



Engineering Contemporary Metal Music with Natural Sound Sources

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ABSTRACT

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The purpose of this thesis is to analyze the developments that have occurred in music technology and how they have influenced contemporary metal music production. In particular it explores the thrash and death metal subgenres, as well as the developments of DAW editing, drum samples and digital guitar amplifiers. A brief history of each category is presented, concluding in the effects that each aforementioned production techniques have caused.

The research report investigates whether a contemporary metal release can still be produced without heavy reliance on drum samples, digital amplifiers and heavy editing, and how it can be achieved. The report describes an actual step by step production of 3 example songs from their demo phases, to their recording, mixing and mastering. The results seem promising but require more investigation with different artists and subgenres.

The majority of the data in the theoretical part was gathered from academic research articles and expert interviews along with books and online magazine articles. The data of the report was gathered mostly from online music production courses and books.

Key words: metal music production, contemporary metal music, drum samples, amplification simulators, digital audio workstation

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ABBREVIATIONS AND TERMS

DAW	Digital Audio Workstation
Grid	Subdivision of a musical bar in a DAW environment
Drum Sample	Pre-recorded drum hit used to replace or augment recorded drum tracks
Quantization	Time adjusting/conforming drum hits to the grid
Beat Detective	Editing tool in Pro Tools that is used for quantising
Fethead	Small microphone preamp connected between the microphone output and the XLR cable, providing 27db of clean gain
Bleed	Sound captured by a microphone from unwanted sources, e.g. a snare close microphone capturing tom hits
Gating	The function of noise gate plugins, which suppresses bleed up to -80db

1 INTRODUCTION

Extreme metal sound has gone through various changes since its emergence in the 1980s, and so has music technology in parallel to it. This thesis intends to review the development of music technology and how it has influenced the evolution of metal sound as well as how much technology and techniques such as heavy editing, drum samples and digital amplifiers have become an integral part of contemporary metal production. The practical section then investigates how much can be done without these technologies by natural performances of the drums, bass and guitar and still achieve a commercially competitive sounding metal production.

The extreme metal subgenres that this thesis focuses on are thrash and death metal. A brief history of both subgenres – along with nu metal, which is seen an important genre of introducing digital music production technology – is presented in the beginning, from the sound and production point of view. Then the main digital technologies such as digital editing, drum samples and digital guitar amplifiers that this thesis intends focuses are explored in depth. After this it is reviewed what exactly makes up a contemporary metal production that fulfils commercial standards and how much of it is dependent on the technologies presented.

The practical part consists of a real-life production of 3 example songs from the band Dregs of Creation, in which the author is the founding member. The objective is to use as little of editing on the drums, bass and guitar, as few drum samples as possible and no digital amplifiers. The intention is to investigate if a commercially competitive metal production can still be achieved with natural performances and sound sources by utilising other parts of digital technology in the post production that don't conflict with the aforementioned objectives.

2 EXPERT INTERVIEWS

2.1 Nino Laurenne

Nino Laurenne is the owner of one of the most prolific studios of the Finnish metal scene, Sonic Pump Studios. His work includes as producer and engineer of bands and artists such as Amorphis, Hevisaurus, Ari Koivunen, Lost Society and many more (Sonic Pump Studios).

2.2 Hiili Hiilesmaa

Hiili Hiilesmaa is one of the best-known music producers of Finland. The artists he's worked with include HIM, Apocalyptica, Sentenced among many more (Hiili Hiilesmaa).

3 CONTEMPORARY EXTREME METAL SOUND

3.1 Genre History

Before delving into the advancements of modern music technology, a brief history about two of the prominent styles of extreme metal, thrash and death metal is presented. Some of the most important influencing bands and albums as well as the general nature of the genres are briefly gone through, however the main focus attempts to examine the subgenres in the light of the important developments in the timbre and music production technologies introduced in the eras.

3.1.1 1980s Thrash Metal

The earliest signs of extreme metal can be traced to the very beginning of the 1980s. The early years of the decade saw various debut full-length and demo releases from bands including Metallica, Slayer, Venom, Anthrax and countless others. What characterised these bands was a collective drive to push the boundaries of metal through extreme tempo, sound and lyrical themes (Christe 2004). Ever since these bands started emerging, the music scene was marked by stiff competition of pushing boundaries to the extreme, particularly competing who can play the fastest and heaviest (Chantler 2019).

Many of the early thrash metal bands in the early 1980s started significantly underaged and underdeveloped musician-wise. However there as the genre defined itself and matured by the mid 1980s, many albums such as Megadeth's '*Killing is my business...*' and Metallica's '*Ride the lightning*' displayed ever more sophisticated musicianship (Christe 2004), a trait which is still highly valued within metal music, particularly in guitar playing (Marrington 2017). However, the audio production standards for the genre remained rather undefined and unsatisfying for most of the decade, as sound engineer and producer Scott Burns puts it:

If you listen to a lot of the heavy thrash bands, even Dark Angel, Kreator or Celtic Frost – they were heavy as fuck, but I always thought the production sounded like shit (...) There was this general consensus that

nobody who produced stuff like Sepultura gave a shit about it. They'd say, 'Oh, they play too fast and it sounds like a dog barking.' (Wiederhorn 2017).

In latter half of the 1980s, the audio production of some of the eras prominent bands established the cornerstones for metal music production that are still timely and widely applied in today's contemporary metal music. Slayer abandoned reverb on their 1986 album 'Reign in Blood' moving for a more 'in-your-face' sound, as guitarist Jeff Hanneman described it in an interview to Revolver (Grow 2018). The mix engineer of the particular and the two follow-up Slayer albums were mixed by Andy Wallace. He explains in an interview to Sound on Sound that the music was extremely aggressive, and accordingly wanted to make its sound 'slam' and have impact. The album became an influential watershed for the metal genre (Tingen 2014), and thus can be argued that it established a standard of dryness and impactfulness for metal music's audio production. The resulting clear sound of the album also helped to highlight the highly worthied details and precision of the musicianship as guitarist Kerry King pointed on an interview to Decibel Magazine (Bennett 2018).

The 1988 '*...and justice for all*' album by Metallica displayed the same dryness in its overall sound. In addition, the drum sound on the album displayed a significant increase in 'snap', referring to the attack of the drum shells, the kick drum and snare in particular. This set the direction for the drum sound in contemporary metal music for the next decade, as can be heard from the releases of various bands of the era, such as Pantera (Laurenne 2021).

3.1.2 1990s Death Metal

With the emergence of the death metal scene in the early 1990s, the extreme tempo, lyrical themes and musicianship of thrash metal were bended even further by a new generation of metal musicians, who had grown up entirely in the era of heavy music. Most of the influential bands in the American scene flocked to record their albums to Morrisound studio in Tampa, engineered by Scott Burns (Christe 2004). As numerous American death metal bands, such as Obituary, Cannibal Corpse, Deicide, Savatage among many more travelled to Tampa,

Scott Burns' and the studio's name eventually became tightly connected to the death metal sound, even so far as gaining the nickname 'Morrisound sound' (Haywood 2020).

The 1990s death metal scene displayed the first widely documented signs of drum sample usage. In an interview to Livewire, Scott Burns credits his then bosses at Morrisound studio, Jim and Tom Morris, as being the pioneers of drum triggering, which they taught to Burns. In the same article the technique is praised to significantly improve the sound quality of the recordings (Wiederhorn 2017). It also greatly eased the pressure on most of the death metal drummers' shoulders, as most of the drummers of the early 90s scene were playing well above their skill level and played most of the fast blast-beat sections incorrectly. Therefore, drum samples were used to entirely replace the original performance to make up for the lack of skill of the drummers of the time (Haywood 2020).

At the same time another prominent death metal scene was rising in Stockholm Sweden. With the band Entombed recording their debut album at Sunlight Studios with engineer Tomas Skogsberg leading the way, the so called 'buzzsaw sound' was created, referring to the thick distorted guitar sound of their 1990 album *'Left Hand Path'* (Matera 2020). This album also included heavy usage of drum triggering on the snare and kick drum (Ferrington 2016). Just as in the american scene, the bands in the Swedish death metal scene flocked to Sunlight Studios inspired by Entombed's debut album. This effectively created a certain standard that most of the local bands strived towards (Matera 2019).

3.1.3 Nu Metal

Along with the extreme metal genres of death and thrash metal, nu metal also should be credited in introducing new production methods into metal music. The first usage of sampling metal music can be traced to the 1980s when hip hop artists such as Public Enemy and the Beastie Boys used sampled metal riffs in their songs. This sampling technique of riffs and various other sounds was later introduced into metal music by industrial metal and nu metal artists, while death metal was mainly focusing on sampled drums. The introduction of the DAW world

increased, eased and improved the use technique of production due to its improved possibilities of editing, copying and looping sections. It brought about a new notion of the metal sound being 'coded' expanding its sound, while retaining the fundamental elements of it that are electric guitars, drums and bass guitar (Marrington 2015).

3.2 Advancement and influence of music technology

There is a general consensus among music producers and scholars alike that the development of digital music technology has significantly influenced the way contemporary metal music is produced and how it sounds. One of the key influencers seems to be development of editing possibilities in the DAW. Some go even so far as to claim how even awful musicians can be edited to sound like they can actually play (Laurenne 2021).

Another significant change that has been more noticeable for the common listener, is the increased loudness of releases in the past decades. Innovations in digital music technology has been observed to correlate with an increase of average loudness and decreased dynamic range. This has led to wide backlash and discussion since the release of Metallica's 2008 album '*Death Magnetic*' in the common metal audience, calling it 'the loudness war', referring to the alleged mastering engineer's competition for ever higher average loudness levels at the expense of musical quality (Williams 2015).

