Bacharach, Britney and Acid Techno Bangers: The Evolving Compositional Practice of Honeysmack

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Abstract

This practice-led research project investigates a range of approaches to real-time compositional practices used in the Electronic Dance Music (EDM) sub-genre known as Acid. Specifically, this study will explore how the creation of Acid is effectively assembled through interfacing and combining performance and recording platforms, while examining the stylistic characteristics of this established sub-genre. It will also interrogate the evolution and impact of commercial interests around EDM.

The project investigates the nature and evolution of my own compositional Acid practice under the name 'Honeysmack', examining the use of electronic instruments and technologies associated with EDM, with particular attention given to the role of the Roland TB-303 Bass Line synthesizer. The research will also demonstrate the ways that the concept of the 'studio-instrument' defines the Acid genre. This will be achieved through a critique of my own professional experiences and outcomes as a composer and performer firmly embedded within the broader EDM community and framed by the broader history of EDM more generally.

To date, only a small portion of practice-based research has focused on EDM compositional practices, with very little focusing specifically on the Acid genre. It is my hope that this project, consisting of this exegesis and an accompanying folio of original works, will contribute to a deeper understanding of the compositional practices engaged in the creation of Acid.

Declaration

This exegesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this exegesis contains no material previously published or written by another person, except where due reference is made in the text of the exegesis.

Signature: ……

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Date: Friday January 15, 2021

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Chapter 1: INTRODUCTION

1.1 Overview

The objective of this research is to examine the evolution of Acid as a genre and characteristic sound of electronic dance music (EDM), with particular reference to my own contributions as Honeysmack. This will be accomplished through an examination of my own creative practice, combining studio- and performance-based approaches. Ultimately, I hope this research will make a small contribution toward a better understanding of contemporary practice-led EDM practices as part of the popular-music discourse.[1]

This practice-led project consists of two parts: a folio of original Acid compositions and this written exegesis, with each informing the other. The folio contains audio and audiovisual recordings composed on various configurations of what I will define as my *studio-instrument*. This research project includes compositions, commercially released recordings and live recorded video performances using various configurations of my studio-instrument. The video content illustrates my engagement with various devices in my studio-based processes, and how they contribute to my overall compositional practice.

The proliferation of affordable music technologies specific to EDM production and composition over the last three decades has enabled increasing numbers of people without theoretical musical backgrounds to compose EDM music. Moreover, the amount of research on EDM artists and their practices within academia is growing steadily. Researchers such as Kodwo Eshun, Mark Butler, Philip Sherburne and Peter Shapiro explicate a number of different EDM artists and their compositional practices. This research will articulate approaches to composition through the lens of my own practice as a professional EDM composer. It will provide an analytical, critical articulation of what Acid is, how it has evolved, and how I am expanding the genre and sound of Acid through my own compositions and performances. I propose that my work extends the genre of Acid by bringing new instrument colour and the influences of different styles to bear within in the genre. Whilst working within the genre of Acid, I am developing new stylistic nuances through a heuristic approach to studio-based practices.

[1] A number of notable texts discuss this at length, including: Matthew Collin, *Rave on: Global Adventures in Electronic Dance Music* (London: Serpent's Tail, 2018); Simon Reynolds, *Energy Flash: A Journey through Rave Music and Dance Culture* (London: Faber & Faber, 2013); and Sean Bidder, *Pump Up the Volume: A History of House* (London: Channel 4 Books, 2001).

This exegesis is divided into two sections. The first section, consisting of Chapters 1 and 2, provides the background and explanation of the context of my work. This section will introduce key terms, EDM histories, tools and practices specific to Acid. The second section, consisting of Chapters 3 and 4, examines the concepts that define Acid and how I combine studio-based and performance-based practices in my compositional approach.

1.2 Rationale for the Study

Acid as genre, style and sound has transcended the stylistic boundaries of what originally emerged as a genre of EDM in the 1980s. Today Acid is woven through many different EDM genres; this research will show how it has evolved through my practice as a professional EDM composer, producer and performer specifically. My compositional practice was first enabled by engaging the Roland TB-303 synthesiser, a technology that continues to inform my practice today.

I have been fortunate that my practice coincided with the development of early EDM genres, starting with Acid House. Acid has been central to my practice as an EDM artist since my undergraduate studies in the late 1980s. I examine Acid in musical terms through the lens of my practice as both a commercially successful artist and through my work as an academic.

1.3 Creative Folio Content

The creative folio (Appendix 1) takes the form of stand-alone audio recordings, full albums, live performance recordings and videos. These works have been selected to demonstrate different modes of exploration within the Acid genre, demonstrating the genealogy of my practice over time. The video documentation also demonstrates the techniques employed in making the tracks. In addition, Appendix 2 provides additional works created prior to this PhD study (pre-2013) in an effort to demonstrate the breadth of Acid as a genre of EDM and my explorations of it. Appendix 3 features interviews I have completed as the artist Honeysmack along with tutorial videos. Appendix 4 is a list of my social media on which I also host my creative work. Appendix 5 is a list of devices used throughout my creative practice, divided into categories: drum machines, synthesisers, samplers, sequencers, effects units, mixers and examples of my modular synth configurations. Appendix 6 lists my recording activity dating back to 1994, showing the breadth of my professional career. Appendix 7 is list of high-profile live shows dating back to 1997. Appendix 8 offers a sample of various live-performance artwork as evidence of my public performances during my PhD study.

1.4 Glossary of Terms

This section will describe common terms that feature throughout this document to clarify the way they are used here in respect to my own practice.

EDM: Electronic dance music (EDM) is an umbrella term used in this research to describe "a heterogeneous group of music made with computers and electronic instruments–often for the purpose of dancing."[2] The term as used throughout this research does not refer to the specific dance genre of the same name that emerged in North America around 2010.[3] Here, the term will refer to a broad group of genres and electronic music practices that evolved from the 1980s onwards.

Acid: Acid is a genre of EDM that began in the late 1980s and was first referred to as Acid House because it was a derivative of the foundational EDM genre known as House Music. It began in the USA and spread to Europe in the mid- to late 1980s.[4] Acid evolved into different EDM variations, such as Acid Techno, through the 1990s and has become a catch-all descriptive label for a variety of aspects including genre, style and sound. Later sections of this chapter will discuss Acid as a genre of EDM, the definition of Acid in musical terms and the sound of Acid through the use of the Roland TB-303 synthesiser.[5]

Producer: Advancements in music technology from the 1960s onwards have transformed the way music is made and heard. This has expanded the role of the music producer from engineer and organiser to auteur throughout the 20th century.[6] EDM composers are more commonly referred to as 'producers' because their composition practice is largely informed by studio production methodologies and processes to create works.[7]

Studio-Instrument: This is a compositional model that builds on the concepts of studio-as-instrument and producer-as-composer as discussed explicitly by Brian Eno and others. Eno highlights how the studio opened up an infinite set of sounds with which an artist can work,

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[2] Kembrew McLeod, "Genres, Subgenres, Sub-Subgenres and More: Musical and Social Differentiation within Electronic/Dance Music Communities," *Journal of Popular Music Studies* 13, no. 1 (2001): 60.
[3] Simon Reynolds, "How Rave Music Conquered America," *The Guardian*, 2 August 2012, https://www.theguardian.com/music/2012/aug/02/how-rave-music-conquered-america.
[4] "Acid House," AllMusic, accessed 10 November 2020, https://www.allmusic.com/style/acid-house-ma0000005001.
[5] "Acid House", AllMusic.
[6] Virgil Moorefield, *The Producer as Composer: Shaping the Sounds of Popular Music* (Cambridge, MA: MIT Press, 2010).
[7] Mark Jonathan Butler, *Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music* (Bloomington: Indiana University Press, 2006), 49.

in comparison to a traditional composer working with a 'finite set of possibilities' based on their chosen orchestration.[8] I use the term studio-instrument throughout this research to describe the instrument I use to compose. As an EDM producer and performer, I view the sum of all the different devices within my studio as my overall studio-instrument. Rather than viewing each device as distinct individual instruments, I will discuss my studio-instrument in more detail in Chapter 3.

Sequencer: The sequencer is a central tool in my studio-instrument, as it provides the interface where I can manipulate the rhythmic, tonal and temporal qualities of different devices. The sequencer has its beginnings in early electronic-music studios, with Don Buchla acknowledged as the pioneer of the sequencer as found on his Buchla modular synthesiser designs since the 1960s.[9] A sequencer can store event data such as tonal or performance information, which can then be played back through different interactions. The sequencers referred to in this research will be hardware sequencers, such as those found in drum machines, as well as those built into various synthesisers and stand-alone sequencers found in modular synthesisers.

1.5 A Historic Overview of EDM

This section provides a brief introduction to the history of EDM leading to the evolution of Acid, and describes its defining qualities. It will cover the legacy of early electronic music practices and how they influenced my EDM practices, and discuss Acid as a genre of EDM and the defining the sound of Acid.

EDM emerged during the 1980s, referencing decades of electronic-music experimentation during the 1980s, when electronic instruments were becoming increasingly affordable as a result of the rapid development of the microchip processor.[10] Paul Théberge describes this shift as the 'democratization of the studio' whereby the home studio became a 'technically viable site of production', bringing amateur and professional production practices closer.[11] Théberge states that 'the home studio has become both the site of significant musical activity at every level, from professional to amateur'.[12] EDM practices grew as a result of these changes, and many early EDM artists had their beginnings with humble home studios,

[8] Brian Eno, "The Studio As Compositional Tool. 1," *DownBeat* 50, no. 7 (1983): 56-57.
[9] James Harley, "Analog Days: The Invention and Impact of the Moog Synthesizer," *Computer Music Journal* 29, no. 4 (2005): 55-56.
[10] Joel Chadabe, *Electric Sound: The Past and Promise of Electronic Music* (London: Pearson, 1997), 28-31.
[11] Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology* (Middleton, CT: Wesleyan University Press, 1997), 215-217.
[12] Théberge, *Any Sound You Can Imagine*, 215.

including Jesse Saunders, Larry Heard (Mr. Fingers), Byron Walton (Jamie Principle), Juan Aktins, Richie Hawtin (Plastikman), CJ Bolland and Tom Jenkinson (Squarepusher).

