

# MASTEROPPGAVE

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## **Nye lyder, nye kreative muligheter**

Akustisk trommesett utvidet med live elektronikk

## **New sounds, new creative possibilities**

Acoustic drum kit expanded by live electronics

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Tradition is not the worship of ashes, but the preservation of  
fire.

- Gustav Mahler

## Forord

Jeg kan ikke huske når jeg første gang tenkte at det kunne vært kult å få lagt lydeffekter på trommer live, men det er mange år siden. Jeg vet bare at de siste to årene har vært de desidert mest fruktbare for å endelig realisert dette, og det er en del mennesker som jeg vil takke for å ha hjulpet meg på veien.

Jeg vil gjerne takke min veileder Mattis Kleppen for uvurderlig feedback oppgaven min. Hva som har vært bra og hva som må bli bedre. Alltid krystallklart og ærlig. Jeg vil også takke mine dyktige og inspirerende forelesere på masterstudiet i Musikk og Ensembleledelse ved Nord Universitet: Andreas Aase, Jan Magne Førde, Bodvar Moe, Tormod Lånkan og Frode Fjellheim. Alle på hver sin måte har inspirert, motivert, gitt meg nye måter å tenke på, og bidratt til min utvikling som musiker.

Jeg vil takke min venn og «fellow nerd» Andreas Lea. Han har vært en uvurderlig sparringspartner for å realisere den tekniske løsningen jeg bruker for å gjøre dette i praksis, og jeg ville aldri ha klart det uten hans hjerne og tålmodighet til å lese bruksanvisninger.

Jeg vil takke min venn og kollega Luke Miles for at han delt sin inngående kunnskap om Jungle og Drum'n'Bass. Det har vært fantastisk å snakke med noen som kjenner musikken og kulturen direkte.

Jeg vil til slutt takke mine venner og «partners in crime»: Martin Högberg og Christo Stangness, som begge deler min nysgjerrighet på hvordan vi kan med nye lyder skape sjangeroverskridende musikk gjennom improvisasjon og samspill.

## Abstract

This project is about making music in a breakbeat tradition through developing a new sound on the drum kit using audio effects. The inspiration comes from other instruments' use of audio effects to create new genres and timbres, electric guitar being a good example. In the same way a guitar player can press a button and change the sound of the instrument drastically, do I wish to find a technical solution to do the same on an acoustic drum kit in a live context. The rhythmic vocabulary I have chosen to explore these new sounds in is very much inspired by "Jungle" and "Drum'n'Bass" music, and in particular the drummer Jojo Mayer. Jungle and Drum'n'Bass are electronic music genres characterised by electronically accelerated and syncopated rhythms made of sampled "breaks" from funk- and soul music. DJs from the club scene have created the genre, Jojo Mayer is one of the drummers who have brought back the rhythms to the drum kit and inspired me to play in this tradition.

## Sammendrag

Dette prosjektet går ut på å lage musikk i en breakbeat-tradisjon gjennom å lage mitt eget sound på trommesett ved bruk av lydeffekter. Inspirasjonen er hentet fra andre instrumenters bruk av lydeffekter for å skape nye sjangre og lyduttrykk, eksempelvis elgitar. På samme måte som en gitarist kan trykke på en knapp og forandre tonen på instrumentet sitt drastisk, ønsker jeg å finne tekniske løsninger for å gjøre det samme på et akustisk trommesett i en live-setting. Det rytmiske vokabularet jeg har valgt å utforske disse nye lyd-uttrykkene med er sterkt inspirert av "Jungle" og "Drum'n'Bass", og spesielt trommeslageren Jojo Mayer. Jungle og Drum'n'Bass er sjangre innen elektronisk musikk som kjennetegnes av elektronisk akselererte og synkoperte trommerytmer, lagd av samplede "breaks" fra funk og soulmusikk. DJ-er fra klubbmiljøer har skapt sjangeren, Jojo Mayer er en av trommeslagerne som har hentet rytmene tilbake til trommesettet og inspirert meg til å spille i denne tradisjonen.

## Table of contents

Forord .....	1
Abstract.....	2
1. Introduction .....	4
1.1 My personal and musical background .....	4
1.2 The goal of the thesis.....	5
1.3 Delineation - What I will not be doing .....	6
2 Methods.....	7
2.1 Theory .....	7
2.2 Practice .....	9
3. Description of the musical background and context.....	10
3.1 Overview .....	10
3.2 Main influences and inspirations.....	11
3.3 Jungle and Drum'n'Bass - a very short introduction .....	11
3.4 Jazz and improvisation.....	13
3.5 Lupe's music and influences .....	13
4. Technical explanation .....	15
4.1 The challenge .....	15
4.2 The loudness .....	15
4.3 The limbs - how to operate the effects while playing .....	15
4.4 The effects .....	16
5. Presentation of new music .....	17
5.1 Quest for Love.....	17
5.2 All my friends .....	20
5.3 Seventh heaven .....	21
5.4 Improvisation .....	22
6. Summary and the road ahead .....	24

## 1. Introduction

### 1.1 My personal and musical background

The research topic for this project is part of a general wish to develop myself as a musician with an ever-expanding repertoire of techniques and concepts that I can use to make music. I will try to give what I consider to be a relevant biographical summary of how I came to this starting point.

I started out playing guitar when I was around eight years old and felt an immense awe from listening to, and many years later, playing the guitar solo on Stairway to Heaven by Led Zeppelin. I thought back then it was the playing of guitarist Jimmy Page that gave me this exhilarating feeling. Many years later I realised that the best part of the guitar solo for me actually is when drummer John Bonham plays the relatively simple, but extremely effective, drum fill at the end of the guitar solo. This fill sends the whole band into the biggest climax of the song and is, in my opinion, a magnificent ending to this relatively long and ambitious song.

