

The concept of my Negotiated Major Project is the exploration of compositional and mixing techniques relating to the creation of multichannel *electroacoustic/electronic dance music (EDM)*. On a technical level, this includes the use of 5.1 surround sound, surround-mixing methods and various specific compositional approaches.

My submission includes:

- Kalim (5:16s) presented in 5.1 surround sound
- Ripper (5:00s) presented in 5.1 surround sound
- Hijacked Frequencies (5:36s) presented in 5.1 surround sound

Introduction

In this critical evaluation, I will begin by outlining a history of multichannel music alongside my project's creative aims, first referencing related texts and musical works which served as influences, before explaining their relevance to my project. I'll then move into a chronological track-by-track analysis summarising the techniques that I employed, from the in-DAW composition to the multichannel mixing stages, relating the previously mentioned creative aims to that of my own work. Finally, I will reflect critically on my project, exploring its failures and successes, before considering how I would approach this idea differently in the future. This document includes a reference list / bibliography and discography, and my submission includes a separate appendix of images marked with [x] relating to my work.

Multichannel electroacoustic music has been in practice since the 1950s. One early example is 'Pierre Schaeffer, (who) alongside Pierre Henry composed various works, including *Symphonie pour un Homme Seul*, which was presented through a tetrahedral configuration' (Lynch, H. and Sazdov, R., 2011). This is one of the first examples of multichannel presentation of music and following this is a long history of musicians exploring sound in a three-dimensional listening environment. One noteworthy institution, Birmingham ElectroAcoustic Sound Theatre (BEAST), has been developing this practice since its formation in 1982 (Wilson, S. and Harrison, J. 2010), now boasting a setup of over 100 loudspeakers. Multichannel formats also grew popular in cinema, with the commercial introduction of the Dolby 5.1 surround sound

format in 1990, now a staple of even mid-budget cinematic releases, with sound designers and composers

working specifically in this format, under a set of 'common practice' rules.

Despite this, 'there is not much history in multichannel club-sound yet, no defined set of rules' (Henke, R 2009). As my project relates directly to EDM, which is typically presented in a mono or stereo format, I am venturing into a relatively unexplored area of study. One of the critical areas of consideration I undertook for this project was the concept of 'the sweet spot' - the area in the centre of a multichannel configuration in which the listener perceives the music exactly as intended (Kendall, G. S. 2010). Deviation from this central point is almost a certainty in a dance club, as the audience is 'theoretically located everywhere in-between the speakers' (Henke, R 2009). This factor presented me with a challenge to be faced – there is a clear market for multichannel *electroacoustic* music, but far less for multichannel *EDM*. I will outline the possible methods of merging the two in this evaluation.

I began by exploring several early figureheads of multichannel composition to gain an insight into pieces 'valuable in (spatial) composition history' (Schelvis, S.A.M, 2020) These included *Gesang der Jünglinge* (Stockhausen, K, 1955); mixed for five channels, and an early example of balancing electroacoustic music with synthesised elements. *Poème électronique* (Varèse, E, 1958), designed for playback across upwards of 300 loudspeakers, a very early example of Stockhausen's idea of 'kinematic relief', or 'manipulating the trajectory of sounds between loudspeakers which corresponds to his practice of mobilizing both acoustic and electronic sounds' (del Cerro, E, and Ortiz, S, 2012). These composers, alongside their other works, made me consider the form of composition that I would need to employ to effectively fuse electronic dance with electroacoustic music. I understood the importance of mixing with *the sweet spot* in mind, as well as the typical conventions of mixing dance music – e.g., kick/bass in the center of the mix - however wanted to explore the motion of sound sources around the listener, meaning creating varied moments within the pieces ranging from ambient, directional sounds to rhythmic, centered sounds which predominantly occupy a single speaker. I decided early on that I wanted to *mix* in 5.1 as opposed to composing entirely in surround sound.

Next, I inquired into more recent examples of EDM to serve as influences for my project. These included *STONEODENJOE (House)* and *BLACK SUNDAY* (Moodymann, 1998), which contain a mix of spoken word and traditional dance elements, much like I intended for my own works. *Primal* (Costello, 2015) brought inspiration in its frequency modulation synthesis, something which I explored in my own track 'Ripper'. Finally, *Dies Irae*, (Chion, M, 2008) although not a dance track, brought inspiration for my piece 'Hijacked Frequencies' in the idea of the composition being formed of radio frequencies being intercepted, and increasingly processed.