Joel Chadabe also discusses how MIDI and the proliferation of music technologies from the mid-1980s onwards gave musicians access to professional-quality sounds from digital samplers and synthesisers, marketed to both the consumer and professional markets by their respective manufacturers.[13] This practice was aligned with young bedroom producers in the USA who were at 'the dawn of early EDM production'.[14] Audio technologies used in home studios were now able to produce results closer to the quality of large professional studios, leading to a plethora of new musical forms, including EDM.

Mark Butler writes that EDM is 'distinct in character in the way it is produced' through the way different types of sounds, sonic textures and rhythms are created on various synthesisers, drum machines, sequencers and samplers.[15] Importantly, Butler also notes that 'live performance is essential to EDM practices'.[16] Butler provides a focused and useful analysis of EDM production and discusses how it is not composed on traditional instruments, and thus there is no need for traditional notation. The essence of EDM is in the process of its making: it is composed as a recording.

The practice of composing via recordings has origins in early electronic-music experimentation in genres such as Musique Concrète[17], the work of composers such as John Cage[18] and institutions such as the San Francisco Tape Music Center (SFTMC),[19] all working directly with sound as their medium.[20] Butler further explains how the 'sound of EDM itself is what matters most to people who engage with it'.[21] The ways in which different types of electronic sounds are layered, manipulated, mixed and sequenced provide EDM genres with their individual character. In contrast to traditionally notated compositions, EDM genres and styles are typically defined by the types of sounds found in a composition, such as the type of synthesiser or drum machine sounds employed, rather than their tonal qualities.

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[13] Chadabe, *Electric Sound*, 198-202.
[14] Sean Bidder, *Pump Up the Volume: A History of House Music* (New York: Macmillan Pub Ltd., 2001), 24-30.
[15] Butler, *Unlocking the Groove*, 33.
[16] Butler, *Unlocking the Groove*, 33.
[17] Examples include works such as *Symphonie pour un homme seul* (1949-50) by Pierre Schaeffer and Pierre Henry.
[18] *Williams Mix* (1952) by John Cage.
[19] *Soundblocks* (1959) by Morton Subotnick.
[20] Thom Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* (London: Routledge, 2012), 92-115.
[21] Butler, *Unlocking the Groove*, 11.

Butler notes that ‘studying the sonic dimensions of EDM will help to understand the specific sonic choices and behaviours that go into creating and informing compositional practices’.[22]

Chris Kempster remarks that ‘just as rock ‘n’ roll was inextricably linked to the electric guitar, House Music would have never happened without affordable electronic instruments’.[23] As technology has provided many EDM producers, including myself, the means to compose and self-produce EDM, I would argue that EDM does not necessarily require a traditional theoretical musical background. Just as contemporary EDM practices emerged from affordable music and audio technologies in the mid- to late 1980s, EDM compositional practices and technological designs have built upon early electronic music practices.

1.5.1 Influence of Early Electronic Music Practices

EDM practices would not exist without the developments of early electronic music practices in the 20th century, notably the evolution of magnetic tape to electronic synthesiser designs and advancements in digital music studio technologies. This research builds on the legacy of early electronic music practices in a number of ways:

1. Studio-based practice is pertinent to this research, as the performance and composition take place simultaneously through the interactions of the technologies found in my studio, as informed by the different studio permutations I create.

2. My modular synthesis practice stems from the synthesiser designs of both Robert Moog and Don Buchla. These synthesis design philosophies are commonly labelled as *East Coast* (Moog) and *West Coast* (Buchla) synthesis.[24] East Coast synthesis was a subtractive synthesis design made to appeal to traditional musicians; it favoured a piano-type keyboard interface. It was able to replicate other acoustic instruments. West Coast synthesis was interested in exploring new sounds without replication and favoured sequencers and touch panels as unconventional performance interfaces. I incorporate different synthesisers in my studio-instrument that are designed or inspired by both of these philosophies. This includes the Buchla Music Easel, the Moog Mother-32 semi-modular analogue synthesiser and a range

[22] Butler, *Unlocking the Groove*, 11-13.
[23] Chris Kempster, *History of House* (Chessington, UK: Castle Communications, 1996), 155.
[24] Kim Bjørn and Chris Meyer, *Patch & Tweak: Exploring Modular Synthesis* (Frederiksberg, Denmark: Bjooks, 2018), 13, 28-33.

of Eurorack modular synthesiser modules. The blend of synthesis designs from different manufacturers provides a large range of possible outcomes.

3. In Battier's paper *electronic music and gesture*, he acknowledges the importance of how the 'sequencer provides an alternative to the keyboard interface for musicians performing with synthesizers'.[25] Since Buchla's original design, the sequencer has been an essential staple in the electronic musician's arsenal, and essential to my real-time compositional practice. The sequencer can store a series of 'pre-programmed voltages that can be played back and performed in a variety of ways to aid composition and performance', as Kim Bjørn and Chris Meyer describe.[26] Voltages can relate to different parameters, such as pitch or modulation, depending on how the system is patched. The different types of sequencers used in this research are integral to both my studio- and performance-based practices.

4. The experimental nature and practices of early electronic music studios inspires me to push the stylistic boundaries of Acid. I explore the technology as a way to form ideas whilst exploring the parameters of each studio permutation I create. The results of my experiments, which are discussed in detail in Chapter 3, can be heard in my creative folio.

5. All of these approaches and philosophies also inform my real-time approach to making and performing Acid and the value of being in the moment, to be discussed in Chapter 3.

My practice as an EDM artist builds on the legacy of early electronic music practices whilst continuing to be informed by different music technologies to produce EDM. The synthesiser in all its different forms, including various drum machines, is the primary device within my studio-instrument, allowing me to compose my music in real time. The genre of EDM that consolidates this approach is Acid.

1.5.2 Acid as a Genre of EDM

Acid, originally called Acid House, is a genre of EDM that evolved from House Music in North America in the 1980s.[27] House Music began in Chicago at a time when Disco was waning in

[25] Marc Battier, "Electronic music and gesture," *Trends in Gestural Control of Music* 1920 (2000): 328-330.
[26] Battier, "Electronic music and gesture," 316.
[27] Iara Lee, "House", in *Modulations: A history of electronic music: throbbing words on sound* (New York: Caipirinha Productions, 2000).

popularity. Gay, Black and Hispanic groups were shunted to underground nightclubs and dance parties when Disco fell out of favour with white middle-class America, due to the feeling that Disco had taken over popular music and was too Black and Gay for middle America.[28] As a result, locally produced Disco records also became less prevalent, and House Music DJs such as Frankie Knuckles and Ron Hardy relied on imports from Europe.[29] As noted previously, this coincided with the rise of the home studio, with young producers gaining access to affordable music technologies such as drum machines and synthesisers. Early House music was born out the need for new dance music for clubs in North America. Its sound borrowed Disco's soul and emotion, along with its pulsating 4/4 kick-drum rhythm. Early House tracks included vocals of a 'love-torn, pseudo-gospel feel, backed by a simple electronic lead or bassline'.[30] The evolution of House Music from Disco featured a deeper, more electronic bass, yet it contained the 'affirmation of traditional musicianly values and uplifting humanist sentiments'.[31]

Acid House emerged from House Music in the late 1980s with artists such as Phuture and Marshall Jefferson. Affordable music technology was at the centre of its sound. Kembrew McLeod distinguishes Acid House from House Music by noting that it was 'characterized by an even faster beat and an instrumental style that emphasized synthesized sounds'.[32] Reynolds emphasises how Acid was increasingly diverging from House Music and through employing a machine aesthetic and 'jettisoning all the residues of soul and humanity, this was machine music without apology, machine-made music that turned you into a machine. Its mind-nullifying repetition offered liberation through trance-dance'.[33] Acid further depersonalised House Music and made it more synthetic with its machine-like sounds and rhythms. These, rather than a reverence to traditional music tropes, became the focus. Acid offered a stripped-back version of House, removing the vocals and making it more mechanical and minimal, with only a few drum machine sounds and squelchy, twitchy, droning hypnotic bass lines set against a motor-like pulse of the 4/4 kick drum. When 'Acid Tracks' by Phuture[34] was first played, everyone thought the water had been spiked with LSD, and the rumour allegedly gave the record its name, according to Kodwo Eshun.[35] The

[28] Bidder, *Pump up the Volume*, 17-21.
[29] Bidder, *Pump up the Volume*, 17-21.
[30] Kempster, *History of House*, 13-20.
[31] Simon Reynolds, *Generation Ecstasy: Into the World of Techno and Rave Culture* (London: Routledge, 2013), 28.
[32] McLeod, "Genres, Subgenres, Sub-subgenres and More," 63.
[33] Reynolds, *Generation Ecstasy*, 28.
[34] This was one of the first Acid tracks to be played at Chicago's legendary Music Box nightclub; it will be discussed in the following chapter.
[35] Iara Lee, "House", in *Modulations: A history of electronic music: throbbing words on sound* (New York: Caipirinha Productions, 2000), 76.

synthesiser that gave Acid its signature sound was the squiggly and squelchy Roland TB-303 Bass Line synthesiser, which will be discussed in the following section.