Other changes and impacts of music technology are presented under the subheadings below.

3.2.1 Editing

As stated above, editing is seen as one of the fundamental areas of music production to benefit from the development of digital music technology. Even less than mediocre musical performances can be edited into significantly better with ease in the DAW world. The instrument benefiting the most from the new editing

technology is viewed to be the drumkit (Laurenne 2021). Unlike in the 1980s, drummers have the option to record their songs in short sections, instead the full song in one take (Hiilesmaa 2021) and then comping the short takes into a single unified performance.

After recording, it is common to edit the drums even further. This generally involves different options, which depend on the performance quality of the original recording and style of the band. Manually cutting and moving audio regions to retain the human feel, or a stricter approach called gridding. Gridding commonly involves chopping individual drum beats and quantizing them according to the click. This seems to be most useful, when the margin of error between drumbeats is extremely short, such as in fast death metal blast beats. However, this has a great risk of making the performance seem mechanical (Mynett 2017).

An overall benefit of the new editing technologies seems to be the way it has sped up the recording phase and the world of possibilities it has opened. For example, a guitarist can play a verse only once and then have the same performance copied and pasted to the next section where the verse comes again. However, if the artist is aiming for a more humane feel in their playing, it is still fairly common to play the entire song through (Laurenne 2021).

A downside of this sometimes said to be a decreased emphasis of excellent musicianship (Hiilesmaa 2021), even though it is also noted that the world is filled with astounding musicians nowadays, which somewhat evident through the internet (Laurenne 2021). While the metal audience generally places high importance for genuine, high quality musicianship (Mynett 2013), another downside seems to be a decrease of authenticity, although this issue seems to hold varying importance among producers. As the performance standards in metal music production has increased, so has the technology and techniques enabling ever tighter performances, and vice versa. Tightening editing standards has also been met with critique of 'machine-likedness' and lack of emotion by some producers (Thomas & King 2019).

Because of the increasing quality of recorded metal music enabled by development of technology, accurate timing in contemporary metal performances

achieved through detailed editing is one of the most crucial factors of a commercial standard recording nowadays. If a performance on a contemporary metal recording is lacking this quality, the result risks to lose clarity and intelligibility, which is interpreted by the listener as the musicians lacking skill or the sonic quality being mediocre, which results in a decreased commercial standard (Mynett 2013).

3.2.2 Drum Samples

The term 'sample' can have a variety of meanings in music production, but in this context, refers to a single pre-recorded drum hit – usually kick or snare drum – with one or more microphone that is then treated with EQ and compression, and used to either replace or augment other drum hits (Mynett 2017). Mynett in his PhD defines contemporary metal music's drumming as extremely physically demanding, due to its speed and necessity to keep up a hard and steady velocity between drum hits, as well as maintaining an accurate and steady tempo (Mynett 2013). This, especially keeping up a steady velocity, becomes increasingly difficult at higher tempos, blast beats or double bass subdivisions. Therefore, no matter how well performed, processed, acoustically treated and tuned a drum recording is, it is often the case that drum samples have to be relied on in the final mix, to punch through the thick harmonic content of a highly distorted wall of guitars. For this reason, the best type of drum samples seems to be ones that have been hit hard, as they possess the sufficient spectral content (Mynett 2017).

There are generally two ways to go about using drum samples in a metal mix. The subtler way is to use 'sample reinforcement', which means that the close mic'd drum tracks are augmented, but not replaced by pre-recorded drum samples. The second, and the more radical way is to completely replace the original close mic'd drum tracks with samples (Williams 2015).

Originally, in the tape era before it was common place to record into DAWs, it was commonplace to use the latter technique. In the 1990s drum samples were triggered from an external sampler, which was playing with a timecode in sync with the computer or tape reel. The signal of a drum track was converted into

MIDI form, then the MIDI triggered the drum samples from the sampler, which was then recorded back onto tape or an early version of Pro Tools. However, due to the limits of editing technology at the time it was difficult to synchronise the triggered and the original drum signal together, so the triggered sound ended up replacing the original track altogether. For example, if the kick and snare drum of a recording were decided to be triggered, the original kick and snare close mic tracks were usually muted and were only somewhat heard from the room and overhead tracks augmenting the samples, rather than the other way around (Laurenne 2021).

Nowadays the trend seems to be balanced in utilising and combining the best aspects of both drum samples and the original live recordings. Laurenne gives an example of his own mixes consisting of an approximate ratio of 70%-30% or 60%-40% balance between the live and sample track, in favour of the live track. He might even use several samples (Laurenne 2021). Nick Raskulinecz in Mynett's book explains how he uses as much time and resources as he can on the live drum tracks, before augmenting them with samples and that he too might use several samples on a single drum shell to get the desired result. This trend could be the backlash of the drum replacement practises in the 1990s. Mynett points out that misusing drum samples has a strong tendency to sterilise the sound and deprive the original performance from its natural heaviness and energy, which is crucial for metal music performances. This effect is sometimes called 'machine-gunning' (Mynett 2017) and can quickly fatigue the listener (Laurenne 2021).

Williams makes a draws a connection in his article that the development of music technology since the 1980s has significantly influenced the overall timbre of metal mixes and samples are no exception. When comparing two spectrograms of a recorded live kick and a pre-recorded sample kick from two different multitrack sessions the differences are quite obvious. The sampled kick has two significant peaks in the high midrange and low-end areas, with a considerable dip between them, with the recorded kick drum containing significantly more spectral information in the lower midrange, compared to the former. According to Williams, samples have thus influenced the overall sound of metal drums, establishing a standard that is sometimes called 'doctored', 'inauthentic' or 'superhuman'

(Williams 2015). The following pictures (Picture 1 & Picture 2) along with their captions demonstrate the effects samples have had on the general timbre of metal mixes.

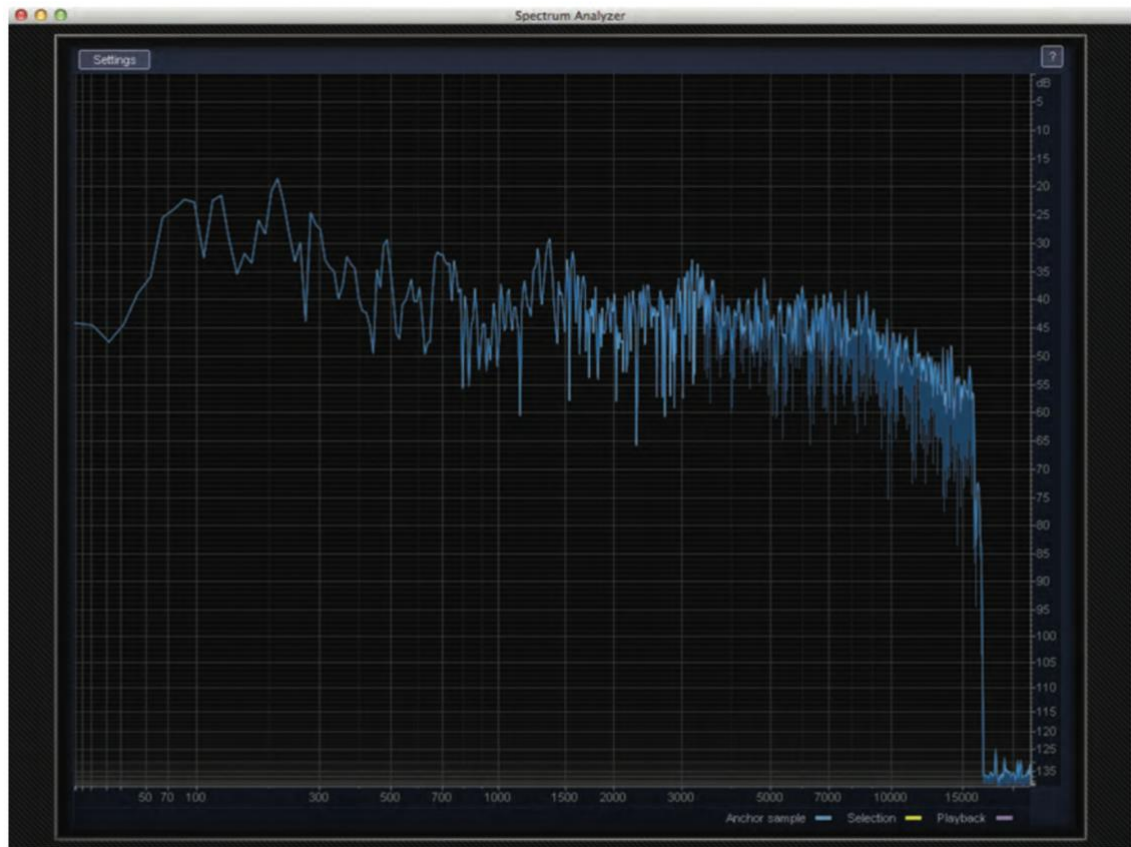


Figure 9: A spectral plot of the full mix, using traditional recording (no kick triggering or convolution guitar amplifier modelling), including the guitar part shown in Figure 8. Overall there is an approximately $1/f$ shape, with strong spectral content in the 1.2 and 3 kHz regions. Note the lack of significant content at >15 kHz – this analysis was carried out on a compressed audio sample (no CD quality version of the separate multitrack files was available).

PICTURE 1. The frequency content of a mix with no samples (Williams 2015).

