock, recording, mixing

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## ABBREVIATIONS AND TERMS

Auxiliary send	A type of an output that can be used to split signal into two different locations, one of which being usually an effect such as reverb or delay
Compressor	An audio processor that can be used to reduce the dynamic range of the audio
DAW	Digital Audio Workstation
D.I	Direct Inject
EQ	Equalizer, an audio tool that can be used to adjust the volume of different frequencies
Hz	Hertz, the derived unit of frequency
kHz	Kilohertz, equal to 1000Hz
Plugin	An audio processing software that can be used within the DAW
Saturation	Subtle form of distortion that has usually a warm and pleasant effect on the sound

## INTRODUCTION

Suntrace is a skate punk band from Kannus, Finland. The three-piece band utilizes elements of punk rock, 90's style skate punk, melodic hardcore, ska and even reggae in their music. The band has been playing shows regularly since it was formed in 2016 and these days it is a well-known band in Finnish punk communities. Their two earlier releases "Skate Fast Eat Ass" (2017) and "Japan" (2019) have been published by a Finnish independent punk rock record label Fast Decade Records. (Fast Decade Records n.d.)

The cooperation between Suntrace and I started in December 2019 when the band needed to record one song for their record labels upcoming compilation album. I had earlier offered my recording services after being impressed by their live performance but that time the band was not yet about to record new material. Couple of months later I ended up recording the song for the compilation album and since the band was very happy with the outcome, they hired me to produce their upcoming full-length album which was named "Moon Gravity".

The album was created between September 2020 and May 2021, excluding the pre-production which took place a few months before entering the studio. The material was recorded in two different locations, on the Mediapolis campus and the in the Headline recording studio, both in Tampere. The mixing was done in my home studio. Even though the album was under construction for nine months, the time spent on the project wasn't as much as one might think. The slow progress was mostly due to the members of the band living in different cities at the time. Recording sessions were done occasionally whenever the band members were able to gather in the studio.

I've been recording and mixing music for over 10 years, but "Moon Gravity" was the first one full-length album I ever got to produce or mix. In this thesis I am going to go through the entire process from demo versions to the finished album. I am going to talk about the gear and techniques that were used during the recording and mixing process and explain some of the decision-making along the way.

## 1 SKATE PUNK

Skate punk is a subgenre of punk rock that has its origins in 80's Southern California. Bands such as JFA, Suicidal Tendencies, Offspring and NOFX started to gather a lot of listeners in Los Angeles area with their music that combined three-chord songs typical to punk rock to the speed of hardcore music and frat-party humour. Rolling Stone magazine has nailed the skate-punk sound as simply "a sort of pop hardcore". (Peacock 2020.) In a Huck magazines article "Skate Punk - The Californian Safety Pin" (Butz 2011) a revered skateboarder Steve Olson explains the connection between skateboarding and punk rock as follows: "The energy behind punk rock and when you were on your skateboard was extremely raw. [...] The energy is the connection, the rebelliousness against the typical and against the norm."

As time passed, an underground phenomenon started to get bigger and skate-punk bands began to experience mainstream success by the middle of the '90s. In 1994 NOFX and The Offspring both released studio albums that were a huge commercial success. NOFX's "Punk in Drublic" went gold by selling 500,000 copies in the United States and The Offspring's "Smash" got certified 6x platinum by the Recording Industry Association of America by selling 6 million copies in USA and over 11 million copies worldwide. "Smash" also became the best-selling independent label album of all time. (Peacock 2020; Eptaph 2014.)

Nowadays, almost four decades after its birth, skate punk and skateboard culture itself are still alive and doing fine. The biggest bands in the genre are still headlining festivals all over the world and releasing albums that reach Billboard top 10 even though the music is not really being considered mainstream anymore (Caulfield 2016; Chaudhry 2020). Skateboarding magazine Thrasher that was a big catalyst in making skate punk a movement in the '80s has now circulation of approximately 250,000 and its iconic logo has found its way to the T-shirts of numerous top celebrities (McIntyre 2020; Thrasher n.d.). Skateboarding also finally made its Olympic debut in the 2020 Summer Olympics in Tokyo (Petrov-Cohen 2021).

## 2 PRE-PRODUCTION

Pre-production is a phase of work where certain musical elements of a song are being fixed and prepared before entering the recording studio (Hepworth-Sawyer, R. & Hodgson, J. 2017, 115). Pre-production can include conversations about arrangements and experimenting with different tempos for songs, as well as seeing band performing live or listening to their demos. Demos can act great role in the pre-production process because they can deliver the idea of band's intention for each song, and thus can pinpoint the direction in which to proceed. (Rogers, 2017.)

Pre-production of Suntrace's album was started in March 2020. I had seen them performing some songs of the album live before and the band had delivered me demos of six songs, so I was already familiar with most of the material. We met on their rehearsal place and while band was playing, I was listening and taking notes and sorting out the key, approximate tempo, and the possible title of each song. We also had a discussion after each song where I expressed my ideas that were mainly about structures of the songs, and we tried those out to see if they work or not. I was first bothered about some songs having unusual structures and my first instinct was to change them into something more common. However, the band members were not very willing to change their songs that much and I respected their opinion. After listening to the songs several times, I even started to think that the unorthodox structures that the songs had were actually a good thing that could help Suntrace stand out from the other bands in the genre.