This little example is a good description of what I continue to experience even to this day: that the emotions evoked by music often come from somewhere else than I first thought they did, and always depend on the interplay of many elements, never just one element.

I made a conscious switch from guitar to drums when I formally started studying music education at the age of twenty. Up until then I had been playing drums more as a second instrument in my teens, but I still identified myself very much as a guitarist. The reason for my eventual switch was as much falling in love with drumming and rhythms, as it was falling out of love with guitar and what I perceived to be a claustrophobic western tonal language. I chose to shift my attention to what I experienced as a more primal expression of music: drumming. In hindsight I find my reasons for switching instruments back then, quite unimpressive now. I still had quite a one-dimensional view of what constituted interesting and emotional music. I have no regrets, but thankfully I have gained a renewed interest in guitar and other melodic and chord instruments in recent years.

Being a beginner drummer at the age of twenty I searched for good educational material to learn drum technique and I discovered the instructional DVD “Secret Weapons for the Modern Drummer” by Jojo Mayer. I found his instructions extremely good and was curious about what music this Swiss virtuoso had been involved in making. I came across his band “Nerve” and in particular their album “Prohibited Beats”. This album completely blew me

away and is probably one of the most important and influential albums for me as a drummer and as a musician. I had up until then almost no knowledge of “Drum’n’Bass” and “Jungle” music, and much less heard those rhythms played by a human on a drum kit. I found the rhythmic complexity, the improvisational nature, and the intense energy mesmerising and spent the next years trying to master this rhythmic vocabulary. I still do, to this day.

In parallel with my music education, I developed an interest in audio engineering and started to work in live sound production and in recording studios. I have for over ten years now learned how music technology is a fantastic creative tool and, especially in the modern era, essential for major developments in contemporary music. To use the guitar as an example: the timbre of Hendrix’ electric guitar is dependent on the amplifier and the pedals he used. This is not just amplification, it’s sound *alteration*, and the technology became an extension of the instrument. I want to try to do something similar with the drum kit.

## 1.2 The goal of the thesis

My hope for my exploration is that I can, through new techniques for live sound alteration of drums, create new timbres and ultimately new music with a distinct and recognizable "sound" that not only influences the music but is essential in defining it.

I think it is helpful to categorise my research into three distinct goals:

### 1:

I wish to emulate the technique of using effects on the electric guitar, applying it to the drum kit. Through my experience as an audio engineer and with the help of relatively new developments in music technology, I hope to create a workflow similar to that of operating a *multi effect pedal* for guitar players. I want to see how this workflow can influence me as a performing musician and how it can interact with other musicians.

### 2:

Make new music in collaboration with the musicians of the band “Lupe”. I play in a trio in a jazz- and improvisational tradition that draws musical inspirations from many genres, but in my case the Jungle/Drum’n’Bass genre, is a particular prominent influence. I will be having this rhythmic vocabulary in mind when playing the drums. My approach is highly influenced by the drummer Jojo Mayer and his work with his band “Nerve”.

**3:**

Make music where I am the sole musician playing. In contrast to seeing how this new drum sound can fit with other musicians and genres, I would like to explore what music I can make using just my drumming and my effects.

The end product is a couple of original songs *recorded live*.

### 1.3 Delineation - What I will not be doing

**1:**

I will not apply my effects as part of a post processing in a studio production. It is essential to me that this is to be a part of a live production. Many people have used audio effects on drums before, but not that many have tried doing it live, for technical reasons I will get into.

**2:**

I will not be using samples. I will only use the acoustic sound coming from my instrument, not pre-recorded sounds that can be triggered using pads or similar devices.

**3:**

The music made will draw on many inspirations and will not be very easily placed in only one genre or category. The rhythmic language I am inspired by is heavily influenced Drum'n'Bass and Jungle, but not exclusively so. The same goes for my fellow musicians. In other words, the music coming from this project will not neatly fit into one genre or category, and it is not a goal either. It is part of the improvisational nature of the group I am working in, and the only thing we are sure of is the exploration itself, not the destination.



## 2 Methods

### 2.1 Theory

In academic research there exists a clear distinction between quantitative and qualitative research methods. The quantitative method is trying to gather as much quantifiable data as possible on a certain subject, while the qualitative method is more concerned by capturing individual human opinions and experience on that subject. “Research in and through the arts” (Malterud, 2012) is a third paradigm which is what I will be using. It is distinct from the qualitative and quantitative methods in that it produces its contents “through the artist” doing the research. The artist then becomes both the researcher *and* the object of the research. This is very much the main lens I am using. The goal is to create and convey new art, and this text is an attempt to reflect on that art and the process of making it.

I will in this text try to contextualise and identify both similarities and differences between my work and the musical influences and tradition I am a part of. Concerning this would I like to cite Andreas Aase in his “Improvisation in Scandinavian traditional guitar” (Aase, 2009):

“I don’t think performing musicians practice source critique in the academic sense either, but gather influences instead, and establish new platforms of expression in a hunter-gatherer process. Consequently, I think I need to meet the demands for contextualization not through interdisciplinary theoretical art theory, but rather by naming my musical influences, showing what I have borrowed from whom”.

I very much identify myself as artistic “hunter-gatherer” and the contextualisation of my influences is one important aspect of my methodology and will be further explored in later chapters.