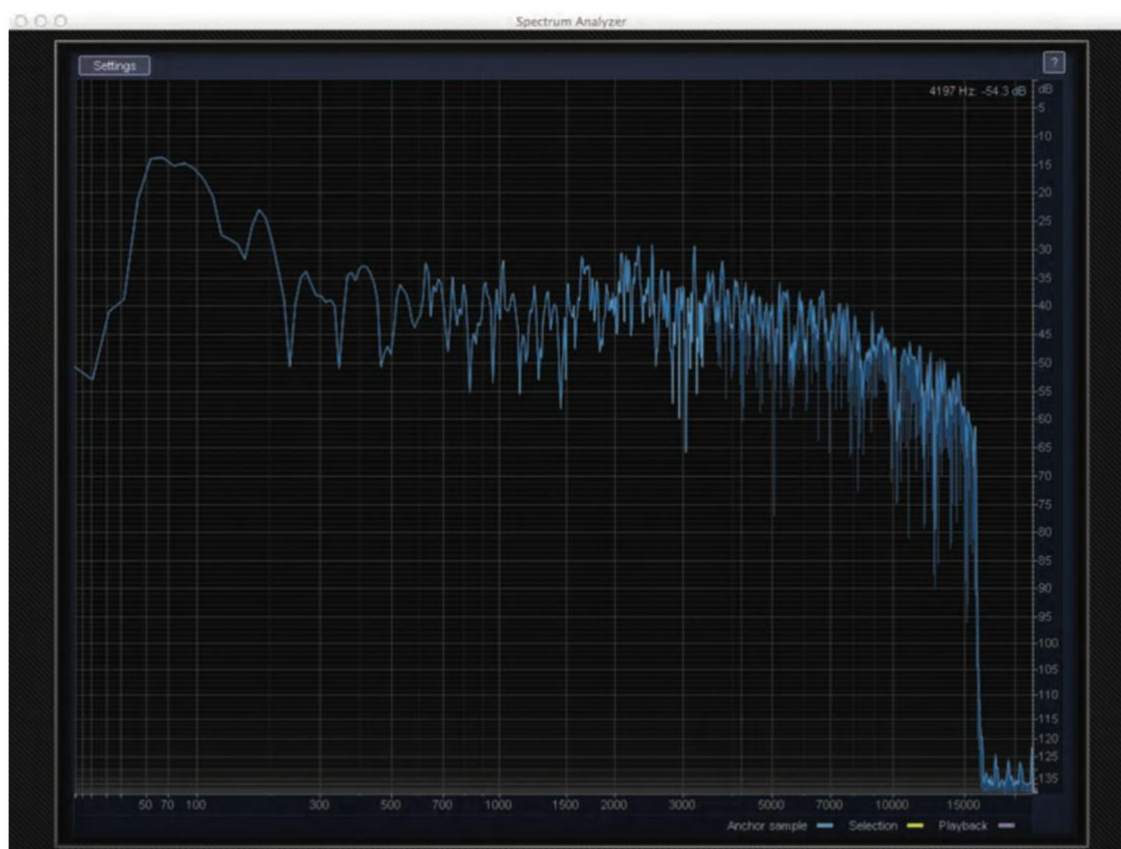


Figure 12: A spectral plot of a third production, which contains indicators of both kick triggering in the sub-bass region and guitar amplifier modelling in the harmonic content region. Note the lack of significant content at >15 kHz – this analysis was carried out on a compressed audio sample (no CD quality version of the separate multitrack files was available).

PICTURE 2. The frequency content of a song with kick triggering. Note the increased sub bass region.

3.2.3 Digital guitar amp modelers

Guitar sound seems to be significantly less affected than drum sounds. It is still a general consensus that a professional sounding guitar tone can still be achieved by a mic'd amplifier stack consisting of an amp head and a cabinet (Laurenne 2021). However, digital music technology has indeed greatly impacted guitar amp technology as well, so it is worth exploring its developments.

Distorted guitar has remained probably the most defining sonic aesthetic of metal music since the genre's emergence in the early 1970s. It's importance can be underlined by simply looking at the long working hours many musicians and engineers have spent looking for the ideal guitar tone for their productions, which sometimes vary from days to even weeks of experimenting different tones. Since

the very early days of metal music, amplifiers specifically designed to produce distortion were available for upcoming metal pioneers – such circumstances were not available for rock pioneers (Herbst 2017). Many valve amplifiers originally designed in the 1950s were further improved in the 1960s and 1970s by developing separate EQ, pre-gain and power amp controls to grow the options for sculpting guitar tones and developing the rack model in the 1980s to switch between pre-amps and power amps. However, it seems that the basic functions of valve amplifier models – particularly old ones such as Marshall – have changed very little over time and have remained as individual improvements to old models (Herbst 2018).

Traditionally guitar players have been very conservative towards new amplifier technologies. This has been evident ever since the first transistor guitar amps, despite being technologically more advanced than valve amplifiers (Herbst 2018). The reason for this is likely the different way valves and transistors produce harmonics. Valves tend to produce even numbered harmonics at higher voltages, which are interpreted as ‘warm’ sounding, while transistors produce odd numbered harmonics, which are interpreted as harsh sounding (Laaksonen 2013). This conservatism seems to be even more evident with the emergence of digital guitar amplifiers that are designed to model valve and transistor amplifiers. Due to the lacking sound qualities of early digital amps, such as the Roland’s VG-8 and the Line 6 POD, this new technology was met by harsh attitudes by metal guitarists.

Despite the criticism, digital modelling and profiling technology has been gradually improving over time, producing more and more sophisticated models, such as Fractal Audio’s Axe-FX and the Kemper Profiling Amplifier. Kemper seemed to be the flagship of digital guitar amp technology for a long time gaining much praise for its seemingly accurate representation of the hardware it has modelled, but on the other hand received heavy scepticism as well (Herbst 2018). At the moment of writing this text, Neural DSP’s Quad Cortex seems to be a very promising innovation and challenge for the pre-existing models in digital profiling technology and has received much praise for its improved and highly accurate sound (Davids 2021; Shull 2021; Fricker 2021). However, this product still remains brand new, so it lacks research.

A huge benefit of this technology seems to be the great convenience it requires on many levels. One can simply open a modelling guitar amp plugin in a mix session, choose a preset and have an incredible sounding tone ready after a few computer mouse clicks. The workflow with a guitar amp plugin is much simpler and shorter compared to the trouble of setting up a heavy stack, mic it and adjusting the microphone position for a time (Laurenne 2021). This digital way of working has also greatly expanded the amount of guitar tones available within a single hardware or software. Below is a picture (Picture 3) of an amp simulating plugin by Neural DSP.



PICTURE 3. Fortin Nameless Suite by Neural DSP. The plugin feature virtual overdrive pedals, adjustable amp head knobs and two microphones in three different tabs.

For example, the Quad Cortex from Neural DSP offers the profiles of over 50 different amplifiers, over 70 effects and over 1000 impulse responses of different speakers and microphones within a single hardware unit. In addition to this Neural

DSP has promised to expand on this collection via updates and one can also capture one's own guitar tones with it (Neural DSP). This same idea has been applied in former amp profiling and modelling technology as well, such as the Kemper (Herbst 2018). In addition to the broad library of guitar tones offered by the manufacturers themselves, the internet is loaded with online communities of guitar players, where musicians share for free presets to existing software's and hardware's as well as impulse responses created by them. All of these possibilities reduce the need to rent expensive studio time and enables high quality results to be achieved even at home (Williams 2015).

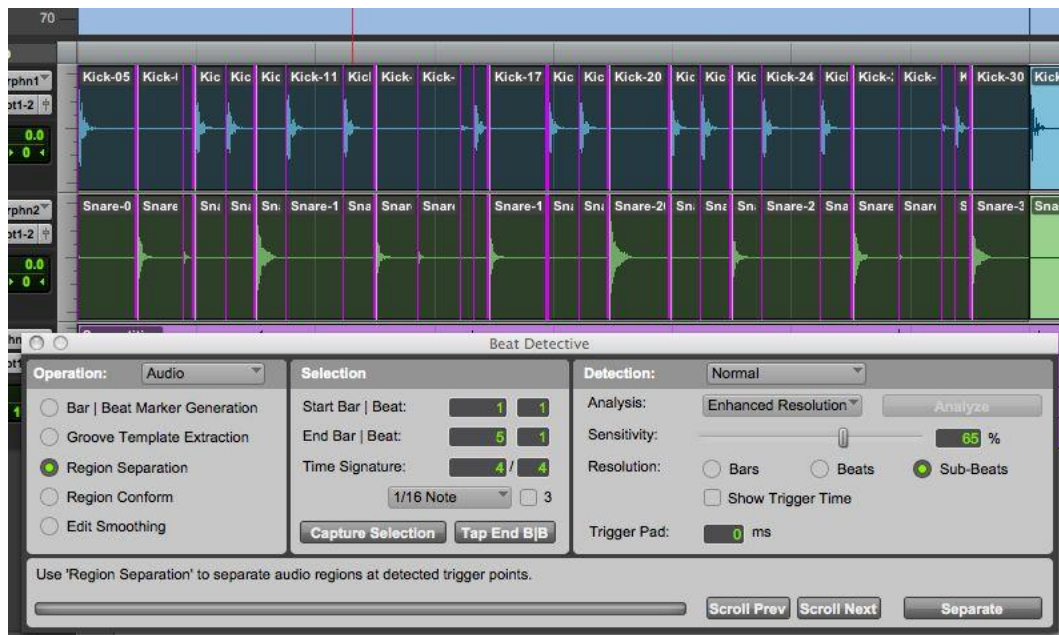
So far there seems to be audible and measurable differences between traditional guitar technology and their digitally modelled counterparts. The spectral content of the guitar tones between these two technologies seems to vary slightly in the examples given by the two example cases in Williams' study, but the overall frequency response between the full mixes doesn't vary dramatically (Williams 2015). Measurable differences were observed within Herbst's study as well but concluded that the differences don't compromise the sound quality. This can be supported by the observation that the general metal audience remains either indifferent or ignorant towards the usage of this technology. However, a downside of it could be the loss of uniqueness with the wide spreading of guitar tones by amateurs and manufacturers that were before deemed as rare (Herbst 2018).