When working as a producer, I find it crucial to understand the artist's vision. Having a clear goal from the start helps in a choice of an approach and tools such as mics or instruments. For that reason, I wanted to discuss with the band about their principles and goals for the album before hitting the studio. The band members opinions were undivided: they found it important that their music would not sound too much different recorded than it does in a live concert. To achieve that impression, we choose not to use quantization or pitch correction and keep use of drum samples in minimum, if needed at all.

As a last part of the pre-production, one day before the actual recording process started, I asked the band's drummer and main writer Anssi to make a list of the songs and figure out the most suitable tempo for each song, while I did the exact same thing. When we met on the next day, we compared our lists which happened to be very similar and after a short debate agreed on the final tempos.



## 3 RECORDING PROCESS

### 3.1 Drums

The drum kit, which is usually the heartbeat of the modern music, is a combination of closely spaced percussion instruments, which makes it often the most time-consuming instrument to record (Robjohns 2003; Miles Huber & Runstein 2017). The typical drum set has a kick drum, snare drum, two or three toms, hi-hat and a few cymbals (Robjohns 2003). Because each part of the drum set has a different function and sound, it's usually good to mic them with separate microphones. The larger-than-life acoustic drum sound familiar to many, is a result of an excellent playing technique, well-tuned drums and the right mic placement. (Miles Huber & Runstein 2017.)

The actual recording process of the album was kicked off with drum recordings in Mediapolis on 4<sup>th</sup> of September 2020. Instead of using the actual recording studios of the campus, we decided to set up the drums in the photo studio, which is a large hall-like room with hard stone floor and moveable curtains on the walls. Reason for this was the pleasant natural reverberation that the room had. I also set up the recording devices in other end of the same room because I personally think it is important to see the action and be able to communicate with the musician directly.

Drummer had changed all the skins of his drum set on the night before, so we were able to dive straight into tuning as a first thing of the first recording day. Both the drummer and I had quite clear and similar vision of the desired drum sound, so the tuning process was fairly painless. After getting the overall sound right, we used a drum tuner called "Tune-bot" to help with matching the pitch differences between individual lugs of each drum.

Drums were captured with 9 microphones. Each shell drum was captured with a own microphone because skate punk music is usually very fast, and we wanted to capture as much direct transient information as possible in order to make all the drum hits audible later in the mix. Two microphone signals (kick drum inside

and snare) went into a Universal Audio Apollo Twins own preamplifiers, one (mono room mic) into a Golden Age Project Pre-73 preamplifier and the rest went into 8-channel Focusrite Platinum Octopre -preamp that was connected to the Apollo interface via ADAT-cable. ADAT is widely used system to transmit signals with an optical cable. It can transmit the maximum of eight audio channels with a sample rate of 48kHz. (Miles Huber & Runstein 2017.) In order to get some saturation to the sound, all the signals were recorded through a Universal Audio Studer A800 -tape emulation plugin on the way into the DAW, which in this case was Cubase. Some of the tracks were also already processed with compressors and equalizers in the recording phase.



PICTURE 1. Drum miking setup (Pietilä 2020)

### 3.1.1 Kick

The kick drum was recorded with two microphones. We had Sennheiser MD421 II inside the kick drum pointing at the place where the beater hits. The main job of this microphone was to capture the "snap" -sound that gets generated when a beater hits the batter head of the kick drum. Outside the drum there was a Shure Beta 52, about 5 cm from the resonant head to capture the sound of the body of the drum.

The signal from the Sennheiser MD421 II was sent to the Universal Audio Apollo twin preamp that had API Vision channel strip emulation on in a Unison mode. Unison™ is an audio processing technology that allows audio Universal Audio interface mic preamps to sound and behave like any hardware unit that the particular Unison™ plugin has been modelled after (Fox. n.d.). I used the API Vision -plugins equalizer section to brighten the kick drum signal by adding 9dB of 10kHz. After that I had Universal Audio Pultec -plugin to boost around 6 dB of 20hz to bring up the subharmonics and 12db of 8kHz to make the kick sound even brighter. The outside mic went into a Focusrite Octopre Platinum preamp and had also an API Vision -plugin on it that had 9 dB boost on 10kHz.

### 3.1.2 Snare

Snare drum was captured with a Shure sm-57 that was positioned pointing at the center of the drum. Depth wise it was in a position that the capsule of the mic was at the rim of the snare drum and to minimize the bleed from the hi hat, it was tilted in way that hi hat was about 140° degrees from capsule. Also on the snare drum channel there was the API Vision-plugin with 6dB boost at 7kHz and a high-pass filter at 100hz to cut the most bleed from kick drum. The reason for having only one mic on the snare instead of two was that one of the ten microphone inputs we had wasn't working properly and the snare bottom mic was considered the least important, so that was left out.