The compositional approach for each of my tracks were similar. I began with various sound sources, then processed them with several audio effects. Next, I explored the implementation of electronic dance percussion until I found an enjoyable balance between the processed, ambient elements and the more rigid, rhythmic dance elements. To facilitate multichannel mixing within Ableton, I assigned the audio output of each channel to 'sends only' and created a return track for each individual speaker in the configuration. I made use of LFOs assigned to the send levels of the track's channels and automated surround panning to create spatial movement in the pieces. These approaches were concurrent across my whole portfolio. I will outline individual techniques and intended effects in my track-by-track analysis:

Ripper

This piece was my first exploration of the ideas I had prepared for the portfolio and is the most influenced by EDM of the three included in my portfolio. I began with a recording of a lecture by philosopher Alan Watts, before processing it with Granular to Go (G2G), a Max for Live (M4L) audio effect, resampling this, and applying delay and automated panning to create the static ripping sound heard during the duration of the track [1]. From here I applied a gate to the processed recording side-chained to the dry allowing it to 'open up' alongside the speech, alongside convolution reverb and an automated instance of G2G [2]. I found a moment within the recording that matched rhythmically with the tempo of the project and looped this to serve as the foundation for the dance elements of the track (0:46s). After building the more typical percussive dance elements of the piece I arranged the track to allow for the development of the processed speech before the introduction of the percussion, as I wanted to delve into both the electroacoustic and electronic dance features [3]. To further emphasise the rhythmic elements, I ran a sample of the 'ripper'

through 'Emit', a M4L particle emitting instrument, before applying a panner, centered and synchronised to crotchet notes to create a side-chained effect [4]. The emitter was automated to gradually introduce more particles as the track progressed. Aside from typical mixing elements, other points of interest include the use of samples that match the spoken topic, e.g., the sound of a basketball and a party blower implemented when the relevant words are spoken, which were later spatialised to add interesting moments.

Each of the techniques I made use of in the composition process was directly premeditated to the approach to mixing that I would eventually undertake. As this piece was my first composition for this portfolio, I found that I had to spend much of the time finding a balance between the electroacoustic and dance elements without going too far in either direction. For example, although the 'ripper' and Emit tracks, alongside the gated speech, were initially discordant, my method of allowing them to develop into a more rhythmic feature of the piece meant that the relationship between the two elements was enjoyable, and still held much of the easily discernible features of themselves, respectively.

When mixing in surround, for this piece I was still exploring the most effective presentation. This meant that much of my percussion was on the front speakers, and my kick playing through every speaker besides the LFE. This was not consistent with all my tracks, and for this piece I opted for slight differences such as allowing the FM synth and bass, as well as some of the percussive elements to bleed from the surround speakers to fill the spatial field more effectively. [1.1] I made use of automation combined with LFOs to move tracks around the spatial field.

Kalim

This piece is in the middle of the electroacoustic and electronic dance format that I intended to explore, in my opinion being the most effective blend of the two. I began by using Emit again to create a foundation for my piece, this time with two separate instances, one, a transient-heavy drum sample and the other a soft kalimba recording. I revisited the use of auto-pan sidechain as well as automated particle emitting, which allowed me to transition from time-stretched, ambience to rhythmic movement, which I found to be the most time-consuming problem of my previous track [5]. I also made use of another recording of Alan Watts, this time less focused on the material and more on providing ambience, through automated filtering

and convolution reverb opening as the piece progressed [6]. Regarding the dance elements of the track, I opted for a more gradual introduction, namely by group filtering the percussion and melodic arpeggios alongside the Emit tracks allowing for a more progressive, organic development over the pieces' duration [7]. This meant that each of the elements of electroacoustic and electronic dance were effectively melded. On the whole I was very pleased with this arrangement going into the mixing stage, with clear vision for the spatialisation of the Emit tracks.