3.2.4 Commercial standards of contemporary metal music

Mark Mynett in his PhD identifies the general aspects that make up a commercially competitive metal production, that can be divided briefly in two domains. The first and the more important one concerns high rhythmic accuracy of the drums, bass and guitars. Each of the instrument's notes and hits have to accurately fall in place in relation to the grid and each other with little to no variations. This is translated as high-performance precision (Mynett 2013) and emphasises the technical proficiency of the musicians that is greatly valued in the metal genre (Marrington 2015).

The second domain has to do with heaviness and intelligibility. This refers to the importance of both low and high frequencies. A commercially competitive metal release should have an enhanced low end creating an impression of large heavy objects creating sound, which is a crucial factor of heaviness. The intelligibility factor on the other hand has more to do with the high end. Highly distorted electric guitars tend to enhance the high frequencies, which is heightened clarity and intelligibility, but it also contributes to heaviness, as it creates the impression of the sound sources being intimately close and 'in your face' (Mynett 2013).

When viewing the evolution of the metal sound from the aspect of the first domain – high rhythmic precision –, the development of digital editing technology seems to have played an important role. It seems to be a general consensus that the development of the DAW technology has played a significant part in an increased performance precision standard. It seems that one of the biggest effects that the development of digital music technology has brought about has been on drum editing (Laurenne 2021). The introduction of the DAW and its editing functions brought about greatly improved possibilities of precision to editing (Marrington 2015). One of the best examples of such editing functions is 'Beat Detective' in Pro Tools developed by Avid. It enables a highly accurate technique of editing called 'audio quantization', which makes slight time adjustments to individual drum hits conforming them to the grid (Williams 2015). This new way of editing saved time and resources compared to the time-consuming manual splice editing of audio tape, and any mistakes made were no longer irreversible (Holkeboer 1998). The picture below (Picture 4) is a screen shot of audio quantization done with Beat Detective in practise.



PICTURE 4. The interface of Beat Detective along with the sliced drum hits that will then be conformed to the grid (Watkinson 2011).

When viewing the evolution of metal music from the point of the secondary domain – heaviness and intelligibility – one of the most commonly observed changes introduced by digital technology is the reduction of dynamic variability and the increase of loudness (Williams 2015). Persistent loudness is translated by the human ear as the sound source being proximate, which contributes to heaviness and intelligibility (Mynett 2017). Nino Laurene goes as far as to call modern metal as ‘compressed to death’ (Laurenne 2021). Another source of heaviness is a powerful bass region provided by the rhythm section (Thomas, King 2019). Williams observed a significant increase of the bass region – particularly the sub-bass region – in his study of timbral changes caused by the development of music technology (Williams 2015).

Another important factor of heaviness and intelligibility seems to be an emphasis of high frequencies. High frequencies support persistent dynamics, in that it makes objects seem close and intimate (Mynett 2017). It also contributes in making things ‘exciting’ and thus increasing the music’s perceived energy, which is deemed a crucial factor of contemporary metal music according to Thomas’ and King’s research. One of the most important instruments in creating this energy is the drum kit and a typical way of creating this energy with the drums is an excessive use of samples (Thomas & King 2019). Sampled drum kits are also

referred to as sounding 'larger than life' (Valeriotte 2015), supporting the case that drum samples greatly contribute to the music's heaviness and proximity.

The effects of all of this new technology among professionals seems to be twofold. On one hand it has brought criticism of musical performances within metal music sounding 'robotic', ingenuine and unnatural (Thomas & King 2019; Marrington 2015) and on the other, it has gained significant welcoming from professional producers and engineers due the increased convenience and fast workflow (Taylor 2011; Laurene 2021; Hiilesmaa 2021). Along with improving the workflow, the digitalisation of music production has also been credited in bringing more clarity to the sound compared to the tape era, and the problems of tape degrading the sound is long forgotten (Taylor 2011).

In the light of this research, it seems that digital music production technology has indeed become an integral part of metal music, even so far as to inform the sound and evolution of metal music itself and the way it is played (Williams 2015; Thomas & King 2019). Some people go so far as to call a part of contemporary metal 'coded', implying the heavy influence of digital music production technology in some of metal's subgenres (Hiilesmaa 2021; Marrington 2015). It therefore raises the question: How much of this modern technology – such drum triggering, digital amplifiers and heavy editing – can be taken away from a contemporary metal production and have it still remaining perceptually commercially competitive?

Many professionals seem positive that metal music can still be produced 'naturally' – without drum samples and digital guitar amplifiers (Laurence 2021; Hiilesmaa 2021). Jordan Valeriotte, who is known as an advocate of drum triggering writes in one of his books that there are two ways of approaching drums in a metal mix: natural or sampled. This implies that there indeed are cases where it is completely acceptable to use no samples and have the production still sounding commercially competitive (Valeriotte 2015). However, it does increase the responsibility of the musicians involved in a production to play excellent performances. Particularly the drummer's responsibility is crucial to play with a steady dynamic and avoid excessive leakage of the cymbals to other

microphones (Laurenne 2021). This is precisely what the practical part of this thesis intends to investigate in practise.

4 PRE-PRODUCTION

Pre-production is the preliminary stage of a record production where many decisive decisions are made that will heavily influence the final outcome of a production. Depending on the budget and other resources of the production, this stage can be done in the bands practise space or a professional studio. The producer together with the band considers a great number of things before the final recording sessions even begin, such as what the music intends to communicate, what kind of a sound will serve it, strengths and weaknesses of the musicians' performances, song structure, recording rough demos, considering what instruments are needed, maintenance of the instruments and much more. If the pre-production takes place in a studio environment, the different equipment can be tested, such as different drum shells, guitar amplifiers, microphones etc. The more of these factors are taken care of in the pre-production phase, the more studio time it will save in the final recording phase (Moylan 2015; Mynett 2017).

In the practical part of this thesis, a record production with minimal reliance on digital amplifiers and drum samples is intended to be carried out, so the role of the pre-production became even more crucial. The aforementioned digital technologies afford the producers to go back and redo countless of decisions concerning the sound of the production (Valeriotte 2020), so the un-reliance on them would mean permanent commitment to whatever sound is achieved in the recording phase. For this very reason, demoing as much equipment as possible for their sound was deemed crucial for a success in this production.

4.1 Project background

The project that this thesis will focus on is a thrash/death metal duo called Dregs of Creation. It was started in December 2019 by the author by writing and demoing thrash metal songs, which ended up with a strong death metal vibe with a low C standard tuning and a growling vocal style. The author was joined by Ahmad Tokallou in February 2020 and they began to exchange ideas, rehearse and record demos together. The lyrics of the band intend to explore the evil and corrupt sides of the individual human mind.

4.2 Demo Phase

4.2.1 Song writing

The demo phase in the beginning consisted of the members of the project meeting up at the mediapolis studios to rehearse, exchange song ideas and recording demos. The first demos were recorded with Logic Pro's pre-programmed drums that were imported into Pro Tools as audio files, the guitars with Kemper and Axe-FX, and the bass with Sans Amp's Bass Driver. The demos at this stage weren't yet recorded with the final equipment in mind, but rather trying out what style of distortion was wanted from the guitars and bass, and how they would complement each other in the mix. The guitars were deemed good with a slightly scooped low midrange area, with the bass distortion filling up that frequency area, creating the kind of aggressive sound that the members were satisfied with.

Two songs were finished this way and the final bass tone of the Sans Amp was deemed to be good for the bass sound, but it was later replaced by a more pleasing combination of the Darkglass Microtubes B3K overdrive pedal and the Boss Bass Equaliser pedal with a significant emphasis on the mid frequencies. Bass distortion has become an increasingly common and important feature as the metal sound has developed, particularly as lower guitar tunings have normalised in the genre. Particularly low tunings make it hard for listeners to differentiate the pitch of the music, therefore making it necessary to add harmonic content to the upper harmonics in form of distortion to make the bass more distinguishable through the thick layer of guitars (Williams 2015). This proved very useful in the project of this thesis, as the tuning in question is C-standard, where the lowest bass note plays at 65hz, a frequency that can't be replicated by small speakers.

In March, the COVID-19 quarantine began, and the members were forced to continue working on remotely with very limited equipment. Ideas were exchanged via Facebook and email, with the author recording his ideas and sending them to Tokallou, with Tokallou sending his ideas as Guitar Pro tablatures for the author

to record, as he lacked recording equipment altogether. The guitar equipment the author possessed at this point was an obsolete Eleven Rack by Avid, so the pre-production was reduced into mere song writing at this point.

In the summer the author started an internship at Sonic Pump Studios in Helsinki and had the opportunity to continue demo recording there as much as the studio work allowed spare time. It was also decided as the location of the final drum and guitar recording, so the final decisions concerning the guitar equipment and tone were could now be done.

4.2.2 Demoing guitar tones

Due to the fortunate opportunity to record the rest of the pre-production demo's in the same studio we were to record the final versions, we were able to try out the guitar amplifiers and microphones of the studio and pick the ones we were most satisfied with to record the final recording. We still used Logic Pro's sample drums for the demo's, as neither of us were drummers. We found a session drummer of Mikael Vanninen, to whom we sent the demo versions of the songs and gave feedback according to the practise demos he sent us back. The final drum shells would be picked in the final drum recording session, so most of the attention regarding the audio production at this stage went towards shaping the proper guitar and bass sound, as well as picking the most satisfying equipment.