### 3.1.3 Toms

Both toms were miked with Sennheiser MD-421s. Mics were placed in a way that the capsule of the mic came little over the rim and it was pointing at the center of the drum. Tom mics were also brought really close to the skin of the drum to minimize the bleed from the other drums. Reason for the choice of microphone was MD-421's slight increase in frequency response towards high frequencies, which makes the toms sound a bit snappier and thus more audible in the mix.

### 3.1.4 Overhead & room

Overhead mics are usually used to pick up the high-frequency transients of cymbals but also to provide an overall blend of the entire drum kit (Miles Huber & Runstein 2017). In this case the function of the single overhead mic was to capture mainly the high-frequency content of the cymbals and not so much of the sound of the whole kit since that job was left for the room mics. As an overhead microphone we had a Russian handcrafted ribbon microphone that was placed in the middle of the drum set about half a meter above the drummer's head.

For the main room mics, we had chosen a pair of AKG c414s. They were placed approximately one and a half meters away from the drums and set according to X/Y stereo miking technique. In the X/Y technique there are two identical cardioid microphones placed on top of each other but pointing away from each other at a 90-degree angle (RØDE 2018). The distance between the drums and room microphones was decided after a while of experimenting. The goal was to find the most suitable ratio between the direct sound of the drums and the sound reflections of the room.

The one last microphone on the drums was a Shure sm-57 lying on the floor about 4 meters from the drum set. This mono room mic signal went to Golden Age Project Pre-73 preamp where it was gained so much it got little distorted.

After the gaining the signal got compressed a fair amount by Golden Age Project's Comp-54 hardware compressor. Compressor was set to the fastest attack and release times to really crush the sound.



PICTURE 2. X/Y stereo miking technique (Sound Training College 2017)

### 3.2 Bass

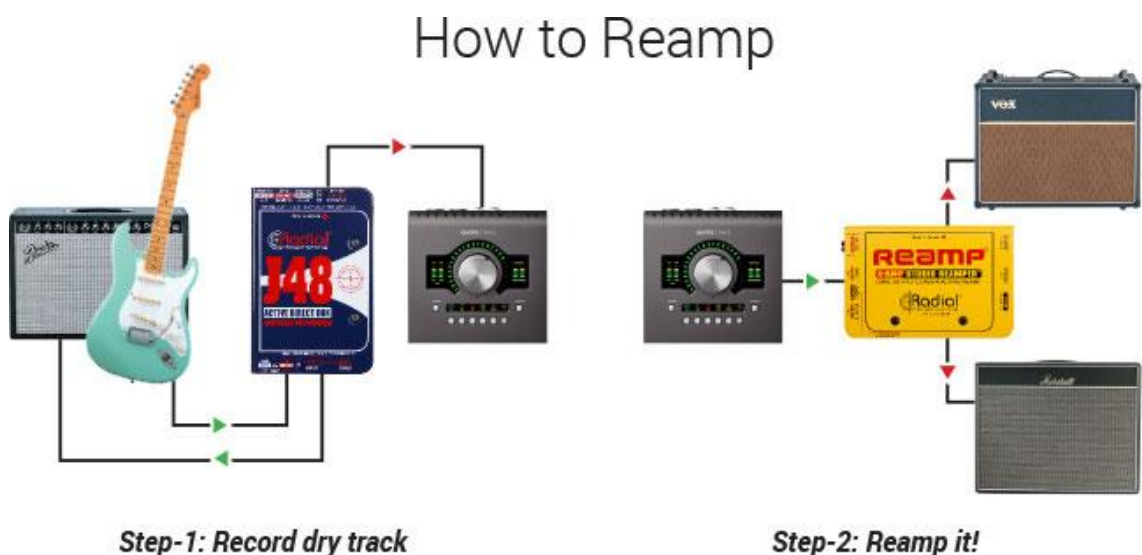
The electric bass can be recorded in two different ways. It can be miked at the amplifier if it's being played through one, or it can be captured through a DI-box (Miles Huber & Runstein 2017). However, the safest way to record bass guitar is to blend the DI-signal with a miked cabinet (Weiss & Calilhana 2020). A good bass guitar sound obviously requires also a good performance and a reasonable-quality instrument (White 1999).

During the time of recording there was no suitable amplifier at our disposal, so we ended up trying a few different SansAmp preamps one of them being Tech 21 Bass Driver that the bass player used to use while playing live. The sound of the preamp was close to the sound being chased but the high-mids were a bit too

sharp and the frequencies below 60hz were totally cut off, so I didn't dare to commit to that. Instead, we ended up recording only the D.I even though that wasn't highly appreciated by the members of the band.

Later in the DAW I put a Universal Audio Ampeg SVT-VR plugin on the bass D.I track. That is a plugin that emulates the legendary Ampeg SVT 300-watt tube amplifier and its 8x10 cabinet (Universal Audio n.d.). Even though the sound of the plugin was generally good it didn't sound as live and real as hoped.

After not finding the right tone from neither the preamps nor the plugin, the only remaining option was to re-amp it. The D.I signal was routed from the audio interface to a re-amp box and from there to a Mesa Boogie Express 5:25 guitar amplifier that was set in a "Crunch" mode. After managing to get the desired, lightly distorted sound out from the amp, it was recorded back into the DAW. The re-amped bass sound was captured with a Shure sm-57 that was placed right on the edge of the dust cap of the one of the four speakers of the guitar cabinet. In order to get the emphasis on the low-end, the mic was so close to the cabinet that it was almost touching its grille.