Figure 1. Roland TB-303 Bass Line synthesiser and sequencer [36]

As the overall House sound of Chicago reached the UK, young British artists embraced the sound of Acid, and it made its way into warehouse parties with music by various artists including Baby Ford, 808 State and Humanoid. As Acid House became more popular it started appearing in the pop charts[37] in the UK, and reached its peak in the infamous Second Summer of Love parties in 1988.[38] Artists such as S'Express reached number one on the UK charts. As Acid House reached its apex in the late 1980s, EDM was making its way across Europe and ultimately the globe.[39] Acid and the sound of the TB-303 helped to inspire new genres whilst remaining a stable sound throughout many EDM genres.[40]

1.5.3 The Acid Sound

This section provides a definition of Acid in musical terms, identifying typical characteristics of the genre and how it differs from other EDM styles and genres. My own music includes and expands upon these defining qualities, which have been drawn from my professional experience as an Acid producer and performer. For a track to be considered Acid, the sequenced synthesiser line should be performed monophonically via a simple step-

[36] Photo Steve Sims, CC0, https://commons.wikimedia.org/w/index.php?curid=53932063.
[37] Tracks include *We Call It Acieed* by D-Mob (1988) and *Stakker Humanoid* by Humanoid (1988).
[38] These were large outdoor events across the UK that became the predecessors to rave parties and electronic dance music culture.
[39] V. Bogdanov et al., eds., *All music Guide to Electronica: The Definitive Guide to Electronic Music* (San Francisco: CMP Media, 2001), vii.
[40] Lee, *Modulations*, 192-195.

sequencer on an analogue synthesiser with a low-pass resonant filter. The filter should be modulated continually across the duration of a track, with the emphasis on the resonance through a 'wapp' sound, as per the TB-303. The folio work *Need To Get More 303s* (Appendix 1, V) sees me using a variety of TB-303s and clones (eight in total; Figure 2), to make the work dissolve into a wall of modulated Acid sounds. An Acid track does not necessarily need to contain the sound of a TB-303, but the sound source should emulate the characteristics of the TB-303 sequencer and sound as described above through a similar-sounding synth sound and filter that is modulated throughout the track.[41] I have defined eight parameters that guide the definition of the Acid sound: tempo, time signature, track duration, common instruments, texture, structure, tonality and timbre.

- Tempo: Dance-floor tempos ranging from approximately 110 to 140 beats per minute.
- Time signature: 4/4. This is the default time signature of many sequencers found on early drum machines such as Roland's TR-909, TR-808 and TR-606. Butler also adds that 'EDM can be counted in 4/4 most easily. Patterns in EDM occur in fours and four-on-the-floor genres have a pure-duple quality'.[42]
- Track duration: Track lengths can vary, although most will be approximately 3:00-10:00 minutes long. Early Acid tracks may have had longer durations, as they were typically pressed to vinyl for DJs to mix multiple tracks for dance-floor environments such as nightclubs, festivals, parties and events.
- Common instruments: The sound of Acid is defined by the Roland TB-303 Bass Line synthesiser. Additional synthesisers are used to supply supportive textures, and drum machines provide the drum and percussion sounds. The Roland TB-303 is considered the key sound of Acid (detailed in the following section), although most analogue monophonic single-oscillator synthesisers with a low-pass resonant filter should be able to simulate an Acid bass line. Other instruments often used in the creation of Acid bass lines include the Roland SH-101 and MC-202, Korg MS-20, Moog Minimoog Model D, Sequential Circuits Pro-One and a plethora of TB-303 clones manufactured from the 1990s to the present. Drum machines such as the Roland TR-909, TR-808, TR-707 and TR-606 are also typically used to provide percussive elements.
- Texture: A monophonic bass line is accompanied by additional synthesiser and drum-machine sounds. Multiple bass synth lines can also be woven in and out or threaded together to create a moving density of sound. Liberal use of audio spatial

[41] Whether an Acid track needs to contain a TB-303 is a common question.
[42] Butler, *Unlocking the Groove*, 113.

effects on both synth and drum sounds can be used to create a particular depth and distance between the different sounds.

- Structure: The structure of an Acid track generally includes highly repetitious sequenced synthesiser sounds and drum patterns, and does not conform to popular music forms in that tracks tend not to employ defining verse or chorus sections. Rather, the tracks are structured as long, evolving layers of electronic instruments and sounds. A phrase is typically 16-64 steps long, but other variations are possible.
- Tonality: Acid employs a wide variety of tonal centres, as there is a tendency to experiment by randomly entering pitches into the TB-303 sequencer. David Bradwell states that 'the use of discordant musical intervals such as minor seconds and tritones is a feature of Acid House'.[43] Anthony Childs, an early Techno producer from the UK, favours 'harmonic minor scales [that] feel like they never resolve'.[44] Additionally there is also the tendency to shift pitches up and down an octave, as the TB-303 has the ability to easily transpose pitch information and this can create a variation in tone within a single pattern, as opposed to writing a whole new pattern.
- Timbre: The filter on the TB-303 is an important component that essentially defines the sound of Acid. Its sound is wide-ranging and can go from sounding like a poor emulation of an electric bass guitar to a more accurate one of a highly resonant, distressed, chirping bird. It has a 24dB/oct low-pass resonant filter, misquoted at 18dB according to Roland US.[45] The filter will not self-oscillate, thus allowing for greater manipulation without creating a new oscillator tone by accident.[46] The cut-off frequency and resonance amount should vary throughout a track in order for the bass line to move through different frequencies and provide a fluid, squelchy, bubbling timbre that dances around other percussive sounds within a track. The maximum filter cut-off range extends to approximately 2.5kHz.[47]

[43] Kempster, *History of House*, 119.
[44] Mark Smith, "The Art of Production: Surgeon," Resident Advisor, published 8 October 2019, https://www.residentadvisor.net/features/3526.
[45] Owen Oz, "TB-303 Acid Flashback: The Fall and Rise of the TB-303," Roland US Blog, published 28 March 2013, https://www.rolandus.com/blog/2013/03/28/tb-303-acid-flashback/.
[46] When a resonant filter self-oscillates it generates a sine wave, transforming a filter into an oscillator.
[47] Robin Whittle, "User Manual for the Devil Fish Mods to the TB-303," published 2 February 2019, https://www.firstpr.com.au/rwi/dfish/Devil-Fish-Manual.pdf.

Figure 2. Eight different 303s pictured in the work *Need To Get More 303s* (Appendix 1, V)

The key to the Acid sound is how the filter is modulated to produce effects ranging from a low-end bass-like character to a highly resonate peaking squelch. The additional quality that gives Acid its particular sound is the slew between notes, known as “slide” (portamento) on the TB-303. The slide gives the TB-303 sound a wobble as it moves smoothly between pitches. The synthesiser and sequencer on the TB-303 work together to create this dynamic sound. The TB-303 sequencer also has the ability to rhythmically accent certain events through an increase in volume at particular times within the sequence. The accent on the TB-303 is unique as it simultaneously sends a very quick envelope to both the filter and voltage-controlled amplifier (VCA). This results in a sharp, momentary rise in volume and a filter sweep at the same time.

> …the Resonance pot drives a special circuit – the Accent Sweep Circuit – to pulse the filter frequency and add to the volume on accented notes…When the Resonance pot is clockwise, this pulse goes through a “lag” circuit which causes the filter to sweep up at the start of the note. This gives the distinctive TB-303 resonant ‘wapp’ sound.[48]

Whilst the accent and slide along with the low-pass resonant filter on the TB-303 were Roland’s attempt to sound like a ‘conventional stringed bass’, Shapiro notes that when the limited and cryptic tone and timbre knobs are manipulated, the TB-303 sounds nothing like an electric bass guitar. This was the misguided quality that appealed to opportunistic bedroom producers. Shapiro goes on to state that ‘the sound became dance music’s answer

[48] Whittle, “User Manual for the Devil Fish.”

to guitar feedback', and the genre of Acid quickly evolved into Techno, where the TB-303 sound would eventually become 'domesticated'.[49]

1.5.4 Acid becomes Techno

EDM genres begin with the post-Disco styles in the early 1980s, eventually evolving into House Music by the late 1980s, with Acid House emerging as a variation and diversion from House, also in the late 1980s. As House Music grew, its impact went global, crossing the Atlantic into Europe where it reached a greater number of people. Acid House in particular became infamous within popular music, particularly in the UK, where English DJs and producers like LFO, A Guy Called Gerald, 808 State and Humanoid further evolved the Acid sound into their own variants. In the UK, the media were associating Acid House with drug-taking youths dancing all night. Sarah Thornton describes how the Acid House label changed as a result of its bad press:

> When "acid house" became unserviceable because of tabloid defamation and general overexposure…the clubs, record companies and media went through a series of nominal shifts (about twenty different adjectives came to modify the word "house," sometimes in pastiches like "deep techno house") until they finally settled on "techno." The term had at least two advantages: it was free from the overt drug reference of acid house and it sounded like what it described – a high-tech predominantly instrumental music.[50]

Acid House evolved into Techno by the 1990s and perpetuated the machine-made aesthetic that Acid House had established. Techno artists who led this trend, including Derrick May, Underground Resistance, Jeff Mills, Blake Baxter, Richie Hawtin and Surgeon, took the machine-made aesthetic a little further and embraced a futuristic vision[51] of what electronic instrumentation promised, reinjecting machine-funk for 'androids, mandroids and womandroids', as Kodwo Eshun colourfully noted.[52] In the introduction to his book *Techno Rebels,* Dan Sicko discusses the difficulty of defining the genre of Techno, although his early description of Techno as 'being a postmodern soul music where electronic music got funky' is a good start.[53] This is certainly true of early Detroit Techno, where its early practitioners, such