There were various different amp heads and cabinets at Sonic Pump to choose from, as well as a great variety of microphones. The idea was to try a similar kind of guitar sound that the Swedish death metal bands who have recorded at Sundown Studio are known for. Traditionally this would involve the Heavy Metal-2 distortion pedal developed by Boss at maximum settings driven into a Marshall amp (Mynett 2017). The exact same kind of sound wasn't actually desired but deemed more of as a reference to aim for, so the pedal settings were considerably milder – the distortion and bass knobs at zero, and the level and mid knobs driven considerably to get the character of the pedal. We didn't possess the original Boss pedal, but instead used a Behringer copy of it which was extremely close to the sound of the original.

At first, the Marshall stack was tried out for one of the demos with the JCM 800 as the head. This wasn't satisfying, so the ENGL Invader 100-amp head was tried on a Marshall cabinet, and then with an ENGL cabinet on the next demos. The last combination with the Heavy Metal pedal copy was in the end deemed as the most satisfying. The idea was to drive the character of the pedal into a high gain channel of the ENGL was to get the character of both of the hardware's in hopes to achieve a more unique sound. Various microphones were also tested, which included the sm-57, sm-7b, e609, MD 421 and KM 86. Of these, only the sm-57 provided satisfying results. The picture below (Picture 5) displays the equipment used in the demo sessions.



PICTURE 5. The guitar and amp head along with the distortion and tuning pedals that were chosen for the final guitar sound. The Avalon preamp that was used is visible on top of the rack and the cabinet is in a separate recording booth.

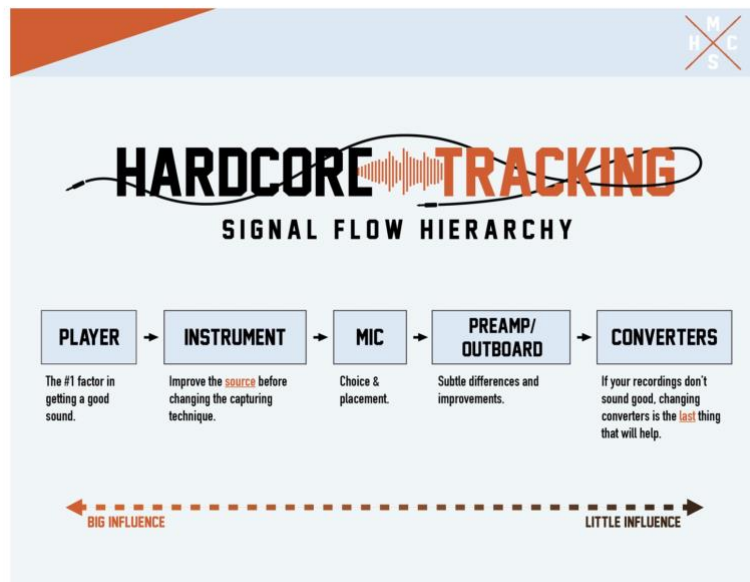
5 RECORDING & POST-PRODUCTION

5.1 Drum recording

As was stated above, the session drummer for this project was Mikael Vanninen. Due to the COVID pandemic the author, Tokallou and Vanninen never had a chance to get together and rehearse the songs, so each one had to practise by themselves in their homes and rehearsal spaces. As for the drums, the author sent Vanninen two versions of each demo track. One with all the recorded instruments including the programmed reference drums and one with a click and without the drums. Vanninen then rehearsed the songs, sent demo recordings back according to which the author gave feedback. Until now the focus had been on polishing the drum performance but defining the sound itself would take place in the setup of the drum recording session.

5.1.1 Setup

The approach to the final recording's signal chain followed closely Jordan Valeriotte's 'Signal Flow Hierarchy' (Valeriotte 2017), which places the order of importance to the sound starting from the player himself, to the instrument, to the microphone and lastly to the preamp. The following picture (Picture 6) demonstrates this.



PICTURE 6. Signal flow Hierarchy from the most important factor – the player – to the least important – sound card converters (Valeriotte 2019).

The setup of the kit was largely determined by the drum shells that were available at Sonic Pump Studios itself. The bass drum and the toms were Ludwig, which were chosen according to what other producers had frequently used at the premises. The size of the toms chosen were 10” and 12” for the rack toms, and 16” and 18” for the floor toms. Each of them was tuned according to the pitch recommended for each size by Nolly Getgood to get the most out of their natural sound (Getgood 2019). The bass drum’s size was 20”. The snare was auditioned between two different DW snares in the soundcheck. The snare drum that seemed more appropriate for this style of extreme metal was the DW Edge, due to its perceptually more aggressive timbre.

The microphone choices went pretty much according to Jordan Valeriotte’s Hardcore Tracking online course. For the inner kick microphone an SM Beta 52 pointing directly where the beaters of the double pedals hit. Outside the kick drum there was a Yamaha Sub-kick. The snare top had an SM 57 with a small sound shield taped around it to prevent hi-hat bleed and a Beyerdynamic M201 at the snare bottom, which was chosen according to what some other producers had used there before. All of the toms were mic’d with Sennheiser’s MD421’s (Valeriotte 2017). The rest of the microphones were picked according to what the author had observed from various professional producers. The overhead microphones were mic’d with a pair of Neumann’s U87’s, and the hi-hat and the

ride cymbals with KM184's. As for the room, altogether five microphones were used. A blumlein stereo pair of Coles ribbon microphones with the crossover line pointing directly in line with the kick drum and snare (Laaksonen 2013). One pair of AKG 414's was further away on the other side of the room, and a third 414 was for experimentation purposes in a small closet behind the kit.

The studio had a top-quality recording rack where all of the microphones were patched to, including API 512 and 3124 which were mostly used for the drum shells, a pair of Neve's 1073's for the overheads, two 512 clones for the 414 pair and eight 4081's for the rest of the channels. All of the close microphones at the drum shells – excluding the sub-kick – were patched into API's 550b equalisers. The blumlein pair was patched into 1178 stereo compressor with 3-5db gain reduction and the experimental mono 414 was patched into the distressor with very drastic gain reduction. The software used for recording and editing was Pro Tools. The following picture (Picture 7) demonstrates the close microphone choices and positions from behind the drum kit.



PICTURE 7. The drum set used and the microphone positions of the snare and toms.

5.1.2 Tracking

The tracking of all of the eight songs was completed in two days. The songs were recorded in long takes with Vanninen playing the whole songs through. On average four takes were recorded per song, while regularly checking the tune of the drum shells, particularly the top of the snare. Occasionally some parts had to be recorded separately that included fast double kick sections or complex rhythmic changes, for example in the chorus of the song 'Sheep in Wolf's Skin', which is included in the example songs of this thesis.

5.1.3 Editing

After tracking, a few entire days were spent by choosing the best drum performances from the different drum takes section by section. The criteria for choosing particular takes were rhythmic accuracy, velocity of drum hits, complexity of drum fills and no mistakes. After choosing the takes quantising – which is fairly common in metal music's drum production (Williams 2015) – was largely ignored, as the rhythmic accuracy and general energy was deemed to be extremely good and quantising runs the risk of degrading the natural energy of drum performances. Instead, the editing was mostly done by cutting and slightly moving long audio sections instead of individual drum hits to retain the natural energy of the performance. Some double kick sections were quantized with Pro Tools' beat detective, because as Mynett describes it, even small deviations in extremely fast sections can be noticeable (Mynett 2017).

5.2 Guitars

The guitars were recorded in two different sessions. Originally, they were planned to be recorded in the same session at Sonic Pump Studios in late October 2020, but due to the rhythm guitar session proving to be very time consuming the lead guitar session was moved to next February in Mediapolis.

5.2.1 Rhythm guitars

The rhythm guitar sound and setup were largely determined by what proved to provide the most pleasing results in the demo sessions. We used the same ENGL stack, Behringer pedal and sm-57 microphone as described in section 4.4.2. Only small adjustments were done with the amp and pedal settings and microphone positioning compared to the demo sessions. A dry DI track was also recorded for safety in case something went wrong with the amp track. Some test takes were recorded after the small tone adjustments to get an idea how the guitar tone would work with the drum sound and then compared to the reference song – ‘Buried Dreams’ by ‘Carcass’ – until the author and Tokallou were satisfied.

Unlike the drum tracking, the guitars were largely tracked section by section with a high emphasis on rhythmic accuracy. Guitar takes can’t be quantized nearly as easily as drum takes, so it is a good idea to get the timing right already in the recording phase. Generally, two tracks per song were recorded – one panned far right and one panned far left – with some additional layers to certain parts for increased heaviness or atmosphere. Some manual editing was done between takes and after the sessions. This method of recording eight songs proved to be extremely time consuming, with the rhythm guitars getting completed after two 8- and 10-hour days.

5.2.2 Lead guitars

The lead guitars were tracked at Mediapolis in February 2021. The equipment and tonal settings were largely improvised in the flow of the setup and soundcheck. The Mesa stack available at the premises was used with the Behringer Heavy Metal pedal from the previous session. A single track of the sm-57 microphone that was set up at the cabinet was recorded with no DI tracks. The microphone was patched to an analogue Allen & Heath with a significant treble boost for differentiating from the rhythm tracks, and into a Drawmer compressor.

This was a fairly easy and stress-free session, as all of the eight songs had only one short solo and the studio was booked for hours. This also allowed creativity

to flow. Some songs didn't have a pre-written solo, so this called for improvisation. Against all odds the author and Tokallou deemed these improvised solos to be the best ones, probably because the feel was freer compared to the pre-written ones.