PICTURE 3. How to Reamp (Radial Engineering 2018)

### 3.3 Guitars

The traditional way of recording an electric guitar is to choose an amplifier and tweak the settings until it sounds good and then place a microphone in front of it.

Thanks to the emerging recording technology, nowadays there are also more options. Guitar amplifier can be replaced with analogue or digital amp simulator, or the pure sound of the instrument can be first captured as is, and then run later through different plugins or re-amped it through actual amplifier. (Albano n.d.)

The guitars for the album were recorded in the traditional way. The plan was to have two main guitar tracks that would play mostly the same parts through all the songs and then add additional leads and solos on separate tracks. To get the main guitars feel wide in the stereo field, they were recorded with fairly different sounds. The first guitar track was a Gibson Les Paul played through a Mesa Boogie Express 5:25 guitar amplifier, the same amp that was used with the bass. The sound of the combination of the guitar and the amp could be described as churchy. It was very high-mid emphasized but didn't have a great amount of frequencies above 5kHz. The second main guitar track was played with an old Charvel guitar that had only a single humbucker-pickup on the bridge. Because the desired sound for the track was almost metal kind of hi-gain distortion, an ENGL Thunder Combo was selected for the amplifier. Both two main guitar tracks were captured with just one Sennheiser MD-421 microphone.

Solos, additional guitar tracks in the choruses and leads that were supposed to be played on top of the rhythm guitars were recorded separately with different gear and in a different session. As the idea whole time was to capture the guitar sounds as "finished" sounding as possible, same approach was applied with these additional tracks. Whereas the main guitar sounds were kept the same for all the songs, lead guitar tone was altered for each song separately in order to get some variation. These guitar tracks were also recorded with two microphones. A Sennheiser MD-421 was very close to the speaker of the cabinet capturing the direct sound and a Neumann u89 large diaphragm condenser microphone was about one meter away from the guitar cabinet to get some reflections from the room and thus giving the sound some depth.

There was also an acoustic guitar recorded for two songs. The acoustic guitar was recorded with a Neumann u89 large diaphragm microphone that was placed half a meter away from the guitar, pointing at the 12<sup>th</sup> fret of the guitar's fretboard. Signal was high passed on and compressed quite heavily on its way into the

DAW. Some top end at around 10kHz was also boosted with an eq and a few decibels were carved out from the boxy sounding 700hz area.

### 3.4 Vocals

The vocals are the most important part of the mix and the quality of them is decided already in the recording phase. For that reason, it is very important to choose a microphone that suits the singer's voice, avoid unwanted reflections of the room getting recorded into the track and most importantly help the singer to get the best out of them. Finding the right distance between the microphone and the singer also has a big impact on the sound. (Mayzes n.d.)

The vocals were recorded in few separate sessions in Headline studio in Tampere. Approach to vocals was quite simple: after getting recording equipment set up and the singer's voice warmed up, three takes of the song were recorded and if there were no major mistakes that annoyed someone, we moved to a next song. When recording main vocals, it was asked that no one else but the singer and the producer would be present. This was because having more people listening and watching the performance can put some extra pressure on the singer and made them feel uncomfortable, which can have a negative effect on the performance.

For the vocals we had two very different microphones to start with: Shure SM7B and Neumann TLM-103. The first one, Shure SM7B, is a cardioid dynamic microphone that is often used for speaking and singing purposes (Shure n.d.). The latter, Neumann TLM-103 is a large diaphragm condenser microphone also often used on vocals (Neumann n.d.). To see which one works better for the album, we recorded a verse of one song with both mics. When comparing the takes it was clear and unanimous choice to go with Neumann. The TLM-103 sounded very present and clear compared to the SM7B that sounded surprisingly dark and dull in the context. The final vocal recording chain was the Neumann TLM-103 mic connected to a SPL Goldmike 9844 tube preamp and from there to a UREI 1176 FET compressor that was compressing the signal 1-5 dBs on its way into the DAW.



After having all the main vocals done, backing vocals were recorded to each song. First each chorus of each song was tripled in order to make the vocals sound bigger when moving from a verse to a chorus. In addition to the doublings, actual vocal harmonies were recorded to most of the songs. The band had written most of the harmonies already before going to the studio but some of them were invented on the spot. The band's lead singer Anssi Landin sang all the background vocals himself except the gang vocals on "Cooldown", where all the band members joined to sing into the same microphone together.