[49] Peter Shapiro, "The Roland TB-303 Bass Line," *The Wire*, issue 303, May 2009, 40.
[50] Sarah Thornton, *Club Cultures: Music, Media and Subcultural Capital* (Hanover, CT: University of New England Press, 1996), 75.
[51] References to futurist writer Alvin Toffler's books *Third Wave* and *Future Shock* of the 1970s and 1980s provided early Detroit Techno producers with literary sources; these were augmented by science-fiction films such as *Blade Runner.*
[52] Kodwo Eshun, *More Brilliant than the Sun: Adventures in Sonic Fiction* (Northampton, MA: Interlink Publishing Group Inc., 1999), 108.
[53] Dan Sicko, *Techno Rebels: The Renegades of Electronic Funk* (New York: Billboard Books, 1999), 9-10.

as Juan Atkins and Kevin Saunderson, were attempting to distinguish and distance themselves from Chicago's House Music at the time, although both genres did evolve from Disco.[54]

Early Detroit Techno looked to Europe for inspiration, and this European influence on the Detroit artists resulted in stylistic differences from their House Music peers in Chicago at the time. Philip Sherburne describes 1990s Detroit Techno by the way they 'took the repetitive tropes of machine funk (whether Kraftwerk or Giorgio Moroder) and cut away everything but the grinding rhythms'.[55] Rick Snoman adds that Techno is 'dance music in its most primitive form'.[56] He further analyses the music as 'chiefly formed around the cohesion and adaptation of numerous drum rhythms. Although synthetic sounds are also occasionally employed, they will appear atonal, as it's the abundance of percussive elements that remain the most vital aspect'.[57] Plastikman's (Richie Hawtin) track 'Spastik' (1993) only includes sounds produced by the Roland TR-808 drum machine. 'Pull Over' (1993) by Dutch artist Speedy J (Jochem Paap) is another early Techno example that features percussive elements as the focus of the track.

The ongoing developments in music technology were embraced further by Techno producers, as the emerging technology provided the tools and sounds that led to a new musical practice aligned to their futuristic vision, such as the music of Drexciya and Robert Hood. Sherburn describes how Techno 'tended to follow closely the limits and possibilities of a range of tools, from rudimentary drum machines and sequencers to…software'.[58] This was also made possible through the suite of discontinued music technology at the time. Mark Verbos (Techno artist and modular-synthesiser designer) describes the machines that were used in Techno as 'forgotten technology', as analogue synthesisers had been somewhat redundant (at the time) by the release of newer digital technologies.[59] Techno producers made 'frequent use of machines in ways the makers never intended, in order to achieve surprising new results'.[60] There is some irony, in that, as Reynolds adds, 'despite this technophile rhetoric, the most radical electronic dance music is often made with relatively low-end equipment and outmoded machinery'.[61]

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[54] Sicko, *Techno Rebels.*
[55] Christoph Cox and Daniel Warner, eds., *Audio Culture: Readings in Modern Music* (Edinburgh: A&C Black, 2004), 321.
[56] Rick Snoman, *The Dance Music Manual: Tools, Toys and Techniques* (CRC Press, 2012), 364.
[57] Snoman, *The Dance Music Manual*, 364.
[58] Cox and Warner, eds., *Audio Culture*, 322.
[59] *Modular Wild Visits Knobcon 2014 Workshops – Mark Verbos – The Techno Synthesist* (2014), https://www.youtube.com/watch?v=lkpwUkVO0u4.
[60] Butler, *Unlocking the Groove*, 68.
[61] Simon Reynolds, *Generation Ecstasy: Into the World of Techno and Rave Culture* (London: Routledge, 2013), 49.

The device that supplied Acid with its pulsating synthetic bass line and bubbling hypnotic modulating sound was the Roland TB-303 Bass Line synthesiser.[62] The TB-303 was affordable and accessible in the 1980s, although only for a short period of time. It was musically abused in ways the manufacturer never intended by young EDM producers who were trying to distance their work and musical identity away from Disco-centric House music. The TB-303 gave birth to the genre of Acid, but as Acid evolved into Techno throughout the 1990s, the TB-303 also transformed Acid into a music-making approach, as this research will demonstrate.

Early EDM genres such as House, Acid House and Techno were defined not only by the cultural and socio-political frameworks of their respective times, but also by affordable music technologies that were available during the 1980s:[63] in particular, Japanese manufacturer Roland's suite of drum machines and synthesisers, which remain staple sounds throughout EDM genres today.

Whilst the TB-303 did not have the commercial success in the 1980s that Roland would have liked, it went on to inform many EDM styles, has become a significant part of popular culture. As Acid evolved into Techno, the TB-303 continued to be cloned by different manufacturers, inspiring the rapid development of new EDM styles and genres. For a device that was rather limited in function and sound in comparison to today's music technology, the TB-303 still remains a popular sound across many EDM genres, within and beyond Acid House and Techno.

The brief history of the TB-303 and its use across different styles and genres beyond Acid House illustrates the impact this synthesiser has made on EDM and popular music more broadly. The following section will describe how the TB-303 has informed my practice, and how it continues to be a staple in my professional practice and central to my studio-instrument.

1.6 The Roland TB-303 Bass Line Synthesiser

The tools of the trade are key in every electronic music genre, and the tool for Acid begins with the Roland TB-303 synthesiser. Kodwo Eshun describes the TB-303 sound as it is used

[62] Eshun, *More Brilliant than the Sun*, 78.
[63] Lee, Iara, "Techno", in *Modulations: a history of electronic music: throbbing words on sound*, 110-120

in the seminal Acid House track ‘Acid Tracks’ (to be discussed further in the next chapter), illustrating how unique and strange the TB-303 can be:

> Instead of emulating rock’s bass, forever stratified at the low end, Acid exaggerates the Roland TB-303 dry slipperiness, its *glissements,* by transforming the sound of the note, the colour of its tone as it plays. Filtering bends < > selects < > suppresses timbres, producing the aural equivalent of a tracer effect, wavering send of panic as the ear fails to resolve this slippage of overtones.[64]

The short, repeating sequences of the TB-303 and its peculiar sound appealed to House producers, as it gave them access to a sound that would dominate a track without too many additional sounds. Further manipulating the limited real-time controls, producers were able to render a squelching bubbling bass timbre that engaged dance floors.

The TB-303 is a versatile sound, equally effective as a melodic lead line, bubbling liquid bass line, or background motif complementing other synth sounds or patterns. Its filter and timbre are immediately recognisable as it modulates throughout a track. Michal Matlak and Florian Anwander describe the TB-303 sound as being ‘very unique with an edgy sound that has a distinctive groove’.[65] Eshun further notes that the TB-303 has a ‘posthuman rhythmatic frequency’ whereby the ‘the machine is in control’.[66] Its short, repetitive sequenced sound along with its immediate squelchy resonant filter puts dance floors in a trance-like state.

> No other make and model of an instrument – whether acoustic or electric, analog or digital, monophonic or polyphonic – has been so inextricably linked with one genre of music as the 303 and Acid House.[67]

Roland’s TB-303 Bass Line synthesiser was manufactured as a portable electronic bass accompaniment machine, conceived from the same idea as the TR-606 Drumatix drum machine and almost identical in design. The TB-303, manufactured to pair with the TR-606 as a bass-line accompaniment, was a stripped-down monophonic synthesiser with limited tonal controls and a sequencer to program bass lines. Arriving before MIDI had been developed and predating affordable computer-based sequencers, the TB-303’s built-in sequencer was designed to appeal more to the busking street musician, because it could stand alone, or a guitar could be plugged directly into it.

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[64] Eshun, *More Brilliant than the Sun*, 95.
[65] Michal Matlak and Flotian Anwander, *R is For Roland* (Berlin: Telekom Electronic Beats, 2015, 170.
[66] Eshun, *More Brilliant than the Sun*, 78.
[67] Shapiro, “The Roland TB-303 Bass Line.”

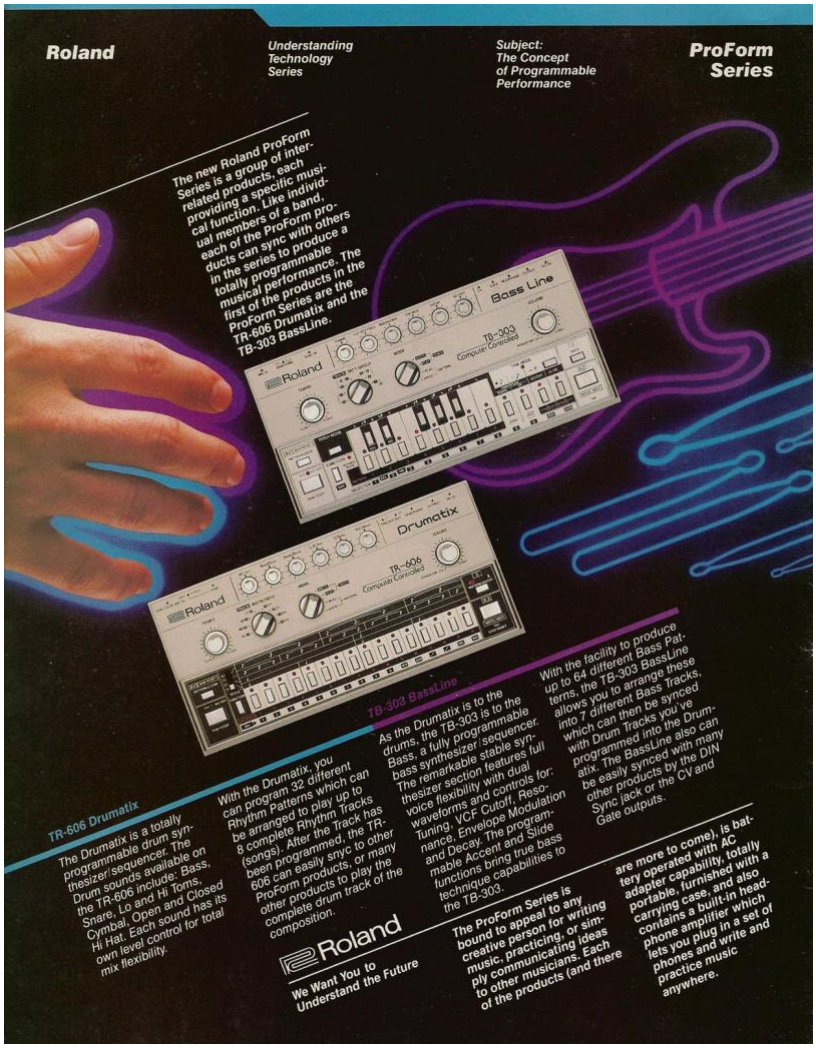

Figure 3. Roland TB-303 and TR-606 advertisement, *Keyboard* magazine, April 1982[68]