I also try to be conscious of to what degree I can represent a tradition so foreign to the cultural context in which I grew up. Regarding this I would like to cite my master supervisor Mattis Kleppen from his “Bassgriotisme”, where he reflects on use of bass guitar in music traditions where the instrument is quite foreign (Kleppen, 2013)

“Avstanden mellom overfladiskhet og troverdighet er kort når prosjektet rører ved så mange stilartsfremmede element som bassgitar og blanding av ulike tradisjoner. Et alternativ til den innfallsvinkelen jeg har valgt i dette prosjektet kan være å dekonstruere stilartene eller låtene/slåttene fra hverandre, og sette deler sammen på nye og improviserte, eller komponerte måter. Dekonstruksjon som begrep kan ha en negativ ladning som ikke er tilsiktet fra min side, men ordet er like fullt en dekkende

beskrivelse på mange innfallsvinkler til å skape ny musikk: det å ta små bestanddeler fra et stykke musikk og sette det inn i et annet eller fremmed musikalsk landskap”.

What Kleppen is saying here is something I very much find relevant to my approach to making this music and is something I think many of the pioneers of Jungle and Drum’n’Bass also can relate to. They too were “hunter gatherers” and “deconstructionists”, “stealing” small snippets of music from one place and manipulating it and introducing it in completely new contexts. All this helped create new musical idioms which I think should be judged on its own terms and cannot be judged on the same terms as the musical sources from which it originally sprang. As I think Kleppen did successfully in his work, namely making credible and not superficial music, is found here in his conscious use of *small constituent parts* used in new and foreign musical context.

“Jeg forsøker dermed å sette meg selv og mine inspirasjonskilder i samme kontekst ved å forsøke å vektlegge de kildene som har inspirert mine kilder. Det vil si at mitt utgangspunkt til tradisjonene går gjennom mine inspirasjonskilder og de utøvere som jeg har et nært forhold til i stedet for et mer historisk og helhetlig bilde på tradisjonene. Dette fører til at mange viktige og sentrale utøvere inne tradisjonene ikke er nevnt i denne refleksjonen. Det vil ikke si at jeg ser bort fra dem, men at de i denne sammenheng rett og slett ikke hører til min nære kontekst“. (Kleppen 2013)

This is also relevant for my approach. My original inspiration to the rhythmic vocabulary I am very inspired by is coming from secondary sources. I don’t consider the primary source unimportant in any way, but in my reflections, they will not be as prominent for the same reasons that Kleppen states: they are not in my close context and it’s not my goal to give a large historical picture of the tradition that I’m inspired by. The goal is to synthesize the influences I have, to something new.

Finally, I would like to cite the following passages, again from Kleppen (2013):

“Jeg kommer fra en metodisk tradisjon og utøverpraksis som bygger på muntlig overføring av musikk. Låter læres stort sett ved hjelp av gehøret. Man lytter og hermer etter det man hører. Kvaliteten på denne metoden avhenger av hva man klarer å høre.. Dvs. at utviklingen av gehøret et veldig viktig moment i prosessen.”

[...]

“Det å lære musikk ved hjelp av gehøret fører også til at musikken får en stor grad av individuell og personlig tolkning. I den muntlige overføringa ligger det ikke bare implisitt en aksept for bevegelighet og variasjon, men det blir også sett på som et kvalitetstegn at man legger til litt av egen tolkning.”

This is a very good distillation of the music learning tradition, I too come from. The implicit acceptance, and encouragement, of one's own interpretation of music and the disregard for playing music strictly and according to an already set tradition. This methodology lends itself, in my opinion, very much to improvisation, and curious exploration of new concepts and ways to make music.

## 2.2 Practice

In practice I will do primarily three things throughout this research process:

### **Composing**

There is always a danger for a project drawing its inspiration from a technical concept, just resulting in proof of that concept, and not much more. The main product of this research will of course be music, and I need to make it, either as an independent composer or in collaboration with my fellow musicians. “Lupe” is a band where improvisation and spontaneity is important and many compositions are made in collaboration, live, while playing together. Other compositions are more concrete and prepared in advance by one of the band members. The musical result of this thesis is a combination of these two approaches.

### **Technical experimentation and development**

Even though this project's main focus is the music, I will dedicate some space to the technical side of the process, for the simple reason that this is quite new ground to cover and, at the time of writing this, there is to my knowledge no dedicated technical equipment for drums that can do specifically what I want to do. In other words, will I have to develop these technical solutions myself and by trial and error come to some kind of workflow that strikes a balance between what is practical to do and what's technically possible. This part of the project is what I suspect might be of biggest direct interest to other drummers and musicians that want to try something similar.

## **Playing and improvising live with fellow musicians**

As stated earlier, the project aims at being applicable for live music making with musicians. I am very lucky to be playing in the band Lupe with Martin Högberg and Christo Stangness. Both are working in Bodø as members of Bodø Rhythm Group, the municipality's own ensemble whose mission is to facilitate the production of contemporary music for the city's inhabitants. They also work as freelance musicians in the rest of the region and country at large. These musicians are excellent instrumentalists, but maybe more importantly, also share my curiosity for what's possible to do in the field of live experimentation with music technology. My technical experimentation, composing and playing will have this band as its laboratory and it is where my research will be "cashed out" in the form of new music.

In summary, I go back and forth between all these activities, sometimes focusing on one of them in isolation, and sometimes I work in parallel with the others. The flows are in constant interplay with each other.

## 3. Description of the musical background and context

### 3.1 Overview

I would like to give a general summary of my approach to music, who influenced me and helped form how I think as a musician and artist.

I consider my study of music as a series of revelations of new elements that make up parts of this infinite mountain we call music. It can be a technique, the interaction between musicians, the lyrics, the recording approach, the production, the cultural context, and, relevant for this thesis: the sound and the timbre of the instruments. This list is in no way exhaustive, and it probably never will be.