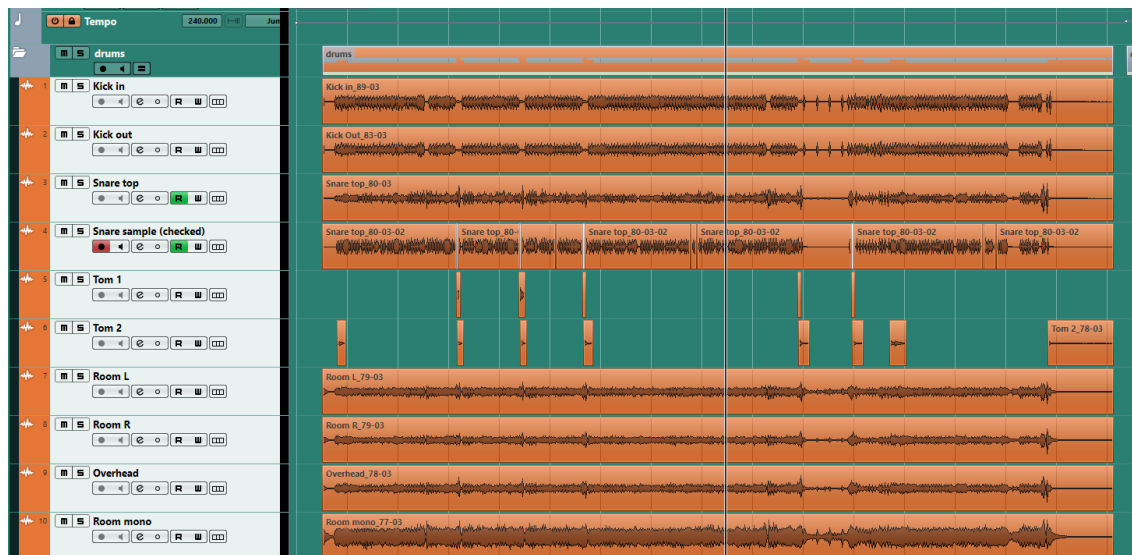
## 4 POST-PRODUCCION

### 4.1 Editing

Audio editing is a process where audio files are being prepared for mixing. The editing might include cleaning up noise and imperfections, improving the musical performance by combining audio from different takes, manipulating audio by slicing individual clips or relocating audio clips in the timeline. Back in the days engineers had to cut and splice analog tape if they wanted to edit the audio, but nowadays these practices can be done inside the DAW. Audio editing plays a huge role in creating a great sounding song. (Hahn 2020.)

The amount of editing done for the album was quite small and since no quantization was used, it was all either comping or cleaning up bleed from the tracks. Comping is a process where multiple performances are edited into a composite track that has the best parts of each take (Sweetwater 2016). There were three or four drum takes of each song and we had agreed on our favourite takes with the drummer already on the recording phase. Even though those takes were pretty good already, there were still some little mistakes every here and there. To make the drums sound even better and tighter, every bad part was replaced with an equivalent from another take. These replaced parts were mostly drum fills or missed hits. After this process it was noticed that the bleed in the tom tracks was making the whole drum sound a bit messy. Bleed means one sound source leaking into another audio source's input, for example hi-hat leaking into a snare mic (Sweetwater 2004). In this case, the whole drum set was very loud in the tom tracks, which was not desired. To fix this problem, I cut out all the parts from both tom tracks where the toms were not being played.

Similar processing was done to main vocals too. There were three solid takes of each song and for each verse and chorus the best out of the three options was selected and used. All unwanted coughs and hums were also cut off from the parts where there was no singing. All the vocal editing was done in the presence of the singer so that he could participate in the selection of the best performances.

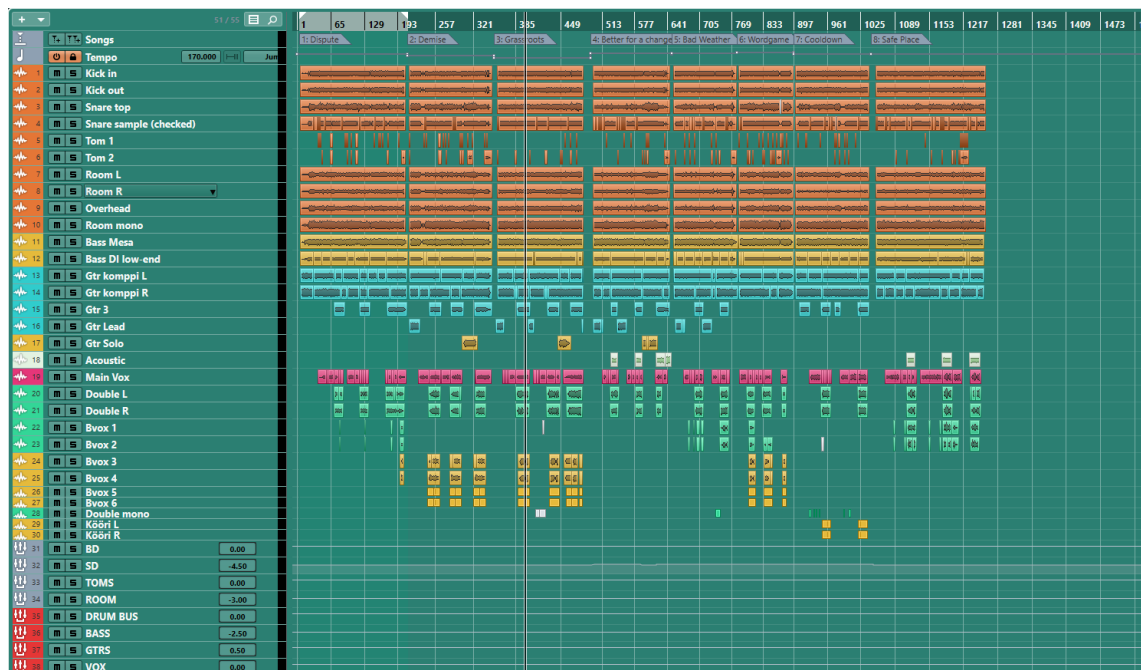


PICTURE 4. Edited tom tracks (Pietilä 2021)