Whilst the idea of a bass-line machine was novel at the time, the TB-303 internal sequencer proved far more awkward to program than a drum machine.[69] The TB-303 sequencer was limited and difficult, and Roland shipped the TB-303 to North America without a manual, according to Acid House pioneer DJ Pierre.[70] In contrast, Roland's drum machines such as the TR-808, TR-909 and the TR-606 all had step sequencers that were more intuitive to program across a 16-step grid. Working with the TB-303 sequencer was different to programming drum rhythms, as it required timing and pitch information to be entered as two separate processes, disconnected from one another, making it awkward to adhere to any predetermined musical sequence (to be discussed in the next section).

[68] Retro Synth Ads, http://retrosynthads.blogspot.com/search/label/tb-303, accessed February 7, 2020.
[69] Matlak and Anwander, *R is For Roland*, 168.
[70] *Pump Up the Volume,* episode 2, directed by Carl Hindmarch, aired November 2001 on UK TV.

As a result, Roland ceased manufacturing the TB-303 less than two years after its release. In the latter part of the 1980s, DJs and young producers in North America started picking up the inexpensive and now discontinued TB-303. This came at a time when the underground dance culture in North America was looking for new music in the shadows of Disco's fall in popularity in the USA and House Music was forming to meet that need.[71] In a sense, the demise of the TB-303 helped to create an entire genre of music, Acid House, and its affordability made it the accidental hero of EDM. One of the first artists to use it was Phuture on "Acid Tracks" in 1987.

Software and hardware that have cloned the TB-303 in various forms since its demise have continued to be produced, and its sound has been a regular feature throughout the development of various EDM genres.[72] In 2016, 30 years after the TB-303 was discontinued, Roland released the TB-03, a TB-303 clone with the same physical and sonic characteristics. Kim Bjørn noted recently that the TB-303 is one of the most cloned instruments (both hardware and software) in electronic-music history.[73] Much as Rock 'n' Roll owes its existence to the electric guitar, EDM found its 'electric guitar' in the form of the TB-303.[74]

Figure 4. Selected of 303s from my collection

[71] Bidder, *Pump Up the Volume*, 42-44.
[72] Over 60 hardware clones of the 303 have been manufactured since its discontinuation.
[73] Kim Bjørn, *Push Turn Move: Interface Design in Electronic Music* (Frederiksberg, Denmark: Bjooks Media, 2017), 198.
[74] Kempster, *History of House*, 169.

The TB-303 and the sound of Acid fell somewhat out of favour with some producers in the mid-1990s, as they felt that the TB-303 sound had been overused.[75] Paradoxically, this drove the sound of the TB-303 to the peripheries of less-popular EDM styles, such as the more experimental Techno styles, promoting further exploration of the TB-303 sound. The TB-303 did have a renaissance in the late 1990s and early 2000s with popular new EDM genres at the time, such as Trance[76] and Goa,[77] that featured the TB-303 sound.[78] Since then, the TB-303 has become a highly adaptable sound that is used in a variety of different contexts across a breadth of EDM genres, with music-technology manufacturers continuing to create machines that emulate or build upon the original TB-303 design, such as the x0xb0x, Avalon Bassline, Volca Bass, RE-303 and MS-404. In the context of my own work, the TB-303 has been a stable sound of my own compositional practice since the beginning. I began making music because of its immediate sound and quirky sequencer and the way it can be contextualised with just a few drum sounds. The piece *Which Side* (Appendix 2, A) demonstrates an early example of my work using just the TB-303 with the TR-909 drum machine.

1.6.1 How the Roland TB-303 Informs My Practice

The TB-303 sequencer is not intuitive, and is rather difficult to operate; this may have been a contributing factor to its short market life. Traditional musicians struggled to achieve effective musical results with its limited sequencer, and the TB-303 did not resemble the realistic electric bass sound Roland was trying to re-create. Peter Shapiro argues that the TB-303 sound is achievable on other synthesisers, both hardware and software alike.[79] However, it is the sequencer that is often overlooked as a key feature of the device. Most TB-303 clones have effectively captured the sound of the original 303, but until recently they seldom attempted to copy the sequencer.[80] Although limited in comparison to fully featured sequencers, the TB-303 sequencer supplies the repetitive rhythms and pulsations of Acid.

The TB-303 sequencer was designed at a time when the sophistication of the micro-processor had not come to the fore, and sequencers at this time were rather simple in comparison to today's more complex software sequencers. The TB-303 manual is divided

[75] *Modulations,* directed by Iara Lee (New York, NY USA, MVD Visual, 1998), DVD.
[76] This refers to new-age electronic music evolving from German Techno, typically characterised by repeating melodic lines with operatic soaring vocals.
[77] This refers to people who gathered at parties to listen to trance music in the Indian State of Goa.
[78] Josh Doherty, "You Just Have to Move Your Feet: 30 Years of Acid," *Attack Magazine*, April 4, 2014.
[79] Shapiro, "The Roland TB-303 Bass Line."
[80] Roland released a clone of the TB-303 in 2016, named the TB-03, that retained the same interface as the original TB-303, including the original sequencer functionality.

into ‘basic’ and ‘intermediate’ *courses* intended to train the user to operate the sequencer.[81] In an effort to provide a better understanding of how to program the sequencer with respect to Acid, I made a short instructional video for teaching undergraduate students at the Melbourne Conservatorium of Music, University of Melbourne (Appendix 3, A). The video outlines how a sequence on the TB-303 contains only 16 steps and requires pitch information and the timing of notes to be entered as two separate modes. First, the user needs to enter (tap) the pitch information one step at a time. Second, the user must enter the timing of the notes, with the choice of only a semi-quaver, tie or rest. Once events data has been entered in both modes, the sequence can be auditioned. Because the two modes are disconnected from each other and the device gives little visual feedback, gaining precise tonal results is a very awkward process. The paradox of the TB-303 is that whilst the sequencer was terribly limited for the musician for whom it was originally intended, it gave the TB-303 a particular quirkiness that was easily complimented by a drum-machine rhythm and embraced by dance-floor audiences. Ed Upton (DMX Krew) remarked that using the TB-303 to sequence other synths can also make other synths ‘303-ish’,[82] reinforcing the idea that the sequencer has a particular quality that can yield results, in spite of its shortcomings. In the folio work *Dub Techno Jam with Roland System 500, TR-8, TB-03 and SH-01a* (Appendix 1, P), the Roland TB-03 is sequencing the modular synthesiser and the SH-01a.

EDM artist Alexander Robotnick (Maurizio Dami) wrote that ‘writing sequences on the three-o-three is a nightmare, but when you are able to do it, you can have real fun’.[83] At the time of the TB-303’s initial release the limitations of the sequencer were not received well, although when the device was used ‘incorrectly’, surprising new results were achieved.[84] I would argue that these results are achieved by exploring the TB-303 sequencer without a musical genre in mind. Simply playing around with the sequencer by entering random pitches and timing information can yield effective results. The video I produced for *Decoded Magazine* demonstrates how quickly one can randomly program a Roland TB-303 to yield an effective result (Appendix 3, B).

The concept of *play* is described by psychologist Dr. Peter Gray as ‘valuing the results of our actions more so than a prescribed goal or means to an end’.[85] I am always *playing* with the TB-303 sequencer to see what result will come from randomising the pitch and timing data

[81] Roland Corporation, *Bass Line TB-303 Owner’s Manual*, Japan, 1981.
[82] Josh Doherty, “You Just Have to Move Your Feet.”
[83] Matlak and Anwander, *R is For Roland*, 178.
[84] Butler, *Unlocking the Groove*, 68.
[85] Peter Gray, “The Value of Play I: The Definition of Play Gives Insights,” *Psychology Today*, published 19 November 2008, https://www.psychologytoday.com/us/blog/freedom-learn/200811/the-value-play-i-the-definition-play-gives-insights.

input into its sequencer. I do not labour over specific events, but quickly write numerous sequences and randomly select patterns (sequences) during a performance. This is also my approach with other devices in my studio, and serves as an important step when pairing devices and finding devices that complement or contrast with each other (to be discussed further in Chapter 3). There is no prescribed goal to my approach with the TB-303, other than exploring different patterns when the TB-303 is paired with patterns and sequences from other devices.

EDM act Phuture made the seminal Acid work *Acid Tracks* in 1987 by improvising a randomised sequence on the TB-303.[86] They played with the same repetitive sequence, tweaking the filter for a considerable time; eventually that became the basis of the track. This real-time practice follows the lineage of more traditional electronic studio practices, exemplified by Musique Concrète and the San Francisco Tape Center, whose composers embraced the concept of improvisation for electronic instrumentation. Important works like Pauline Oliveros's *Bye Bye Butterfly* (1967) and Eliane Radigue's *Triptych* (1978) demonstrate the exploration of electronic sounds that were achieved through an improvisational approach via specific electronic devices such as tape recorders and Don Buchla's synthesisers. Likewise, the TB-303 leads my practice through an improvisational and play approach to composing (discussed in Chapter 3).