I, and I suspect many others, started out focused on mainly one thing: an instrument - in my case the guitar. You can spend a lifetime learning to master an instrument and not necessarily move on to other parts of music. I am however more of a generalist than a specialist, and I developed a polyamorous relationship between guitar, bass, drums, studio production, live sound engineering, song writing, arranging etc, each new subject shining new light on the others. Perhaps I never became an expert on any particular one, but more someone who is good at seeing the big picture and developing good ears and judgement for what's important, and what's not, for creating emotionally impactful music (which I'm told I've managed to do on occasion).

### 3.2 Main influences and inspirations

As stated, many times already, I am heavily inspired by Jojo Mayer and his band Nerve. Their music, especially their first album, *Prohibited Beats*, was the gateway for me into this rhythmic language which can be broadly called Jungle and Drum'n'Bass. Nerve and Jojo Mayer have not invented this language, they have rather “taken back” the rhythms previously “stolen” by DJ’s and reapplied them to their instruments in a process Mayer calls “reverse engineering.”<sup>1</sup> Other musicians include Zach Danziger and Louis Cole who both also have deep understanding of the rhythmic vocabulary created by the DJs and are applying them on the drum kit. This means that my main inspiration is, in a way, coming from secondary sources.

There are however two other artists I would like to cite as inspiration, who unlike the forementioned drummers, are actual electronic music artists: “Aphex Twin” and “Squarepusher”. Especially the album “Feed me weird things” by Squarepusher has been an important reference for me, and this album has also been cited as an inspiration for Jojo Mayer and Zach Danziger as well. When listening to Aphex Twin or Squarepusher I can hear more clearly what Mayer, Danziger and Cole are trying to emulate and the thread of musical history from the nineties to today becomes much more apparent. I also think that this music stand in a way as an example of how the rhythms and production of the club music can be used to make music not necessarily meant for dancing, which is a proof of concept relevant for me as well. Both Squarepusher and Aphex Twin are well respected in the wider world of electronic music and are seen as more experimental figures than arch typical examples of a distilled ideal of Jungle and Drum'n'Bass. They might not be the Louis Armstrong of the genre, setting many of the rules for coming generations, but more like Miles Davis, synthesising many influences and breaking the rules.

### 3.3 Jungle and Drum'n'Bass - a very short introduction

I have in recent years done some research into the music that inspired the artists that inspired me, to get a deeper understanding of the music tradition I’m a part of and where these rhythms and textures are coming from. The following is a brief summary of my findings.

Jungle and Drum'n'Bass is a sub-genre in electronic dance music emerging from the rave scene in the UK in the early 90s characterised by highly sped up and syncopated breakbeats.

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<sup>1</sup> This concept is further explained in this video interview: DRUMMERWORLD VIDEOS (2023, 23. January) *Jojo Mayer: Exclusive Interview* [Video]. Youtube. [https://youtu.be/1C\\_XuVfH978?t=1326](https://youtu.be/1C_XuVfH978?t=1326)

Because it was an underground and alternative music genre, it's somewhat difficult to orient oneself in what would be the most important contributors to the electronic music scene of the nineties. This is club music meant for dancing and is more oriented towards mix tape compilations and labels, than towards artists or bands. So, finding the Miles Davis of Jungle or the Jimi Hendrix of Drum'n'Bass can be difficult, at least for me who have not lived through that era and in the cultural context in which it arose.

"Jungle" and "Drum'n'Bass" is very often mentioned in the same sentence, to a degree that they often are seen as interchangeable labels for the same thing. Although being distinct musical genres, from what I have gathered the evolution from Jungle to Drum'n'Bass has some socio-political origins which I find quite interesting.

Jungle is a genre that emerged in the club scene in the UK in the early 90s, and was associated with rave, partying and extensive use of the drug ecstasy. It was also very multicultural, many of its exponents being immigrants from Jamaica, and thereby very influenced by reggae and dub music. However, to my understanding, the transformation from Jungle to Drum'n'Bass was not, at first, a musical evolution, but rather a *rebranding* of the same music to dissociate the music from the dubious reputation Jungle music had gained in broader society<sup>2</sup>. However, one of the musical changes that came about in this change was the elimination of the "black" elements from the music. This would be the influences of reggae and dub music, and all that was left of the music then was "drums and bass", hence the name. Drum'n'Bass developed into a more polished sound and had much bigger commercial success than Jungle, one of the clearest examples being with DJ Goldie and the song "Inner City Life".

Researching this I discovered that my tastes seem to lean much more into the Jungle side more than the Drum'n'Bass. The use of the breakbeats in jungle music and the rhythmic complexity and syncopation are more prominent, and so is the more unpolished and dirtier production aesthetic. Both of which I have discovered, really appeal to me. Many of the concrete rhythms I'm playing on the songs in this project are more or less directly stolen from this genre, but as Jojo Mayer and others, done on a drum kit. And in my case, done with audio effects as well.

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<sup>2</sup> This documentary from Channel 4 contains interviews with several of the pioneers of Jungle, and the phenomenon I describe is discussed in this clip: Shut up and dance (2014, 4. May) *channel 4 jungle music documentary Broadcast April 30th 2014* [Video]. Youtube. <https://youtu.be/PAh1WdsEVhE?t=1139>