5.3 Bass

As described in section 4.2.1, the equipment for the bass recording consisted of a simple signal chain of a Darkglass overdrive pedal and a Boss EQ pedal. Along with providing the low end, the bass guitar was planned to compliment to the midrange of the rhythm guitars, to the overdrive pedal settings were set to maximum and the EQ pedal had a significant boost in the mid frequencies. The author practised with the previously recorded tracks in the Studio One 4 DAW and deemed these tonal settings to be appropriate in context of the mix. The tracking was done with fairly little trouble by playing through each song in a few long takes. The following picture (Picture 8) shows the simple signal chain of the bass recording.



PICTURE 8. Bass connected to the chromatic tuner, to the Darkglass Bass Overdrive pedal and finally into the Bass Equaliser.

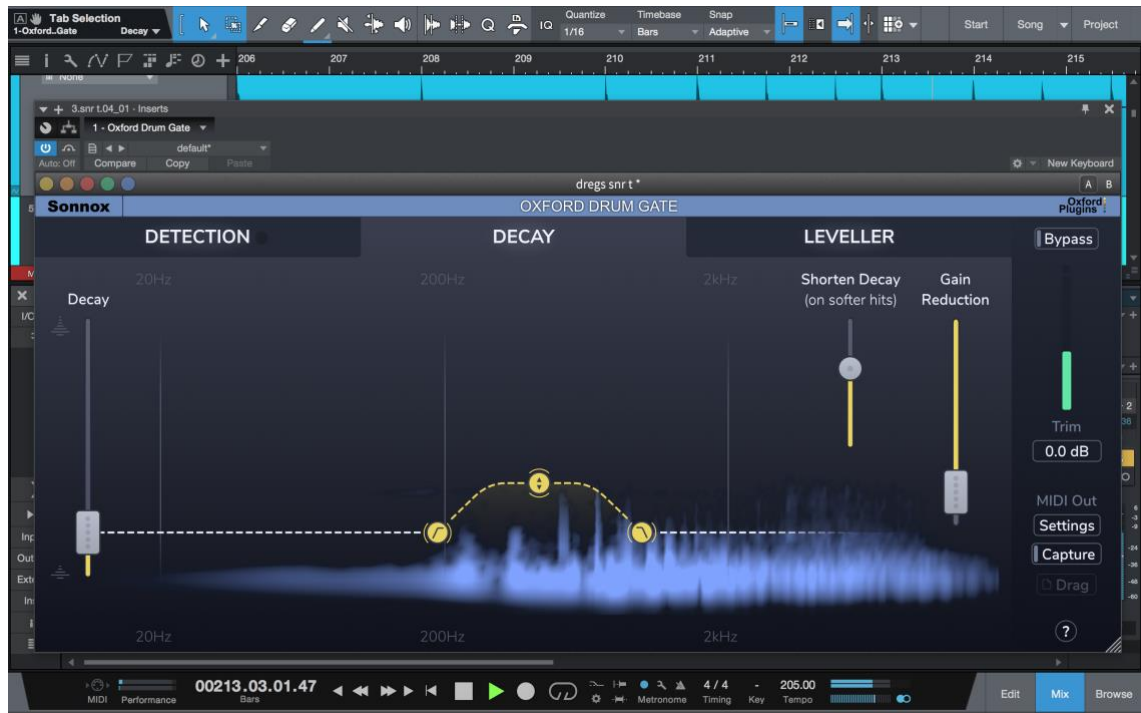
5.4 Vocals

The vocals were done in many short sessions. The vocal style of the author is low death metal growling, which can't be retained for long periods due to the styles heavy strain on the vocal chords. Between each vocal session was taken at least a one-day break for recovering the authors voice. An SM-7b microphone with a Fethead and a thick foam – no pop filter – patched directly into the audio interface was used for recording. Most songs had two or three takes, as the first takes were usually done with the vocal chords slightly unprepared. After the recording some slight time adjustments were made for individual words or phrases. Some choruses were sung once and then copied and pasted to other sections in order to use the authors voice more sparingly. Backing tracks were not recorded.

5.5 Mixing

5.5.1 Drums

The mixing phase started with processing the drums. For the sake and purposes of this thesis the plan was to avoid using drum samples if possible. For this reason, the first phase was to clean out any bleed from the close microphones of the drum shells. The special plugin used for this purpose was the Oxford Drum Gate developed by Sonnox. The plugin has an internal AI that can differentiate between kick, snare and tom hits. It also includes a filter to allow a certain frequency area to decay for a longer period, while gating other frequencies at a much shorter attack. This proved to be particularly useful in cleaning out cymbal bleed from the snare and tom tracks, while allowing their fundamental frequencies to decay naturally. The drums were also processed through the plugins drum leveller eature to even out the dynamics (Sonnox). The picture below (Picture 9) is a screen shot of the sonnox plugin.



PICTURE 9. The white dashed line is the default close time of the gate, while the extended yellow line ranging from 200hz to 1khz allows frequencies to decay for a longer time in that range.

After this, each of the drum shells were treated with fairly heavy EQ manoeuvres and compression in order to make them stick out through the thick distortion of the guitars (Valeriotte 2015). Unfortunately, the inner kick drum track didn't provide a consistent attack which couldn't be fixed by compression or EQ. Therefore, it was necessary to augment it with a drum sample. This seems to be a common issue in high tempo metal music, such as this project, where it is extremely challenging for the drummer to keep up a consistent velocity, which is necessary for the standards of contemporary metal music production (Mynett 2017; Laurene 2021). The snare drum and toms however proved to be satisfying with the heavy EQ, dynamic processing, and light distortion on their individual tracks, as well as parallel buss compression to even out the attack even further. No artificial reverb from plugins was used in the drum mix in addition to the room tracks.

5.5.2 Guitars

The guitars didn't require much processing due to the pleasing results with the raw recorded sound itself. The rhythm guitars only included slight compression, EQ and some saturation enhancement. More importantly the lower mid frequencies were slightly suppressed with multiband compression to avoid excessive 'muddiness' to the mix, particularly in sections that included palm muting (Valeriotte 2018). The lead guitars included some more heavy-handed EQ boosts and compression to stick through the rhythm guitars, as well as delay to take up more space and depth in the mix.

5.5.3 Bass

The bass guitar plays an important part in providing the sonic weight that is crucial for metal music to be interpreted as 'heavy' (Mynett 2017). Unfortunately, the recorded bass track proved to lack some energy below 90hz but was fixed with a significant boost below this frequency area. To stick through the dense wall of guitars and drums, aggressive EQ boosts and compression were needed. Particularly to compliment the wall of rhythm guitars the bass was boosted below 1khz. The most challenging part for mixing the bass guitar is often quoted to be achieving a consistent low-end, as lower notes naturally provide more bass frequencies than higher ones. For this, compressing the low-end and adding some harmonic distortion to the bass frequencies proved to do the trick (Valeriotte 2015). The picture below (Picture 10) shows the most important plugins regarding the bass sound.



PICTURE 10. The low-end boost on the back left, the low-end compression on the front left and the mid-frequency boosts on the right.

5.5.4 Vocals

The vocals required probably the most processing in the post-production phase due to the simple signal chain and the resulting dry sound. The sm-7b naturally has a rather flat frequency response with no boost in the high frequencies, which is evident in its frequency response (Shure). Therefore, the vocal track required a significant boost in the high frequencies to stick out above the other instruments. Another common and frequently used aspect to metal music's vocal production is heavy compression to stick out the dense wall of sound, particularly produced by the rhythm guitars. This was done by applying compression through various compression units for cleaner results and to gain a diverse coloration from different analogue modelling plugins, resulting in almost -20db of combined gain reduction at the most (Mynett 2017). The picture below (Picture 11) demonstrates the compressor chain.



PICTURE 11. The compressor-chain. Note the significant high-end boost in the FG-N EQ, which is necessary for dark character of the SM-7b.

After all of the individual instrument tracks and their mix busses were processed, some slight mix bus processing was added to limit the dynamics, add glue and finally, set the appropriate loudness comparable to released contemporary metal music.

6 CONCLUSION

The end result of the project proved positive the idea that commercial standard metal music can still be produced by relying mostly on the recorded sound sources themselves, instead of replacing/augmenting them with artificial amplifiers or pre-recorded samples. However, the kick drum being the only track requiring sample reinforcement would require further research. It is particularly the natural sound of the drum tracks that proved to be the most challenging to sound on par with commercial releases of the genre.

The project in this thesis dealt with a particularly high tempo subgenre of metal music. Therefore, it might be useful to repeat this same research using different kick drums, microphones, drummers or by performing different subgenres of metal in order to confirm the claim proposed in this thesis. Every drummer seems to have their own unique style of playing and what they are used to playing and not all drummers are used to extremely high tempo styles. High tempo extreme metal requires high stamina that must be retained unchanged for long periods of time to maintain the same velocity at all times, even during fast double kick or blast beat subdivisions (Mynett 2017).

The guitar and bass sound seem to be the least affected by the fast tempo. High distortion seems to mask some of the slight inconsistencies of the performances and naturally compresses the audio signal (Laaksonen 2006), which seems to make up for the decreasing performance velocity of faster sections. In the end, profiling and modelling digital plugins and hardware are designed to imitate analogue amplifiers as accurately as possible and are constantly compared to them, not the other way around (Laurenne 2021).

In conclusion, it seems promising that contemporary metal can indeed be produced by using solely the natural sound of drums, guitars and bass guitar with modern technology, but without replacing or augmenting any of the recorded sounds with samples or artificial amps. However, the drums would require further careful research.