One of the first tracks that helped to establish my role as an Acid producer was *Walk On Acid* (Appendix 2, F). Style wise, the TB-303 sequenced pattern is prominent, and its filter is modulated throughout the track, with its fluctuating filter performance aligning to classic Acid works such as Phuture's *Acid Tracks* (to be discussed in the following chapter). The track is complimented by the TR-909 and TR-808 drum machines that were the common drum sounds for Acid. Whilst not a defining feature of the genre as such, the experimentation and inclusion of the sampled loop from Burt Bacharach's *Walk On By* from 1963, gave the track a certain commercial appeal. This was validated by the finalist nomination it received for an Australian Recording Industry Association (ARIA) award for best dance music release in 1999, along with my international signing to Zomba Records (my professional practice as Honeysmack will be discussed in the next chapter). The track was performed in a single take, all improvised live and recorded straight to tape with no software arrangement or post-production. It also aligned to the aesthetic of early Acid tracks (to be discussed in the next chapter).

[86] *Pump Up the Volume,* episode 2.

1.7 An Introduction to My Practice

My practice as an EDM artist began soon after I completed my undergraduate degree in Media Arts at Royal Melbourne Institute of Technology University in 1990, where I studied media arts (film and sound design). This was a time when EDM culture and sound were being formed, as Kembrew McLeod extensively discusses.[87] Coming from a punk background in my later teens, I enjoyed experimental rock, electronic music and Disco, and early EDM. By the late 1980s my musical interests were focused on various forms of electronic music and, more broadly, music that was outside of mainstream popular culture.

In particular, I felt that Acid House and Rave subcultures seemed to merge the styles, genres and philosophies to which I was drawn. My undergraduate degree introduced me to music-studio practices and electronic music-making, and I began experimenting with different electronic devices. I soon realised that music technologies such as the synthesiser, sequencer and digital sampler gave me the ability to make music without having any formal traditional music training.

During my undergraduate studies I was introduced to Melbourne artists such as Philip Brophy and Philip Samartzis, who inspired and taught me, and with whom I would go on to collaborate on later projects.[88] As my practice developed in the early 1990s, I was also influenced by my peers and stimulated by the community of other EDM producers and DJs. People such as Voiteck Andersen, Adam Raisbeck and Scott Armstrong were early collaborators, and the *Smelly Records Compilation* album (Appendix 2, O) features work I co-wrote with them all. Josh Abrahams was a friend and collaborator, and we performed live together on numerous occasions through the 1990s. There was also a close-knit community of DJs such as Jason Rudeboy, Mad Rod and H20, with whom I also collaborated on various projects, including radio shows (Acid Agency) and live performances throughout the 1990s.[89] Rudeboy, Mad Rod and H20 ran the enduring Techno club called Club Filter at The Lounge, where I became a regular live performer early in my career.

Since then, I have made a professional career as a live EDM performer and producer under the name *Honeysmack*, performing with music technology; I have focused primarily on hardware over software as I enjoy the physicality of interacting with a tangible instrument. To

[87] McLeod, "Genres, Subgenres, Sub-subgenres and More," 60.
[88] Phil Brophy was one of my supervisors across this PhD study.
[89] Rudeboy, Mad Rod and H20 ran the enduring Techno club called Club Filter, where I became a regular live performer early in my career.

date, I have performed at major music festivals and published hundreds of original compositions. My career has spanned almost 30 years, and I continue to perform and publish music commercially as Honeysmack. I will discuss my professional practice and journey as Honeysmack in the following chapter.

I have been incorrectly referred to as a DJ throughout my career as Honeysmack. Whilst I have DJed occasionally with spots on radio (KissFM in the late 1990s) and as part of projects such as Acid Jacks (2004-2009), the focus of my practice is creating and performing original music. The following section will clarify how my practice differs from DJing.

1.7.1 How My Practice Differs from DJing

The term 'DJ' (disc jockey) has become synonymous with EDM. Today it has become a common label for the auteur of all EDM as deriving from the DJ.[90] The DJ was originally (during pre-war Europe) someone who played back recorded music, somewhat of a human jukebox, and eventually played records on radio and in club environments.[91] As the evolution of music and DJ technologies have accelerated beginning in the1980s, DJing has shifted from indicating a person who would play back music on vinyl records to someone who can now construct (and deconstruct) new works from pre-recorded digital files whilst maintaining the pulse for dance-floor audiences.

Ulf Poschardt describes a DJ as someone who 'organizes material that has already been created and builds artworks into a new whole. He is a second-level artist'.[92] Whilst I have a history of DJing records in the past,[93] the work produced here is not that of a DJ, and I will expand upon this in Chapter 3. Whilst DJs have a greater capacity to manipulate pre-recorded material as part of their performance, for the purposes of this research, I will categorise the practice of DJing as requiring a selection of pre-recorded or prepared musical content for the DJ to perform. In contrast, my practice creates new original works by combining studio- and performance-based practices through manipulating an array of electronic instruments and devices in real time. The DJ can easily recall pre-recorded material for each performance and mimic previous performances via the same track selection and processes, whereas my performances are unique, as there is almost no capacity to recall or recreate previous work due to the limitations of the devices I use and the

[90] Bernardo Attias, Anna Gavanas, and Hillegonda Rietveld, eds., *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music* (London: Bloomsbury Publishing, 2013).
[91] Bill Brewster and Frank Broughton, *Last Night a DJ Saved My Life: The History of the Disc Jockey* (London: Headline Publishing Group, 1999), 50-53.
[92] Ulf Poschardt, *DJ-Culture* (London: Quartet Books, 1998), 16-17.
[93] My experiences DJing include the 'Acid Jacks' project with Antonio Celestino from 2004 to 2009.

fact that I assemble a unique studio-instrument for every work; I will discuss this further in Chapter 3.

DJs have a library of pre-recorded music they can quickly access during a performance, making relatively swift changes to the track that the audience is hearing. They do this in an effort to contrast and/or complement the overall group of tracks that make up their DJ set. The equipment the DJ uses is largely focused on providing continuous playback, as the DJ's primary focus is to maintain the dance floor throughout the duration of a set. In a sense, my performance practice also requires me to maintain the dance floor, although my performance has me composing entirely new works through an improvisational approach using on a unique instrument I assemble for every performance. DJs might make variations to tracks (remixes) on the fly during a performance that will be recognisable by the audience, whereas I create and perform new material for every performance. I do not recall prepared patches or other saved material as many of my devices do not have memory capabilities, such as the modular synth, and I do not take patch notes. This approach also promotes a large degree of risk and happy accidents and forces me to be in the moment. As a result, the creation of new material evolves in real-time and these creations cannot be recalled, making each performance unique and in contrast to the DJ set. In addition, my approach has to adapt for every studio-instrument configuration that is always in a state of flux, unlike DJs who tend to work with the same equipment configuration.

Some actions are common to DJing and my practice, such as mixing and blending of sounds from various sources is common, although (as previously discussed) DJs access sounds as pre-organised phrases, such as pre-recorded material from vinyl or digital files. I also have the capacity to recall predetermined phrases from a sequencer; however, I have the added flexibility to manipulate the material further, as I have immediate access to a device that is the source of the raw sound, phrase or sequence at my disposal.

EDM practices often conflate the DJ and composer because EDM is generally presented by solitary performers behind a DJ mixer in nightclubs and other similar live dance music venues and spaces. Butler discusses at length how DJs select and play back recorded music, blending different recorded material to form unique performances. DJs require facilities such as playback devices and a mixer to help shape, blend and mix.[94] Butler explains that this blending approach saw the DJ evolve from 'mere presenter to creator'.[95]

[94] Poschardt, *DJ-Culture*, 354-359
[95] Butler, *Unlocking the Groove*, 51-59.

Whilst the sound resulting from a DJ and a live EDM artist may have similar qualities, the approach, process and outcomes are very different. The practice of DJing relies substantially on the pre-recorded and prepared material in order to perform. As a result of the pre-prepared material DJs are able to replicate their outcomes for each performance as they can easily recall recordings (or part thereof) for every performance. Each one of my live performances are unique because each performance is conducted with a different permutation of my studio-instrument. I do not recall prepared patches or other saved material as many of my devices do not have memory capabilities, such as the modular synth, and I do not take patch notes. This approach also promotes a large degree of risk and happy accidents and forces me to be in the moment. As a result, the creation of new material evolves in real-time and these creations cannot be recalled, making each performance unique and in contrast to the DJ set. In addition, my approach has to adapt for every studio-instrument configuration that is always in a state of flux, unlike DJs who tend to work with the same equipment configuration.

When performing live in front of audiences in spaces such as nightclubs, I will avoid performing on stage or in the DJ booth. Rather, I request that I am positioned on the dance floor and perform with people dancing around me. While this might seem risky in terms of having my studio-instrument amongst people drinking and dancing, it helps to reinforce that I am not DJing and that I am actually performing live and improvising in the moment. Performing on a stage or in a DJ booth disconnects what I do from the audience. The liveliness of my performance is best experienced up close and makes it entertaining for me as I can interact with the audience more freely and effectively by being on the same level. When audiences see my studio-instrument, they can immediately see and hear the results of my actions, which is a different experience to seeing a DJ.