### 3.4 Jazz and improvisation

I would also like to describe a more conceptual influence on me that has enormous impact on how I make music, especially in this project. As mentioned earlier, I am very much a musician who learns music mostly by ear, and I see this skill as the biggest prerequisites for one of my favourite ways to make music, namely through improvisation. I find it useful to compare improvisation in music, to humans' most characteristic way to communicate: the use of natural language. What I always strive for as a musician and instrumentalist is to play, or speak, fluently, and without accent, in a way we humans do when we speak using our natural language. Not uttering already prepared sentences, but generating new sentences, that are new and unique but at the same time intelligible and appropriate to the situation, and in constant interplay with other humans that speak the same language. I believe the comparison between human's use of natural language and that of music and improvisation is quite profound. I see music as another means of communication, and improvisation the musical the equivalent to a conversation from which new things, new thoughts and ideas, can arise that no one had previously thought of before, but comes to life in an interplay between participants in the conversation. The music genre in western popular music with the strongest connotation to improvisation is probably jazz, even though many other genres have of course improvisation as a core element. I have listened quite a lot to jazz music, and it certainly has a big influence on me, however more so the spirit of jazz than the playing style or timbres. I would like to cite Jojo Mayer<sup>3</sup>, himself citing Miles Davis, that: “jazz is not a style or a rhythm, but the spirit of improvisation, communication, innovation, and self-expression as it relates to the time we are living in” This approach to music resonates deeply in me and stands as a point of departure for the band Lupe and our way of making music.

### 3.5 Lupe's music and influences

There is no neatly defined genre for Lupe's music to fit into, but we have of course our influences and I will try to give the musical context of what we are playing.

Christo Stangness, although mainly a bass player, plays two keyboard instruments in Lupe; a bass Moog and an acoustic pump organ. His use of the pump organ is very similar to my use of the drum kit, in that he also uses live audio effects on the pump organ while playing, giving it a highly processed sound. The texture of this instrument is very important in defining the sonic signature of the band and perhaps makes us somewhat difficult to put

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<sup>3</sup> SRF 3 (2015, 13. February) *Jojo Mayer – The Nerve Mission* [Video]. Youtube. <https://www.youtube.com/watch?v=QObmX-vM22I>

neatly in one genre. The combination of jungle drumming and pump organ is not a very explored one, to my knowledge, and for better or worse puts us in a quite unique sonic landscape.

Martin plays the electric guitar and various synthesizers and samplers. The relatively clean and unprocessed guitar tone is something that, in my opinion, helps the band connect with existing musical references and gives an audience a familiar sound which is possible to relate to. It's something that helps us avoid sounding completely foreign or alien, in a good way.

Both Christo and Martin also use looping in their playing, hence the name, which gives them an ability to add more textures and parts to the music as we play.

As stated earlier, the band's instruments and choice of sound is not a very tried and tested one so there is not another band or artist which we are directly emulating, but rather a combination of many different ones. Martin and Christo also cite the following musicians, bands and composers as influences:

Martin:

Eivind Aarset: Ie (2015)

Boards of Canada: Geogaddi (2002)

Christo:

Nils Petter Molvær: ER (2005)

Elephant 9: Walk the Nile (2010)

Listening to these artists and bands I can't hear a very direct sonic relation to what we do, however there is the central element of improvisation and the fearless use of unconventional sounds and production techniques in them that I think is a common thread with what we are doing in our band. As a general summary of what is common for all these influences is their commitment to musical exploration and experimentation, more than technical perfection or wish to make music in a genre with strictly defined borders. This spirit of exploration and experimentation is key, and something I experience that my fellow bandmembers and myself share as a core value that guides us the whole way in our music making. All new ideas are worth trying, and the weirdness of the idea is often a pro, not a con.



## 4. Technical explanation

I will now describe how I came to solve the technical challenge of applying audio effects to my drum kit while playing live.

### 4.1 The challenge

Drums are loud, and drummers use all their limbs to play their instrument. This is the most distilled explanation of why, I think, the methods used by for example guitar players, have not been used much up until now by drummers. Guitar players can change their sound just by the touch of a button, using their feet, and at the time of writing this no such equipment is readily available for drummers. Electric guitars also make very little sound when played acoustically, so the amount of control guitar players have of their sound is enormous. Many other instruments also have had an easier time emulating the electric guitar, (horn players, other string players, etc) but they have the same advantage as the guitar: relatively low volume acoustically, and limbs free to be used to operate the effects. I will now explain how I have tackled this challenge for the acoustic drum kit:

### 4.2 The loudness

The loudness of drums brings the following challenge to someone who would like to add effects to the sound: how will the audience *hear* the effects over the acoustic sound of the instrument? How can the effects be loud enough before amplification of the instrument creates a feedback loop between the microphones and the sound system? This is my solution to this problem:

After much experimentation I have found the best result is to use *condenser contact microphones* on the different voices of the drum kit. As the name implies it is a microphone that is physically attached to the instrument it is supposed to amplify or record. It generates its sound from the resonance of what it is attached to rather than sound moving through air, like ordinary microphones do. This has the practical effect of being extremely feedback resistant. It picks up next to nothing of the other instruments even though they are loud and in close proximity. I have also tried regular microphones on the drums, but the feedback issue becomes quite problematic, and the sound is less “direct” since regular microphones pick up not just what it is pointing at, but also whatever is around it. The contact microphones are the closest I have come to DI for drums, and it solves the loudness problem.

### 4.3 The limbs - how to operate the effects while playing

I will give a brief description of how I solved this, but I think the video referenced at the end of this section will probably be best at explaining what I am doing.

When guitar players started adding effects to their instruments, they started with analogue stomp boxes. They could step on a button with their feet and the sound of their instrument could change drastically. Trying to use analogue stomp boxes live on a drum kit, operated by the drummer, would be a technical and practical nightmare. However, with the advent of faster computers and audio interfaces, at affordable prices, came the possibility to move the sound processing into the digital realm. This opens for the possibility of new workflows. The challenge is just coming up with them. Helped by my friend Andreas Lea, I developed the following workflow:

All my contact microphones go into an audio interface, which gives me the ability to add effects to the drum sound in a Digital Audio Workstation (DAW) using my laptop computer. My DAW of choice is Ableton Live, which is unique in its great functionality made specifically for live sound manipulation. The challenge then becomes how to operate this program and the different sound effects, *while playing*. I obviously cannot start using my computer's keyboard and mouse while playing so my solution is to “make” a new keyboard and mouse using a MIDI controller, which I can hit with my drumstick.