## 4.2 Mixing

Mixing is a process where the overall tone, character and intention of the song are being shaped by adjusting relative levels, positioning the sounds in the stereo field, equalization, dynamic processing and with the use of effects such as delays and reverbs (Miles Huber & Runstein 2017.) There are a few different ways to approach a mix and my choice with the album was to go with the bottom-up mixing. Bottom-up is a mixing method that starts with the drums and ends with the vocals, and it is considered traditional way for mixing rock, pop and dance music (Hepworth-Sawyer & Hodgson 2017, 62). Before diving into any processing, I routed all 31 audio tracks of the project into four stereo bus tracks which were drums, bass, guitars and vocals and set their relative levels about right.

All the songs of the album were mixed in the same Cubase project. This meant that if for example a bass guitar sound of one song was changed, it changed for all the other songs too. Mixing the album this way made the process faster than mixing all of them separately, but it also made it easier to make the album sound coherent since the overall sound would be more similar throughout the album. However, some changes between individual songs were still made by using automation and by having different audio tracks for different songs.



PICTURE 5. Edit window of the mixing project (Pietilä 2021)

#### 4.2.1 Master bus

Master bus is the mixer channel where all the sound sources sum together (Hahn, 2021). Sometimes processing is added on the master bus to shape the sound of the whole mix. Before starting to process any individual audio tracks, I set up my usual master bus chain that includes four plugins onto the master bus.

The first thing in the master bus was a Waves SSL G-master bus compressor. Compression is the most common kind of master bus processing since it can help to glue all the individual elements of the mix together into one cohesive whole (Waves, 2017). My compressor settings were 4:1 ratio, attack at 10 milliseconds and release on auto mode, which makes the release time is dependent upon the duration of the program peak. The compressor was reducing the signal 1-3dBs.

Next one in the chain was UAD Pultec EQP-1A equalizer that was making a big difference on the sound by boosting quite a lot of both the high and the low end of the mix. On the low end the equalizer was having a 5,5 dB raise at the 60hz but also a 1,5 dB cut at the same frequency. At the other side of the frequency spectrum the equalizer was making everything a lot brighter by boosting approximately 9 dBs at 10kHz.

Whereas two previous plugins were inserted before starting to process any individual tracks, the next one was added after the mix was almost finished. When referencing the mix with some popular skate punk songs, I noticed that most of them had less midrange frequencies, which made my mix sound a bit muddy and honky compared to them. To even out that difference, I put a Fabfilter Pro-Q3 equalizer to my master bus and cut 2 dBs at 700Hz. After making the cut I also ended up boosting just 1 dB at 1,8kHz to add some clarity and presence.

The last plugin on the master bus chain was Soothe 2 by Oeksound. Soothe 2 is a dynamic resonance suppressor that identifies problematic resonances and reduces them automatically (Oeksound n.d.). The job of the plugin was to gently remove harshness and sizzle from the mix without making it sound dark.

#### **4.2.2 Processing of individual tracks**

Now that the tracks were roughly in balance level-wise and some compression and equalization was added to the master bus, it was time to start tweaking the single tracks. At this point I already had a plan where all the musical elements will be placed in the stereo field, but I wanted to keep everything in the center until the very last steps of the mixing phase in order to create a mix that will sound good also when played back in mono. I even mixed most of the record with just a one Avantone Mixcube reference speaker that has relatively narrow frequency range, which is from 90Hz to 17kHz. By not hearing the sub-bass frequencies or the highest top-end put your focus in the mid-range where most of the work needs to be done usually.

First thing I wanted to do was to add some warmth to all the tracks because they were generally sounding a bit too clean and spiritless. I inserted a UAD Studer A800 -plugin to each track excluding the background vocal tracks and added subtle but crucial amount of saturation by twisting the input and output knobs. This process alone gave the whole mix way richer and more pleasant sound. After that it felt good to start sculpting the drum tracks.

I set the kick in and out tracks in nice balance with each other and routed them into a kick bus track. After playing around with an equalizer on the kick bus track but not being able to get the desired sound, I decided to put a Steven Slate Trigger 2 drum replacement plugin on the kick in channel. Drum sample replacement means the process of replacing the individual recorded drum hits with samples in order to change their tone (Hahn, 2019). In this case I chose to use sample replacement because I wanted to make the drums sound a bit fuller and to have clearer transients and thus make them sound more aggressive. Another benefit of using drum samples was the possibility to even out volume differences between individual drum hits by limiting the dynamic range of the triggered sound. The mix knob of the Trigger 2 -plugin was left at 50%, meaning that the triggered drum sample and the original audio were playing at equal volume. This made the kick drum sound more consistent and aggressive but still not robotic or fake. The only plugin that was on the kick bus track was UAD SSL 4000E Channel Strip plugin that was limiting the signal gently, carving out a lot of 700hz area, adding 3dBs at 3,5kHz and boosting almost 9dBs at 8kHz to exaggerate the attack of the kick drum in order to make cut through in the mix. Considering the equalization moves made earlier in the recording phase, the high end of the kick drum signal was now boosted by 30dBs, which some mixing engineers might think is too much, but every step was carefully considered and decided by according to what was considered to best serve the song.