Figure 5. Performing live on the dance floor at New Guernica, Melbourne, 2019 [96]

Whilst DJs today use a variety of music hardware, it is also common practice for them to incorporate laptops with digital audio workstation (DAW) software such as Ableton Live or Serato, providing them with the means to play pre-organised material and craft seamless transitions between different pieces of music.[97] My compositional practice is in contrast to DJs in this regards, as I only use a computer and software as a means to record and capture my work when working in my larger home studio. I do not use a computer as a performance or compositional tool; rather, it is used as a rudimentary audio capturing device, analogous to a tape recorder. My work is composed in real time as one contiguous performance using a variety of electronic devices (my studio-instrument), with a focus on combining music and audio production techniques and processes to create new original works. As I have a long and diverse history as an EDM practitioner, my music practice is focused on how studio production approaches inform my work in contrast to DJing. This would position me as an 'auteur', according to concepts discussed by Moorefield.[98]

[96] Photo courtesy of Melbourne Techno Collective.
[97] Mark Jonathan Butler, *Playing with Something that Runs: Technology, Improvisation, and Composition in DJ and Laptop Performance* (Oxford: Oxford University Press, 2014).
[98] Virgil Moorefield, *The Producer as Composer: Shaping the Sounds of Popular Music* (Cambridge, MA: MIT Press, 2010).

1.7.2 Producer as Composer

The role of the music producer has changed with the evolution of music and audio technologies, as Paul White discusses in his introduction to *The Producer's Manual*.[99] Multitrack recording from the 1960s onward paved the way for the type of music producer practising today. Prior to multitrack recording, there were multiple distinct studio roles, from different engineers who managed the recording and audio mixing processes, to the music arranger and producer who oversaw and directed the entire process. Today the music producer is a 'multi-faceted individual who often has to wear several hats, including those of arranger and creative ideas generator', as White notes.[100] The development of digital music and audio technologies have provided, and continue to provide, wider access to once segregated roles and practices in the music studio. Today's music producer, regardless of genre, needs to understand 'what is possible in the studio – even if they aren't an experienced engineer'.[101]

Moorefield tracks the philosophy and technique of the music producer and how it has transformed from a technical practice, like that of an engineer, to the practice of an artist and creative 'auteur'. In his book *The Producer as Composer*, he discusses the history of popular music through notable producers such as Phil Spector, George Martin and Brian Eno, who expanded the concept of music producer through their work. Moorefield, in his discussion of Eno, states that 'the producer is the director of the aural movie. He has become the composer of the music: in this situation, he is not organizing and performances of others; he is himself the artist'.[102] His discussion also coincides with the underlying technological advancements and dissemination of music and audio technologies throughout the second half of the 21st century. Where once the aim of recorded music was to provide 'replication or illusion of the concert hall or live setting', popular music changed this concept, and music production became a creative expression of the producer.[103]

My compositional practice similarly builds on the legacy of early electronic studio practices and those of Brian Eno. I am an artist whose instrument *is* the recording studio, which is in alignment with the techniques popularised by Eno. I deliberately use the word *popularised*

[99] Paul White, *The Producer's Manual: All You Need to Get Pro Recordings and Mixes in the Project Studio*, 4th edition (Carnforth, UK: Jake Island Ltd, 2018).
[100] White, *The Producer's Manual*, 16.
[101] White, *The Producer's Manual*,16.
[102] Moorefield, *The Producer as Composer*, 55.
[103] Moorefield, *The Producer as Composer*, xiii-xv.

here because many composers before Eno were also working in this way, but he used the studio-as-instrument practice in his popular-music productions.

Furthermore, Moorefield aligns his observations of Eno's in-studio composition practice and labels the concept of composing with the studio environment as a 'meta-instrument'.

> …the recording studio is effectively a meta-instrument, a way to shape entire compositions. It is score and orchestra rolled into one. Before Eno, pop's sound effects and various delays and distortions were arrangement devices built around what were essentially still songs in the tradition of Tin Pan Alley and the Brill Building songwriters.[104]

Equally, my practice positions the studio as the tool to create and shape my compositions. As I have different permutations of my studio-instrument, my considerations in the tactile assemblage of my instrument are the same as those of a traditional composer who writes a score to provide directions to musicians as to how and what to perform. Additionally, I rely on my understanding of what is expected in an Acid track to help guide the composition.

1.8 Chapter Summary

In this chapter I introduced my practice and described the key terms and frameworks used throughout. This chapter has also provided a historic overview of EDM, including the genre of Acid, and provided a detailed description of the defining Acid instrument – the Roland TB-303 synthesiser – and its impact on Acid and how it informs my practice. The rationale for the research and an explanation of my practice-led methodology provide the foundation to analyse my work in the following chapters.

Chapter 2 will situate my practice in the field of EDM and Acid by discussing the existing literature on Acid and the influence of different practitioners on my practice, both predecessors and contemporaries. The discussion of different practitioners and their work will also provide a chronology of Acid from pre-Acid and Para-Acid styles to contemporary works that extend the style and sound of Acid. Chapter 2 will also discuss my professional practice as the artist Honeysmack.

Chapter 3 will contextualise and examine my compositional practice through the different concepts and tools that make up my studio-instrument and live-instrument. This chapter will

[104] Moorefield, *The Producer as Composer*, 54.

also examine my studio-based practice and approach to composition and how I assemble and approach my studio-instrument. It will also examine my choice of music and audio technologies within the studio environment and how I make use of them. The later part of this chapter will examine how I compose with my studio-instrument through to my performance practice. It will discuss my interaction process and real-time relationship between my studio-instrument and myself, including how risk and happy accidents inform my work.

Chapter 4 will summarise my research and review how I have engaged with, and been able to extend upon, the genre and sound of Acid, including an overview of my compositional approach.

Chapter 2: SITUATING MY PRACTICE

Since the inception of EDM, its styles, genres and sub-genres have continued to evolve at an increasingly rapid pace, led by commercial interests, advancements in technology and the changing landscape of youth and popular culture.[105] Furthermore, affordable technology and other cultural factors, such as the way in which recorded music is consumed, continue to evolve.[106] How people interact, engage and discuss music continues to expand and further diversify as technology evolves and provides new ways to access and interact with music. Robert Strachan labels this as the 'democratization of practice, distribution and promotion'.[107] This chapter of my exegesis will contextualise a small part of this continued evolution with a focus on Acid and how its practice and approach can be extended within the commercial forces of EDM practices more broadly.

2.1 Existing Literature on Acid

Acid as an EDM genre is normally discussed as a component of Techno, and rarely given detailed focus in its own right.[108] The literature discussing Acid focuses on the sounds of the instruments, rather than the compositional methods I will be outlining in this research. Outside of academia, online forums and websites provide an important discourse on Acid; examples include music technology blogs such as *Matrixsynth*[109] and music-culture publications such as *Resident Advisor*[110]*, The Quietus*[111]*, Fact Magazine*[112] and *The Wire.*[113] The online EDM magazine *Attack*[114] offers insight into various EDM genres with some rudimentary compositional tutorials. *Attack* also offers music-technology reviews with an array of interviews and articles on contemporary EDM styles and artists. In general, these websites tend to cater to wider EDM interests. The occasional interviews with musicians offer some insight into their compositional approach, which is helpful, although analysing and referencing their works provides further insight into how the works may have been composed.

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[105] Kembrew, "Genres, Subgenres, Sub-subgenres and More," 59-75.
[106] More information is contained in texts such as David Kusek and Gerd Leonhard, *The Future of Music: Manifesto for the Digital Music Revolution.* Edited by Susan Gedutis Lindsay (Boston, MA: Berklee Press, 2005).
[107] Robert Strachan, *Sonic Technologies: Popular Music, Digital Culture and the Creative Process* (London: Bloomsbury Publishing, 2017), 127.
[108] Techno is a broad genre of EDM with many micro-genre variants that have emerged since the late 1980s.
[109] *Matrixsynth*, viewed 8 January 2015, http://www.matrixsynth.com
[110] *Resident Advisor,* accessed 14 January 2021, http://www.ra.co.
[111] *The Quietus,* accessed 15 January 2015, http://thequietus.com.
[112] *Fact,* accessed 14 January 2015, http://www.factmag.com.
[113] *The Wire,* accessed 14 January 2015, http://www.thewire.co.uk.
[114] *Attack,* accessed 8 January 2015, http://www.attackmagazine.com.

A growing amount of literature explores the cultural aspects of Rave and the broader EDM culture in Europe and North America. These include *A State of Ecstasy, The True Story of Acid House* by Bainbridge, *Counter Culture Through The Ages* by Goffman and Joy, *Altered State* and *Rave On* by Collin, with each providing insights to the histories of EDM culture specific to geographical places, and covering youth culture and related hedonistic lifestyles including club (nightclub) culture. These books offer robust analyses of the socio-cultural aspects of EDM, although they do not discuss the creative practices of related artists. Many of these texts and their authors position EDM as the soundtrack or sonic landscape to their cultural and sociological discussions, such as Simon Reynolds's *Generation Ecstasy*, in which the author provides an extensive discography of music to support each section of his book. Other authors also acknowledge the importance of the music of the time and their works are strong examples of cultural writings that include some limited insight into Acid. While they focus on the histories and impact of EDM culture and do not explore or discuss particular EDM compositional practices, they remain important and relevant texts.

Prior to *Generation Ecstasy*, Reynolds's book *Energy Flash* was one of the first texts to discuss Acid House as a genre, but is not entirely dedicated to Acid itself.[115] Reynolds discusses the critical history of Rave culture and the journey of early EDM beginning in the 1980s from Chicago House and Detroit Techno to Acid House, and through to early 1990s styles including Jungle, Trance, Trip Hop and more. Acid House is just one of the many genres he discusses in his cultural chronology of EDM, acknowledging the importance of the Roland TB-303 synthesiser in the section titled *Everyone Needs a 303.*[116] Although there is some rudimentary discussion on how the TB-303 was used, the text is not focused on compositional practices. It is interesting to note that the updated cover artwork on the newer edition (2013) includes a photo of the TB-303 synthesiser; I would argue that this reinforces Reynolds's acknowledgment of the impact the TB-303 has had on EDM practices since the book was first published 15 years before.