The techniques I used for mixing this piece were again reliant on LFOs and automation. I considered the use of spatial tools such as GRM's Spaces but felt that these served better as multichannel composition tools, and due to the strict rhythmic nature of the elements of my piece that I intended to spatialise, I wanted to retain this rhythm. As the foundations of the piece, the Emit tracks, moved from droning and irregular to rhythmic, I wanted to emphasise this in a spatial manner so decided to create 4 unique instances of each Emit track for mixing in 5.1. I had each track's LFO automated to move in waves across each of the surround speakers (L, R, BL, BR), which resulted in the exaggeration of said rhythms. One downside to this however is that the piece seems to stutter in parts, becoming quite complex, although still enjoyable. I again used traditional electronic dance mixing techniques, namely reserving the center channel for the kick, and other percussive elements, although allowing the bass to occupy every speaker to bring more presence in the mix. I also assigned the claps and hi-hats to every channel for the same reason [1.2]. I was pleased with the two pieces I had created so far but now wanted to venture in a different direction, namely a less EDM focused piece exploring more of the electroacoustic side of things. This led me into my next piece.

Hijacked Frequencies

This piece explores a traditional electroacoustic presentation and compositional approach. In practical terms, this involves the manipulation of recorded radio frequencies (streamed from radio-uk.co.uk) to create a variety of textures and timbres, through the means of automated pitch shifting, convolution reverb, delay, and Ableton's audio to MIDI conversion algorithm [8]. I began by recording several stations until I had over five minutes of material. From here I created three duplicates of the material to process in separate ways, creating a wall of sound unrecognisable from the original source material [9]. To retain some of the melodic

and harmonic features of the captured music I made use of Ableton's audio to MIDI algorithm and had soft synths play the separate harmony and melody of the unaltered recordings, respectively [10]. I then set out to create variety across the duration of the track, which involved assigning parameters of the applied audio effects for each iteration of the source material, before 'performing' changes to them as the piece progressed. This eventually created moments of textural crescendo and diminuendo which naturally extended across the duration of each song recorded from its respective station, allowing the piece to develop over time as each new station is tuned into [11].

From here I wanted to explore how this could be moulded into an EDM format, so first began by programming drums and implementing them into the project. There was little semblance of a consistent, discernible rhythm across the piece as the source material was selected entirely by chance, so I opted to group each of the processed frequencies together and apply side-chain compression to the group, linked to the kick drum. This, through automation, meant that alongside the introduction of the distinct percussive elements was the 'locking in' of the rhythm between the processed recordings and the drums. I found this to be particularly interesting after the very loosely structured first half of the piece, serving as a kind of resolution to the previous chaos.

When surround mixing the track, my aim was to build upon the previously mentioned 'wall of sound' spatially while maintaining the concurrent, more conventional dance music mixing heard across the other tracks in my portfolio. Technically this meant retaining the centered kick/bass and percussive elements while allowing other, the less rhythmic sound sources to move around the listener. This, as mentioned in my other track analyses, was the most important mixing technique I employed to find the 'sweet spot'. I relied much more heavily on automation in this piece, creating spatial movement to coincide with the tuning into new 'frequencies' and provide variation [1.3]

Reflection

On reflection, I feel that each of my pieces effectively explores a different balance between electroacoustic and EDM. Structurally, each piece follows a similar format: the exploration of ambient,

heavily processed samples that become the bases for the rhythmic percussive elements, before moving between the two. This is pleasant and enjoyable however in the future I would like to explore different means of finding this balance, possibly working backwards, creating ambience and texture from dance rhythms.

Technically, I composed using several techniques which were new to me, such as G2G and Emit, which brought positive results. Moving forward, I would explore the use of surround sound in the composition stage, as this would present new technical approaches and likely strengthen the relationship between both genres.

I feel that the development of timbre and texture in each piece is extremely effective, namely due to the compositional methods I undertook meaning that the percussive elements were gradually introduced. This could be improved again by composing in a surround format, as despite the tracks working very well, there would undoubtedly be improvements to the mixing itself.

The variety within each of my pieces improved as my process was developed. I found that Ripper was the least varied in its compositional form, sounding almost like an abrupt dive into electronic dance, whereas Hijacked Frequencies never returns to the same passage melodically. This is to be expected and in future I would bear this in mind when composing.

To summarise, I am very pleased with the outcome of my research and the application of the blending of electroacoustic and EDM. I feel that my portfolio stands to make a point of exploring the possible relationship between the two, in three distinct but similar ways, each presenting the listener with an interesting angle to compositional form and multichannel presentation. From here I would like to move into the investigation of composing in a surround format, and moving into more complex multichannel configurations, much like that of the B.E.A.S.T and Monolake Live Surround. I know that there is a world to be explored in this respect and would like to be a part of it.

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