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Appendix 1. Interview with Nino Laurenne

1. Kuinka määrittelisit modernin äärimetallisoundin?

Alavire, "compressed to death", örinäsäkeistöt ja cleanit laulut kertseissä. Mutta se on tietysti yhden tyyliuunnan. Mutta moderni metallisoundi noin niin kuin yleisesti niin, onhan se kyl aika editoituu ja kompressoituu. Mä luulen että se on se varmaan jos tolleen suht yksinkertasesi sen kuvailee. Sithän on eri genrejä tietysti mut kyl toi varmaan aika hyvin pitää kaikkien genrejen kans paikkansa enemmän tai vähemmän.

2. Kuinka paljon se on muuttunut 80-luvulta nykypäivään?

No kylhän siel tietysti jotkut elementit on aika samoja mutta, niin kuin esimerkiks särökitarra. Emmä tiä onko se särön määrä mitenkään lisääntyny, ehkä se tyyli on jotenkin, se särön tyyli on muuttunu. Mutta tota, kylhän kun kuuntelee 80-luvun hevilevyjä niin onhan siel niinku tilaa enemmän. No tää on tietysti genresidonnaista mutta tota synaosastoo on tullu aika paljon lisää että ite miksaan sellasii projekteja missä on 30 raitaa synaa niin kylhän se alkaa aika tukossa olee. Vaikee siinä on löytää tilaa enää. Kylhän se dynamiikka on kadonnu sieltä aika kivasti jos kuuntelee jotai iron maideneita tai mikä vois nyt olla joku nykymetalli... emmä tiä pitäs kuunnella vähän ekaa maidenii ja vikaa maidenii että kuinkas paljon (eroa) niiden välillä on sitten loppujen lopuks, mut se ei oo ehkä se vertailu tässä. Emmä tiä mut kyl nyt niinku samoja, laulussa on pitkät delayt ja rummuissa on napsua enemmän tai väh... tai no 80-luku joo... no se on tietysti aika... silloin aletaan puhua 90-luvusta niin sitten tuli noi "justice for all" ja "pantera" niin siel oli pikkasen enemmän napsuu sitten. Mutta tota, emmä tiä onks se ny muuttunu niin, tai onhan se nyt muuttunut muta millä tavoin. Kylhän siel paljon on samoja asioita joka tapauksessa. Mut siis edelleen sama juttu viitaten ensimmäiseen kysymykseen: se on kompressoidumpaa nyt ja tota, tulee lujempaa.

3. Onko musiikkiteknologian kehityksellä 80-luvulta nykypäivään ollut vaikutusta miltä se soundaa ja kuinka sitä soitetaan? miten?

No on varmaan ihan h**vetisti. Koska tietokoneet on mahdollistanu sen että ei sun tarvi osata soittaa ees niin, sä saat sen kyl aika hyvin kuulostaa editoimisen jälkeen siltä että sä osaat soittaa. Eli kylhän niitä kaiken maailman kikkoja käytettiin nauhurilla, hidastettiin nauhaa kun viriteltiin lauluja ja muuta, tai nopeutettiin nauhoja jossain tietyssä sanassa joka oli alavireessä tai ylävireessä. Mutta tota, vaikuttanu ihan niinku tosi paljon. Väitän että... tää on jotenkin niin outo ajatus että mitä jos ei olis tullu tietokoneet, että edelleenkin tehtäis nauhureilla, että miltä ne soundais tänä päivänä jos ei ois tietokoneita. Varmaan lähempänä sitä 90-lukuu kuin 2021. Vastaus kysymykseen: on vaikuttanu, ja paljon, kaiken. Koska tota, rumpujen sämplääminen ja editoiminen. Se on varmaan se kaikista isoin niin ku juttu on se niinku kannusoundi mä luulen, että ei kitarasoundissa, että edelleenkin sul on viisseiska ja joku muu mikki tai sit ei oo mitään muuta ja sit sul on marshalli ja sit sul on säröpedaali ja sit sul on kitara. Että ei se oo niinku hirveesti muuttunu paitsi että tänä päivänä on tietysti noi plugari... mallintavii plugareita mutta ei sekään oo se, tavallaan juttu. Nehän vaan mallintaa niitä vanhoja vahvistimii. Niin tota, rumpusoundi on varmaan se kaikista isoin että on tullu niinku sämplet, että kyllähän silloin kun mä joskus niitä ihan ekoja hevilevyjä oon tehny, niin silloin pyöri vieressä tietokoneelta mistä ajettiin, ensin trigattiin rummut MIDIks ja sit se käännettiin toisinpäin, niin että se MIDI pyöri synkassa sen sun nauhurin kanssa ja sit se MIDI soitti niitä jostain alesiksen rumpu moduulista niitä sämplejä ja sitten niitä MIDI:jä siirreltiin. Mut eihän se tietysti siellä alkuperänen rumpusoundi mikä tuli nauhurilta niin tota, mikä se nyt sattu oleekin siihen aikaan ADATteja tai mä en ees muista mitä me pyöritettiin synkassa silloin joskus. Mutta ei niitä tota MIDI triggauksia pystyny hirveesti siirtää kun ne alko tietysti flämäämään sen oman soundin kanssa koska niitähän ei pystyny silloin siirtämään. Mut ne samplet oli niin lujalla että tavallaan se tota, niinku basari ja virveli transientit oli jossain siellä tila- ja overihumussa vaan että... ja omat snaret ja kikki raidat oli mutella aika monesti. Että sieltä tuli vaan pelkkää snare ja kikki samplee.

Soittamiseen silleen että... no joo, outoo olis nyt sanoo että ennen oli parempii soittajii kun ei ollu, kun näkee netistä että v*tun kovii tyyppejä on, mutta tota... Varmaan mä luulen että se on eniten... no on se tietysti silleen että mä äänitän

nyt kitaroita että mä äänitän nyt osa kerrallaan ja sit mä copy pastaan, että sitä tehään varmaan tosi paljon. Äänitin just amorphiksen levyn kitarat niin ei copy pastattu yhtään. Kaikki soitettiin. Että tota, näitä voi tehdä niin monella eri tavalla, mutta on se vaikuttanu tosi paljon.

4. Milloin rumpusamplet tulivat kuvioihin ja kuinka nopeasti ne yleistyivät?

No siis ne on ollu jo ennen ku mä oon alottanu tekee niin on kyl jollain tavalla jo sämplätty, niinku heittämällä. Mutta tota, mä en osaa vastata tohon että milloin on rumpusamplet tullu kehiin. Mutta siis nyt me puhutaan kuitenkin metallista ehkä enemmänkin, eiks niin? (**kyllä**) no siis... milloinkahan mä oon tehny ekat... opetellut ensimmäisii äänityksii? Joskus 80-luvun, eiku 90-luvun loppupuolella. Ja kyl mul aika nopeesti oli. Muistan kun Karmilan Mikolla oli kun se miksas jotain niit siihen aikaan, niin se pyöritti... oliskohan sil ollu Pro Toolsi? Ei, kun sil oli joku... Oisko se ollu ihan nauhurii pyörittäny, just jotain ehkä Fostexin tiiätsä kelamankkaa tai sitten jotain otarii tai mitää FinnVoxil oli ja sit sil oli synkas pyöri, aikakoodil se pyöritti tota atarii missä sil tuli sämplet. Niin se oli MIDI, niin se pyöritti niinku MIDli, ja sit just silleen just ne trigattiin... ensin se ajettiin se bassari ja virveli sinne alesiksen rumpukoneeseen niin että se teki niistä MIDI nuotit. Sit se käännettiin toisinpäin, että se soitti sitä alesiksen rumpu sämplee, mistä otettiin ykköskanava kikki, kakkonen snare ja sit se palautettiin pöytään ja sit sul oli ykkösfeiderissä kikki ja kakkosessa snare. Ja sit se soitti tavallaan se nauhuri, soitti sitä tota tietokonetta mikä pyöri synkassa siinä. Ja sit tietokoneet tuli aika nopeesti sitten, ekat versiot varmaan Pro Toolsista, en tiedä 1990? Silloin varmaan se on ollu. Mul oli tää eka softa mitä käytin oli Nuendo. Ja jossain siel 90-luvun alkupuolel ja siitä tähän päivään asti. Mut mä luulen että tänä päivänä niinku tuntuis siltä että jengi yrittää kumminkin parhaansa saada siitä omasta

lähtösoundista niin hyvän ku mahdollista, itse ainakin että mä otan ite sitten jollain,

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en tiedä onka se sama asia mutta otan samplen, kuten tiedät niin omasta setistä ja pyrkii käyttää sitä. Ja sit avuks jotain muuta, mutta on mulla välillä niinku silleen 6 (tai) 7 samplee päällekkäin. En tiä miks mutta ihan vaan silleen että sitten voi kikkailla jos halua jotain niin sitten se on nopeesti tos sormen alla. Vastaus kysymykseesi: kyllä.

5. Kuinka paljon arvelet nykyään käytettävän rumpusampleja ja digitaalisia kitaravahvistimia metallijulkaisuilla?

100%:n varmuudella kaikilla. Jompaakumpaa näistä, jossain muodossa. Tottakai on sitten jotain old school bändejä jotka halua, mutta jos sä halua tommosen niinku modernin tiukan metallisoundin niin kyl sä niinku samplei käytät. Eikä siinä oo mitään väärää. Käytäthän sä kaikujakin, ja kompressoreita. Ei sil oo niinku tavallaan... mun mielest se on niinku... edelleenkin että viel puhutaan siitä että käyttääks joku auto-tunee tai käyttääks joku samplei että se ois jotenkin silleen että "v***u tyyppi käyttää sämplei" tai bändi joka tulee studioon "mä en sit halua että mun rumpusetis käytetään samplei", okei, no sit soita sillä lailla ettei tarvi käyttää. Esimerkiks sillä lailla että haitsu ei vuoda virveliin olenkaan. Tai jotain muuta.