I use the SPDS-X sampling pad which has 9 different pads, which means 9 different MIDI notes, ready to be triggered with just a stroke of a drumstick. This pad does not make any sound of its own, it just works as a series of buttons for me to press, or more accurately, hit, to make changes in the DAW while playing. What I have ended up making is what is essentially the drum kit's equivalent to the electric guitar's *multi effect pedal*. This means that at the stroke of a pad, I don't just turn on an effect, as guitar players can do with *stomp boxes*, I make a change to the entire *signal chain*. I go into detail in the video of how this is done in the DAW and will not use more space on it here, but I like to stress how much work and research this part of the process took. I could not find any guide or instruction of how this could be done so I had to do my own research, and with great help from Andreas, who is more inclined to read manuals than me, we developed this workflow together.

#### 4.4 The effects

What effects I use is in continuous development, but some effects have been more musically effective than others.

The use of delay and reverb has been quite effective in creating an acoustic space for me to play in and greatly affects how, and how much, I play.

Another successful experiment is using the signal from my kick drum to control the volume of a synth in my DAW. This synthesizer changes pitch based on the MIDI from Christo's Moog. The result is that my bass drum, instead of having a constant pitch, is changing pitch, appropriate to the music going on around me at any given time. The use of spectral resonators and vocoders have been what I have found most aesthetically pleasing as an "always on" effect. These effects give my drums some resemblance to the highly processed drum sounds found in Jungle and Drum'n'Bass. Both the kick synth and the spectral resonators have an advantage with the fact that these effects can be interactive with other musicians. I am getting MIDI and audio from Martin and Christo and what they are playing is influencing my effects, hence the sound of my drum kit. I have not heard or seen any other people doing anything quite like this. However, the drummer Zach Danziger has a somewhat similar approach and has inspired me to try some of these interactive ideas. He also has the live element and no use of pre-recorded tracks or loops, but unlike me, is he using his MIDI-triggering to trigger sounds, and not as a control device for turning on and off live audio effects on the drums. The video interview here gives a good explanation of his workflow, and it is possible to see the similarities, and in contrast with my video, the differences between us.

Vic Firth (2017, 6. April) *"A Week With" Zach Danziger - Part 1 of 2* [Video]. Youtube.  
<https://www.youtube.com/watch?v=7B-g-l-13o8&t=292s>

Aksel Bakke (2023, 11. May) *Demonstrasjon av Lydeffekter* [Video]. Youtube.  
<https://www.youtube.com/watch?v=lHBCywtuEyk>

All these effects are of course better heard than described so the video is recommended viewing.

## 5. Presentation of new music

I will now present reflections on the musical results of the work laid down by me and my fellow band members over the course of this project. For the sake of comparison and reflection will I use both demo and live versions of the songs when discussing them, to hopefully see progression in both sound and performance.

### 5.1 Quest for Love

I brought this composition to the band to rehearse as it was, more or less, written originally. The melodic, harmonic, and rhythmic structure is quite well defined, and this piece is probably the one with the least amount of open improvisation.

## [Quest for Love Original demo](#)

This song began on my computer with just a MIDI-keyboard and me playing around virtual instruments. The main creative catalyst for this song is the keyboard sound which you can hear clearly on the intro of the original demo. This sound was just a ready-made pre-set on a virtual instrument but gave me instant inspiration and made me come up with a chord progression shortly after which would become the basis for the A-section of the tune. I find it interesting that what originally inspires a composition is not necessarily something that will end up in the final product, which is the case here. The keyboard sound was eventually replaced and ended up only as a springboard for the rest of the song.

Having a couple of chords recorded I continued with programming a drum part. Using a DAW in this case, and not my drum kit, I could not rely on my hands and feet just to do what they already know. I was forced to use another part of my brain and tried to sing a drum part out loud for me to transcribe into midi-notes for a virtual drum kit. I can hear direct inspiration from Nerve's song "Far" from "Prohibited Beats" on the drum part. The double stroke on the bass drum before every other snare hit is more or less stolen from Mayers drum part. However, this is a common Jungle and Drum'n'Bass motif and Nerve's song is just what inspired me to use it as well.

Having a chord progression and a drum beat to work with, I turned my attention to a melody. What ended up as the melody for the A-section was me improvising on the keyboard, again, with an inspiring sound. Keyboard is the instrument I am the least comfortable with, but still able to make music with. The same phenomenon happened here as with the drum part. If I were to use a guitar or a bass, my hands would probably do a lot of work on their own. Playing on a somewhat foreign instrument helped me be more intuitive and made me use my ears more than my hands. I find it interesting when listening to the original demo how small details of the melody, like the ending of phrases for example, is something else at the final version of the song. And also, when the melody is interpreted by Martin, it gets a new dimension. It's almost like the melody has gone through a small evolution over the course of the song's creation.

I cannot tell where the inspiration for the melody of the A-section is exactly, but the B-section has a rhythmic motif which is clearly inspired by Koji Kondo's "Super Mario 64 Main Theme" from the video game "Super Mario 64" (1996). The displacing of the melodic

sequence in the end of the phrases is apparent in both songs and gives the song a bit of a lopsided feel - it may not be obvious to the listener where the “one” is for a moment.

The bass sound heard on the demo is the only part which is not midi-based. I played it on an electric bass with highly processed and filtered sound which is emulating the opening of the cut-off filter in bass synths. This is also something that was eventually replaced with a more “djent”<sup>4</sup>-oriented approach, revealing the considerable influence that metal music has on me. The long and gradual bass sound was used for the B-section and the djent was used for the A-section.