The processing of snare drum was quite like the processing of the kick drum. Drum re-placement was used but because there was some very fast drum fills and leakage of other drums on the snare track, the trigger was constantly triggering samples at the wrong time and some snare hits weren't triggered at all. To be able to fix this problem I had duplicate the snare track and render it to an audio file with the trigger plugin on. After this I went through the tracks hit by hit and every time there was a sample triggered at the wrong time, I manually moved it to the right place. Once the samples were matching the original audio, I routed these two tracks into a bus track added processing there. First one of the two plugins on the chain was UAD SSL 4000E Channel Strip plugin that was making the snare brighter by boosting 6dBs at 8kHz and 3dBs at 4,5kHz but also carving out some boxy sounding middle frequencies at around 800hz and adding some body to the sound by adding few dBs at 200hz. The signal was also high-passed

at 90hz to get rid of some unwanted rumble and leakage from kick drum and low-passed at 12kHz to reduce the harsh sound of hihat bleeding into the snare microphone. After the equalization the signal was compressed by UAD Distressor plugin that was set to a medium attack and very short release time. Ratio was set to 4:1 and the gain reduction was 1-3dBs in all the songs. After that the processed and ready-sounding snare drum signal got finally sent to a Waves Abbey Road Plates -plate reverb that was on a separate auxiliary send.

On the other drum tracks the processing was simpler. Both tom tracks had just one eq on them that was boosting both the attack and the thump of the drum. What comes to panning, toms were panned hard left and right, the floor tom being on the left. From the mono overhead channel only a few dBs were taken out from the 700hz area. Room mics were made little darker by bringing high-pass filter down at 12kHz, while 6dBs were cut out from 800hz area. Room mics were also compressed heavily with SSL E4000 Channel Strip's own compressor that had fastest attack and release times possible and 5:1 ratio selected and as a last thing, some nasty sounding resonances between 4-7kHz were reduced with Soothe 2 plugin. Room mics were panned 90% left and right. The mono room mic that was compressed and distorted on the recording phase didn't need any further processing.

The bass guitar was on two separate tracks. First one was the clean D.I signal and the second one was the one that was re-amped through Mesa amplifier. The idea was to use the clean low end of the D.I and the tone and character of the re-amped track, so the D.I signal got low-passed at 120hz while the re-amped signal got high-passed at 120hz. To make the low-end of the mix more constant, the low-passed D.I signal got also compressed quite heavily with UAD LA-2A -compressor before going into a bass bus channel. On the bass bus channel, both signals were compressed gently but equalized heavily with UAD SSL E4000 -plugin. While the compressor was set to 2:1 ratio and medium release and the gain reduction was ranging between one and three dBs, eq was boosting 9 dBs at 1,5kHz and 6 dBs at 5 kHz to make the bass guitar cut through the mix. Eq moves on the lower end were -3dBs at 200hz to remove some muddiness and +3dBs at 100hz to add some fullness to the sound. Frequencies below 100hz

were not boosted because that space was left mainly for the kick drum. High-pass filter was at 40hz.

A lot of attention was paid to the guitar sounds at the recording phase, so they needed relatively little post-processing. UAD Pultec EQP-1A -equalizer plugin was put on the guitar bus channel so it would be making all the guitar tracks brighter by boosting roughly three decibels of frequencies above 5kHz. Little bit of 100hz was also added to both main guitars to add some fullness to the sound and some annoying resonance at 4000hz was cut with a surgical eq. Since the guitars had quite different character, they were treated also differently. The guitar track that was recorded with a Mesa-Boogie amplifier, was sounding a bit too midrangey so a few dBs were cut at 550hz and the other main guitar track which was recorded through an ENGL amplifier was sounding a bit too scooped so even as much as 6dBs were added at around 700hz with quite narrow bandwidth. These two guitars were panned one 90% left and the other 90% right but in choruses they were automated to go hard L and R in order make the choruses feel bigger and wider than the verses. The third guitar track that would play only in choruses didn't need any equalization and neither did the acoustic guitar since it was processed already in the recording phase. Solo and lead guitar tracks were both made little bit brighter by adding 2dBs at 7 kHz and to make them stand out better from the mix, but rest of the processing was a bit different for each song.