6. Mitä hyöty ja varjopuolia em. teknologioilla on ollut metallimusiikin tuottamisessa ja soundissa?

No siis hyötyy, pelkkää hyötyy. Emmä nää tos niinku mitään varjopuolta että, se että, jos sä kuuntelet levy missä samplet on jotenkin liian lujalla, miksattu, ja sit jotenkin sillä lailla luonnottoman kuuloseks, ettei siin oo niinku mitään dynamiikkaa. Ei nyt tommoses rankemmas metallis hirveesti dynamiikkaa ookkaan. Mutta jos sä ajat samaa samplee täydel velocityl levyllisen koko ajan miksattuna silleen ihan "in your face" niin kylhän se aika raskat kuuneltavaa on.

Mutta se ei oo sen samplen syy, ei sovi lyödä samplee. Eli tota... emmä nää mitään varjopuolii siin todellakaan. Se että onks se varjopuoli noin yleensäkin tän päivän, tai

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jo 20 vuotta ollu se että tota, tietokoneel ku äänität niin voi mennä helposti osa kerrallaan. Että eiks jengi osaa soittaa enää? Sit voi mennä livenä kattoo niit bändei niin kylhän ne yleensä sit on treenannu ne biisit silleen että tota ne jotenkin menee. Mutta se ei ehkä oo tässä se pointti. Mutta emmä kyl... Kaikki uudet kikat vaan mitkä helpottaa työskentelyy ja saa asiat soundaa jotenkin paremmalt niin onhan niin ku hyvä asia vaan.

7. Onko 2020-luvulla enää mahdollista tuottaa “nykyaikaiselta” kuulostavaa metallijulkaisua minimaalisella editoinnilla, samplauksella tai digitaalisilla kitara/basso vahvistimilla? mitä se vaatii soittajilta ja tuottajalta?

On ihan täysin mahdollista. (Se vaatii) ihan s*****an hyvää soittoa. Että siitähän se on niin ku loppujen lopuks aina kiinni siitä että miten sä vedät. Että ehkä tommoses niin ku rankemmas äärimetallis mis ajetaan aika lujaa rumpuja ja kaikkee niin ku... tai rumpuja lähinnä niin tota, se ei siinä se soittotaito ei ehkä tuu niin esille siinä. Mut kyl se aina niinku tossa kun miksailee noit tuotoksii niin kyl siin aina jotenkin päätyy siihen niinkun toteemaan että jos siel on niinku ollu tekjiä miehet tai naiset taustalla siin tilantees kun niit trackataan niit juttuja niin on se vaan niin paljon helpompaa miksaata. Koska siihen liittyy yleensä monesti myös semmonen, että jos sä oot hyvä soittaja niin sul on korvien välissäkin joku taju siit kokonaisuudesta joka on taas sitten niin ku loppuviimeks se tärkein juttu, että sä pystyt ajattelee jotain muutakin kuin omaa instrumenttii. Elikä sit tullaan siihen että ne on arrattu hyvin ja niin tota... Kyl ton mallintavan jutun voi unohtaa ihan kokonaan tästä koska kyllä tota, kyl kitaran oikeella vahvistimel ja mikittämisel saa hyvän soundin. Ja edelleenkin kyl niin ku mun mielestä paremman ku sen mallintavan ku viittii kuluttaa siihen aikaa, enemmän ku sä otat sen plugarin esiin niin se presetti on siinä heti ekana h***etin hyvän soundinen niin se vaatii vaan enemmän mikkien liikuttelu ja särön määrän kattomista ja kaikkee muuta mutta... Lähinnä tää koskee tosi paljon rumpuja väitän ja rumpusampleja niin

tota... Se että pystyyks tekee ihan ilman mitään samplei niin se on vähän hankalaa, mutta kyl mä esimerkiks ite niin jos se on niinku hyvä rumpali joka lyö tasasesti ja kovaa sitä virvelii niin kyl se on niin ku silleen se euhde on niinku...
70-

6 (6)

30, 60-40 niin ku luonnollisen eduksi. Eli kyl niin ku, kyl mun tota miksausissa niin väitän että se oma virveli kuuluu sielt niin ku aina kovempaa ku se sample. Tommoses niin ku hevissä, missä nyt ei haeta eritoten jotain tiettyä virvelisoundia joka on sit selvästi samplattu.

1. Kuinka määrittelisit modernin (ääri)metallisoundin? (thrash, death, black metal)

Metallinen, terävä, kiiltävä, vaarallinen. Kuten Fiskars Royal - kokinveitsi. <https://www.verkkokauppa.com/fi/product/3551/ktnrq/Fiskars-Royal-kokinveitsi-21-cm>

2. Kuinka paljon se on muuttunut 80-luvulta nykypäivään?

Soundi on muuttunut vallankumouksellisesta enemmän standardinomaiseksi. Teknologia on muuttanut **kaiken** musiikin soundia huomattavasti ja metallin soundia siinä muiden mukana.

3. Onko musiikkiteknologian kehityksellä 80-luvulta nykypäivään ollut vaikutusta miltä se soundaa ja kuinka sitä soitetaan? miten?

Musiikkiteknologialla on mielestäni ollut suurempi vaikutus kuin millään muulla asialla. Itse musiikki on muuttunut vähemmän kuin uuden teknologian myötä tulleet uudet tuotantomahdollisuudet.

Suuri muutos on esimerkiksi se, että 80-luvulla varsinkin rumpalin oli pystyttävä soittamaan **koko biisi** kerralla alusta loppuun. Nykyisin monet biisit tehdään paloissa ja yritetään saada kerralla **yksi biisin osa** soitettua. Ja sen jälkeen vielä editoidaan.

4. Milloin pro toolsin beat detectiven käyttö alkoi yleistyä ja kuinka tuottajat sekä tavallinen yleisö suhtautuivat sen vaikutuksiin?

Muistaakseni itse aloin käyttää sitä 90-luvun lopulla Finnvoxilla, missä oli aina uusinta teknologiaa käytössä. Ammattilaiset suhtautuivat sen käyttöön rauhallisesti, mutta kyllä siitä aika suuri vouhotus syntyi joidenkin toimesta. Hiukan samaan tapaan, kuin viime vuosina on kohistu laulujen virityksen korvinkuultavuudesta. Suuri yleisö ei toki huomannut mitään eroa, sillä rytmin tarkkuus on vain yksi osanen musiikissa.

5. Milloin rumpusamplet tulivat kuvioihin metallimusiikissa ja kuinka nopeasti ne yleistyivät?

Samplet tulivat jo ennen Pro Toolsia. En osaa sanoa miten nopeasti ne yleistyivät, sillä en itse ole seurannut kenttää aktiivisesti. Uskon että kaikissa ammattistudioissa uutta tekniikkaa otettiin heti käyttöön, kun se vain oli mahdollista. 90-luvulla käytin itse samplejä siten, että ajoin virveli tai bassari raidan audion tietokoneen Master Tracks sekvenseriin. Sitten sekvensserillä triggasin Akai sampleria, jossa oli sopivat samplet. Työ oli hidasta ja tietokoneen ja sekvensserin synkronointi oli joskus painajaismaista. Uutuuden viehätys vei voiton kaikista ongelmista.

6. Kuinka paljon arvelet nykyään käytettävän rumpusampleja ja digitaalisia kitaravahvistimia metallijulkaisuilla?

Arvelen että 99% käytetään, mutta se on tosiaan vain arvio. Metallin määritelmä on niin häilyvä.

7. Mitä hyöty- ja varjopuolia edellä mainituilla teknologioilla on ollut metallimusiikin soundin ja soiton kannalta?

Teknologia on tuonut uusia mahdollisuuksia tekemiseen, jolla luovia ideoita soundeissa ja soitossa voi toteuttaa. Varjopuolella uskon, että hyvien biisien tekemisen tavoittelu ja hyvän soittotaidon merkitys ovat laskeneet merkittävästi. Mutta ei musiikkia olekaan pakko soittaa, se voi toimia ilmankin. Kuuntelukokemus ratkaisee.

Metallia voi ohjelmoida siinä missä esim. teknoakin.

8. Onko 2020-luvulla enää mahdollista tuottaa "nykyaikaiselta" kuulostavaa metallijulkaisua minimaalisella editoinnilla, ilman rumpusampleja tai digitaalisia kitara/basso vahvistimia? mitä se vaatii soittajilta ja tuottajalta?

Sen ei mielestäni tarvitsekaan olla mahdollista. Aivan kuten 50-luvun rokissa, tai Punk-rokissa tietty soundiestetiikka kuuluu metalliin. Metallin soundi on valmis. Sama estetiikka pätee mm. eri musiikkityylien kannattajien pukeutumiseen ja hiustyyliihin.

Nykyaikainen ei mielestäni ole niin ratkaiseva tekijä, vaan se kuka soittaja tai tuottaja tekee vallankumouksellista "huomispäivän" soundia. Pitää pyrkiä olemaan edelläkävijä, vain siten voi saavuttaa päävoiton. Se vaatii visiota, uskoa ja rohkeutta.

Appendix 3. Work Samples

Links for the work samples of the project:

Dregs of Creation – The Mouth of a Despot

https://drive.google.com/file/d/1Fk6EMn62WfeeZ6wmSn3_8MfBB7pPQ474/view?usp=sharing

Dregs of Creation – Mark of Cain

https://drive.google.com/file/d/1qfNUe_6xEav85WBdUAdJZpr8yxckt0fl/view?usp=sharing

Dregs of Creation – Sheep in Wolf's Skin

https://drive.google.com/file/d/1cdmqgrgMNZkrOvh-lvvmcBWo_sjYqiTh/view?usp=sharing