These two sections of the song ended up being one cohesive part, but I wanted to make another section with quite another feel than these fast and frantic ones.

The basis for the last section of the song came to me when I, much later, played around with my acoustic guitar. The original idea can be heard here: [C-section](#)

This melancholic melody and chord progression was to be the coda of the song and the inspiration for the title. The groove I ended up playing is very inspired by a concept called “drunken drumming” which I heard about from, and is associated with, the drummer Questlove. The fast-paced gaming inspired A- and B-sections combined with the drunken and unquantized C-section is what gave the song its title, Quest for Love.

I had originally planned for the A-section to repeat one last time as can be heard on this demo of the song, but following a suggestion from Christo we ended up using the C-section as a coda instead: [Quest for Love Demo 2](#)

I have two live versions of this song played by Lupe. The first one is from our very first live concert done at Dama Di, [December 2022](#). The other one is also done live, but without an audience. This is done at our rehearsal space and is my final submission, [February 2023](#).

Comparing these two versions, a couple of things stand out to me. The concert version has an energy from the audience which we do not have in the studio version. There is also a technical problem with my kick synthesiser, ironically in the studio version, and not in the concert version. There is a synth bass synth sound coming from me, that is quite in dissonance with Christo’s bass sound on the A-sections. This was not intended, and we did

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<sup>4</sup> “Djent” is an onomatopoeia originating from the message boards of a fan forum of the metal band Meshuggah. It describes a stylistic trait in metal music where there is a simple 4/4 beat played in the hands by the drummer, but with rhythmically complex part played in unison by the bass drum and rhythm guitars.

not hear it before the session was over. But in some way, it gives an extra tension to the part that was not there before. The concert version also has some parts that are not as well rehearsed as they were in the studio version and the audio fidelity on the recording is somewhat lower in general. However, I think my drum effects might have been closer to what I envisioned on the concert version, more so than on the studio version. This is a good example of how I use the effects is in continuous development all the time. One day taking two steps forward, and another day one step back. This is always changing. I do think both versions are quite presentable as live versions of the song and if, and when, we record it again I think we would only make minor alterations for an eventual release of the song.

## 5.2 [All my friends](#)

This song was made in collaboration between all of us in a jam session. Listening to the demo recording of the jam ([All my friends demo](#)), I am struck by the fact that our playing and energy is close to what I would deem release worthy. The recording fidelity is of course not as good as it would be on a release, and I can hear that my drum effects are not quite as developed as they are now. However, many of the ideas shown in this demo have made it into my current setup, just a bit more refined. The timbre of both Christo and Martins are top notch in my opinion and if recorded a bit better would be more than good enough for a release. The demo contains just the A-section of what was to become the complete song but listening to the whole jam now, I must admit, this very long collective improvisation has a charm and I feel this band would do well to remember that our long sections of us improvising together is well worth listening to. I believe something gets lost when we decide to put the music into a more defined form with a set beginning and end.

After we recorded the demo, we listened back to it and decided together that we would like another section in the song with a clear contrast to the first one. The slow tempo and few chords that the A-section contains, prompted us to use a metric modulation, sending us into a new section with 6/8-time signature and a richer chord progression. The song in its final form contains only these two sections. I'm afraid I don't remember who specifically came up with the specific melodic or rhythmic motifs now, but in a way, I don't think it matters. When we compose collectively, I feel there is an interaction between the people in the room that is the main catalyst for the new ideas, more so than the brain of a single person. Who suggested the ideas that made it on the final version is not clear to me, but it is quite clear to me that we all had to be in the room for it to happen.

I'm quite satisfied with my final submission of the song and listening back to it now, comparing it with the demo, a few things come to mind:

Firstly, the audio fidelity is much better on the final version. Also there is a conviction and energy, especially in my playing, that gives the song quite another "feel" than the demo. This is a double-edged sword in my opinion. There is a "laziness" in the demo that I find quite charming. It sounds as if with have all the time in the world and that we are happy to play the same groove and two chords for forever. This feeling is somewhat gone in the final version and it's much more expressive and extroverted. I think this might be due to the psychological effect that being in a recording situation can have. The playfulness is somewhat reduced in favour of increased concentration to "get the job done". All this said, I'm quite happy with how the composition turned out and the final version of it. I think my use of effects are quite close to what I envisioned, and they really help define the sound of the song, and I think we all did a good musical performance.

### [5.3 Seventh heaven](#)

This song is also made in collaboration between all of us, however the main theme for the A-section bears clearly Christos signature in my opinion and became the starting point for the rest of the composition. The way these sections are conceived is often that one of us is coming with an idea, it can be a chord or melodic motif, and then one or both of us responds to the idea and come up with a suggestion of either a development of the idea or a modification of it. This process of collective composing of the three of us have been quite effortless, and every time we have met has been fruitful with new music coming out on the other end. Having jammed for a while on the A-section, we decided to add a new section and the suggestion was made to make the B-section more "chord based" in contrast to the more riff-oriented A-section. The B-section has longer notes and the melody is now played by Martin instead of Christo which helps solidify the distinction between the two sections. After jamming on the B-section the suggestion was made to create a section for me to be freer and improvise over. In a way you could say that Christo played melody on the A-section, Martin on the B-section and, me on the C-section. I'm very happy with the compositional choice, however, my self-confidence as an improviser in 7/8-time signature is not very high so I don't take as many chances as I wish I would. This makes the distinction between the B-section and the C-section not as clear as I wish, but that I think that stems from my performance and not the composition.