After the guitars were made to sound pleasing and they blended well together with drums and bass, it was noticed that the lead vocals were a bit hard to hear because the guitars had so much sound information on the higher midrange area. To fix the problem, that 1-2kHz area was first tried to be cut from the guitars with a normal equalizer but that made the guitars lose their aggressive sound and that wasn't acceptable. The final solution was found in a dynamic equalizer on the guitar bus channel. Dynamic equalizer is type of an equalizer that doesn't get active until those specific frequencies that you want to boost or cut get over the set threshold (Fox n.d.). Dynamic eq was put on the guitar bus channel, but instead of the equalizer getting triggered by the guitar signal itself, it was set to get active every time when there was something happening on the main vocal channel. This was made possible by sidechaining the main vocal track to the guitar bus dynamic equalizer. Sidechain compression means the type of compression



where the volume of one instrument is being controlled by the volume of another instrument (MasterClass, 2021). However, in this case not the total volume of the guitars, but the volume of the frequencies between 1-2,5 kHz in the guitar bus was controlled by the volume of the main vocals. So, in every part of a song where there was singing, the volume of those frequencies from the guitars was lowered by approximately two decibels. This gave some space for the vocals and made them more audible but didn't affect the guitars when there was no singing.

After all the instruments were sounding good together, it was time to focus on the main vocals. As a first step, Soothe 2 -plugin was put on the main vocal chain to gently remove some harshness between 3-7kHz. Second plugin on the main vocals was Studer A800 tape emulation plugin that was giving the sound some saturation, as it was doing for every single audio track in the project, as mentioned above. The tape emulator was followed with SSL E4000 channel strip plugin that was boosting 3 dBs 1,5kHz to make it cut through the mix a bit better and 5dBs at 100hz to add some warmth to the sound. The signal was also compressed a bit with SSL channel strip. Next in the chain was Cubase's own stock de-esser that was followed with JST Gain Reduction which was probably the most important factor of the vocal sound. Gain Reduction is a very aggressive sounding compressor and saturator designed by a well-known American producer Joey Sturgis. The last two plugins were Soundtoys Decapitator, which is a saturation plugin, and Fabfilter Pro-Q3 -equalizer. The Decapitator was set on "A" -mode, which is modelled after the Ampex 350 tape drive preamp (Soundtoys 2015), and the drive-knob was set at 3 so it would just slightly distort the sound. The Pro-Q3 was there at the end only to filter out everything below 130hz and cutting 2dBs at 550hz.

The main vocals were also sent to a three auxiliary sends. First of them was Microshift by Soundtoys and its purpose was to make the main vocals sound a bit wider in the stereo field. The second send was Valhalla Room reverb which had 1.6 seconds decay and no pre-delay. The signal that was going into the reverberator was filtered in a way that no frequencies below 300hz or above 4000hz were passed. This was because the reverberated sound was not desired to have any low frequency content that would make the mix messier, or the high fre-

quency information that would make the reverb too noticeable. Both sends mentioned were set 12dBs lower than the dry main vocals. The third auxiliary send was a mono quarter note delay that was set to synchronize with the tempos of the songs.

Background vocals were well sung, and they were already compressed in recording phase, so they sounded very good as they were. Only measures taken on them were setting a low-pass filter to 200hz, taking a bit of top-end away at 5000hz with shelving eq and adding even some more compression. The gang vocal tracks, where all the band members were singing into the same microphone, were also distorted with the Soundtoys Decapitator. Every vocal harmony was recorded twice on separate tracks and each of those pairs was panned either hard left and right or 90% left and right.

I want to underline, that even though the elements of the album were mixed in the order that they've been told about in the previous chapters, the rest of the tracks weren't usually muted during the process. At least 90% of the time when the album was being mixed, all the tracks were playing at the same time. That is because the I wanted to keep the focus on how each instrument sound in the context, as it is often commonly recommended (Benediktsson, n.d; Mastering The Mix 2020). Also, all the panning was done in the very late stage of mixing, because the goal was to make a mix that translates well also to mono listening conditions (Why Derek Ali Mixes Kendrick Lamar In Mono, YouTube 2019).

## 5 DISCUSSION

At the time of writing, the album has been finished for six months. It has not been released yet, but it's already easier for me to listen to the album more objectively. As mentioned, Moon Gravity is the first full length album I ever produced and mixed, so it was quite predictable from the start that some mistakes will be made. The bright side is that none of the mistakes made were that serious, and a tremendous number of things were learned during the process.

The creation process of the album was very long, a whole nine months. Working on the album was mostly fun but I still think it took too long to get finished. When there were long breaks between recording sessions, I noticed that at the beginning of each session it took some time to readjust my thoughts to the project, which required some extra effort. In future projects, scheduling is something I will pay more attention advance. There are also some technical things that I would do differently now. For example, the room where the drums were recorded in wasn't maybe the most suitable one. When recording drummers who play as fast music as skate punk, I want to use more dampened room in future in order to capture more of the dry sound of the drums and less reflections from the room. The reason for that is that in the music that is really fast there is not much space for neither natural nor artificial reverberation between the individual drum hits. Also sacrificing the snare bottom mic for a distant room mic was something that I cursed a lot during mixing.

Producing the album was challenging at times, but it was also very instructional and rewarding. Working on it made me develop as a producer and audio engineer and brought me even new clients. Even though there are things that I would do differently now, I'm happy with how the album sounds and I can stand proudly behind it. The band is also satisfied with the outcome, and I truly hope the album gives their careers a boost when it's released in 2022.

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## **APPENDICES**

Appendix 1. Suntrace – Moon Gravity