Listening back to the recording of this song and comparing it to a demo version made earlier, I was surprised to hear that I actually preferred the demo version in many ways more than the latest version which I intended to be my final submission. I listened back and forth between the two versions a couple of times and settled finally on that the latest version would be my final submission, and I think the reasons why I was unsure which one to pick is interesting. Something had to do with the mix. I decided to do another revision of the mix on the final version, which helped getting the organ into focus, which was sorely needed in my opinion. However, I think that that the effects used on the demo version is actually closer to what I envisioned the sound to be more so than the final version. Again, this is part of the process of developing a new sound with this technology. What works and what doesn't is not necessarily clear to me in the moment of playing it. All I know is that I'm either inspired, or not, by the new sound of my instrument, and sometimes the sound fits well into the broader musical context, and sometimes it does not. There is also a playfulness in the demo and some quite wild chances being taken. Not all of them are perfectly executed, but in my opinion is the energy somewhat more appealing than the final version. However, the final version is more refined and less outright mistakes which can be heard in the demo version and is why I settled on it for my final submission.

#### [5.4 Improvisation](#)

My supervisor Mattis Kleppen suggested to do a piece where I was the sole musician. I think this was a great idea because this recording is probably the one where my own playing and the use of my effects are coming the most into focus. I wanted this to be an improvisation and I wanted to try and capture an energy and playfulness while at the same time having a high degree of musicianship and demonstration of my influence of Drum'n'Bass and Jungle.

I set up my drum kit in my studio and after I had made sure all the equipment was working, I tried just to start recording and see what came out of me. The first take can be heard here:

#### [Improvisation take 1](#)

Listening back to this recording, there is a lot of good ideas and, in my opinion, inspired playing. I can hear that I'm not afraid to take chances and experiment, however, there are some ideas that are not satisfactorily executed and some ideas that don't lead naturally to new ones.

Over the course of a couple of takes I made up my mind to aim for a specific form for the improvisation to have. I decided to go for an open rubato beginning and end, while having a



fast-paced groove based middle section with high energy. I recorded quite a few takes and felt on the end of the session my musical energy depleting. I decided to come back the next day with fresh ears and new energy and listen to what I had captured and, if necessary, record some new takes.

The next day I began by listening to what I had captured the day before and was positively surprised by the raw energy and conviction in the takes I had recorded so far. However, I wanted to capture a more refined and precise version and I also wanted to add a small melodic element. I programmed an ascending line in midi which fed my effects in the middle section and helped, in my opinion, create a feeling of urgency that I felt appropriate to the frantic jungle-energy I tried to capture. I also made the decision to use a metronome in the middle section to make sure I kept the tempo. I often find improvising a bit easier when there is an external pulse for me to play off. The part hardest for me to execute satisfactorily was the middle section. I wanted to use my Drum'n'Bass/Jungle vocabulary and, as is often done by the DJs: play a steady groove with a syncopated backbeat, but freely improvise inserting ghost notes and further syncopated hits as the groove develops. From there I wanted to go into a more "drum solo"-style of playing where the pulse remains in my hi hat, but I'm now playing continuous 16<sup>th</sup> notes or sextuplets with melodic accents around the kit. This is where the metronome comes in handy and helps me keep the tempo and a feeling of four bar phrases. And finally going back to the jungle groove for a final climax before the more soundscape inspired end.

It's very interesting to hear the recording of the improvisation, but without the audio effects:

[Improvisation final version dry](#)

Comparing the dry version with the final version, a few things come to mind:

In my opinion it's possible to hear very clearly, almost to a comical degree, how important the audio effects are for the final result and how much they inform my playing, especially in first and last section. Furthermore, I think it's easier to make room for the new timbres in rubato and slow tempo, because as soon as the tempo is faster the less room for the sounds to evolve. This gives the fast-paced part a somewhat chaotic sound, especially where I go out of groove and into accented rolls. What I find interesting is that while it's much clearer what I'm playing in the dry version, the chaos and distortion added by the effects actually gives me a feeling much closer to what I wanted to convey when I played it. The rawness of the playing is even rawer when it's somewhat difficult to hear each and every note played, which is

possible to hear in the dry version. However, this works in large part because I'm the sole musician, I think. If there were other musicians and other sounds I had to take into consideration, the sonic bandwidth quickly gets eaten up by all the added distortion from my effects and I would have to decide on how much room there is for this "extra" sound.

## 6. Summary and the road ahead

This research project has in my opinion turned out very well and I am quite satisfied with both the musical results and the process leading up to it. The academic input made by my master supervisor Mattis Kleppen and other lecturers, my fellow students and the milieu around Nord University, combined with the quite fortunate coincident of the forming of the band Lupe, made my situation quite fertile for this creative progress. I believe these last two years have been one of my best when it comes to being a creative artist and discovering new parts of the infinite mountain of music.

This master program has certainly been a catalyst and inspiration to take the technical proof of concept and further develop it into a useful tool for artistic creation, something I'm always on the lookout for. I have for many years prior to this master program thought, and to some degree tried, to develop the technical methods I have described here. However, these last two years have provided me with several breakthroughs and been much more productive than all the years prior. Concerning the future, I would like to see other drummers, or other musicians for that matter, pick up on the technical workflow I have demonstrated and further develop it. I have barely scratched the surface for what's possible and I can imagine many other people taking these ideas and applying them in new and interesting ways. My main focus going forward will probably be more on the music, more so than further developing new and more complex ways to use the technology. These new timbres I have now acquired on the acoustic drum kit has opened a door for me to be creative and helped me make new music. I want to play more of this music made with these new colours in front of an audience interested in new sounds and ways to express oneself. Together with my fellow musicians, I hope to spread a positive feeling to anyone interested in listening.

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