Published in the same year as *Energy Flash*, Eshun's *More Brilliant Than The Sun*[117] dedicates a short section to an exploration of the sonic qualities and impact that the TB-303 had on Acid. Eshun also discusses the impact of other important music technologies, such as the Roland drum machines, which were manufactured at the same time as the TB-303. He discusses how the Roland TR-808 gave Hip Hop and other EDM styles their futuristic

[115] Simon Reynolds, *Energy Flash, a Journey Through Rave Music and Dance Culture* (London: Picador, 1998).
[116] Reynolds, *Energy Flash,* 24-27.
[117] Eshun, *More Brilliant Than The Sun*, 95

sound and approach with an Afrofuturist[118] perspective. Both Reynolds and Eshun touch on aspects of the genre of Acid and its impact at the time by connecting the sound to the EDM culture; however, they do not provide details of Acid's compositional approach. Both authors acknowledge the impact of Phuture's track *Acid Tracks* as the seminal work that gave birth to the Acid genre. The following review of the artists and their work in this chapter provides further insight to the compositional approaches used to create Acid, and how they inspire and inform my practice.

2.2 Influence of Individual Practitioners: Predecessors and Contemporaries

The following section discusses a selection of specific artists whose studio- and performance-based practices have inspired my practice. This will simultaneously track the genealogy of Acid as an EDM genre[119] whilst demonstrating how diverse the genre of Acid is, and how varied it continues to be. The genre of Acid coincides with the repurposing of the Roland TB-303, and the EDM piece *Acid Tracks* by Phuture (1987) is considered the first work in the genre.[120] Some of the works and artists discussed predate Acid as a genre of EDM and the creation of the Roland TB-303, and are included to illustrate the evolution of the genre and my involvement in it. The following is divided into four chronological, stylistic sections: (1) Para-Acid; (2) Acid Inception; (3) Acid Professionalism;[121] and (4) Acid Now.

2.2.1 Para-Acid

Each piece in the following selection of five different artists and their works predates the genre of Acid, yet they all demonstrate the studio-led approach that provided a foundation for others to build an Acid aesthetic. There is a common real-time compositional approach to their practice and how they interact with and allow their electronic instrumentation to guide their work. The following section discusses what I have labelled Para-Acid artists: (1) Morton Subotnick, b.1933 USA; (2) Timmy Thomas, b.1944 USA; (3) Cluster, Germany; (4) Ryuichi Sakamoto, b.1952 Japan and the Yellow Magic Orchestra, Japan; and (5) Charanjit Singh, b.1940 India.

[118] First propounded by Jazz/Electronic musician Sun Ra in the 1950s and since explored by many artists and writers, Afrofuturism is a cultural aesthetic combining (but not exclusive to) elements of science fiction, fantasy, magic and non-Western spiritualties in an effort to critique the struggle of people of colour in the past, present and future. http://afrofuturism.net/, accessed January 8, 2015.
[119] Kempster, *History of House*, 166-169.
[120] Doherty, "You Just Have to Move Your Feet."
[121] Shapiro, "The Roland TB-303 Bass Line."

2.2.1.1 Morton Subotnick

Morton Subotnick was a key member of The San Francisco Tape Music Center, and his work with Ramón Sender and Don Buchla 'helped define the very nature of analogue synthesisers in the 1960s'.[122] Subotnick received money from the Rockefeller Foundation to fund Buchla's idea of building a voltage-controlled modular synthesiser system and soon received a commission from the record label Nonesuch to compose the work *Silver Apples of the Moon* (1967) within a 13-month timeframe. Subotnick noted that the work 'had to be conceived for the [recorded] medium, without [traditional] instruments…it had to be something that I liked and wanted to hear again, and the experience had to be kind of a trip'.[123] *Silver Apples of the Moon*, performed and composed entirely on the Buchla Box (modular synthesiser), was the 'first commissioned long-play album of electronic music'.[124] Subotnick's work was a focused, studio-based piece with a synthesiser that was custom-designed for a real-time compositional approach, and Subotnick would spend up to 10 hours a day crafting the sounds. His interactions with this new technology engaged new ideas for electronic instrumentation and performance, supported by Don Buchla's synthesiser design.

This was a time during the height of the counter-culture in San Francisco during the 1960s when illicit drugs such as LSD were commonplace.[125] *Silver Apples of the Moon* feels very psychedelic, although Subotnick did not use drugs.[126] Alfred Hickling describes the work as 'full of profound, synthetic sighs, like a robot in despair; then in the second half, something extraordinary happens – the music suddenly develops a pulse and climaxes in the frenzied hammering of proto-club rhythms'.[127]

Silver Apples of the Moon is a cacophony of complex rhythms, pulses, tones and timbres all made possible by using multiple sequences on the Buchla Box, which allowed Subotnick to control the synthesiser to produce unique results. Buchla's sequencer design challenged traditional music practices by replacing the organ-style keyboard interface with a pressure-

[122] Théberge, *Any Sound You Can Imagine,* 52.
[123] Holmes, *Electronic and Experimental Music*, 148.
[124] Holmes, *Electronic and Experimental Music*, 255.
[125] The cultural parallel to the advent of Acid House in the UK in the late 1980s is well-documented in Reynolds, *Energy Flash*.
[126] Alfred Hickling, "Morton Subotnick's Silver Apples of the Moon: 'It blew my mind!'," *The Guardian*, published 7 March 2014, https://www.theguardian.com/culture/australia-culture-blog/2014/mar/07/morton-subotnick-silver-apples-of-moon.
[127] Hickling, "Morton Subotnick's Silver Apples of the Moon".

sensitive, touch-controlled voltage source.[128] Subotnick's artistic vision, what he termed 'music as art studio', links into my origins in visual-art practices.[129] The studio provided Subotnick with a palette of different sound sources and processes, similar to the way a visual artist uses different mediums within their studio to create their work. The work *Buchla Easel Techno* (Appendix 1, KK) demonstrates how I incorporate the Buchla Music Easel into my work, whist maintaining the spirit of Techno.

2.2.1.2 Timmy Thomas

Funk, Soul and Disco musician and producer Timmy Thomas began as a session musician for TK Records, an important Disco record label from the 1970s based in Florida, USA. His work is distinguished by minimal instrumentation and 'stripped-down production qualities'.[130] For example, on his track *Funky Me* (1972), Thomas is improvising on an electronic organ with accompaniment from the organ's built-in drum machine. Thomas's work here is in contrast to what were typically more-elaborate arrangements that appeared in multi-performer and commercial studio productions of Disco found on the same label at the same time.

Funky Me does not demonstrate an immediate Disco aesthetic; its focus is on the repetition of the mechanical beat in conjunction with the funky organ keyboard performance that continually reinforces the pulse throughout the track. It demonstrates how a single musician can interact with a pre-programmed rhythm machine to drive the composition and performance. It contains no vocal or other instrumentation and feels like a live improvised performance led by a machine; it can be hard to separate Thomas from his machine. The piece *Techno: 909 + MachineDrum + Sherman Filterbank* (Appendix 1, Q) demonstrates how the cacophony of drum sounds and beats drives the track led by the two different drum machines. Here I continuously make timbral changes to each drum machine, which make my interactions feel as though they are generated by the machines, rather than resulting from my actions.

[128] Mark Vail, "Alternative Controllers: Part 1 from The Synthesizer by Mark Vail', The MIDI Association, published 7 January 2016, https://www.midi.org/articles-old/alternative-controllers-part-1-from-the-synthesizer-by-mark-vail.
[129] David Bernstein, *The San Francisco Tape Music Center: 1960s Counterculture and the Avant-Garde* (Berkeley: University of California Press, 2008), 112-116.
[130] Steven McDonald, "Timmy Thomas Artist Biography," AllMusic, accessed January 9, 2015, http://www.allmusic.com/artist/timmy-thomas-mn0000603195/biography.

2.2.1.3 Cluster

'Krautrock' is a genre of experimental Rock developed in Germany from the late 1960s, controversially labelled by the 'war mad English', in Ben Whalley's documentary.[131] More appropriately called 'Kosmische Musik' ('Cosmic Music'), the genre was born out of Germany's youth culture, with artists wanting to distance themselves from the Blues-influenced Rock music from the UK and USA at the time.[132] The genre incorporated elements of electronic music with the notable use of synthesisers and other electronic practices through to progressive and psychedelic Rock idioms. A number of texts from Sicko,[133] Kirn,[134] Reynolds,[135] Whalley,[136] Kotsopoulos,[137] Pendergast[138] and Moorefield[139] discuss the influence of Kosmische Musik[140] on contemporary EDM.

Kraftwerk is one particular group whose influence on popular music genres such as Disco, Electro (early Hip Hop) and EDM more broadly is well documented. Jim Atkin in *Keyboard* magazine remarked that 'the band's musical idiom and technological devices presaged electronic dance music to come'.[141]

However, the group Cluster had a more direct influence on my own work. The three musicians in the group – Moebius, Roedelius and Plank – experimented with a variety of instruments including organs, different types of guitar and effect pedals, sound generators, cello, violin, slide guitar and tape delays. 'Cluster sonically abused their studio and instrumentation to create abstract recordings, which sounded more like industrial machines working in a factory.'[142] Cluster cite Russolo's *The Art of Noise*, Varese's concept of 'organized sound' and John Cage's experiments as key influences.[143] In Ben Whalley's BBC documentary on Krautrock, Cluster's music is characterised as having de-emphasised

[131] Ben Whalley, "Krautrock: The Rebirth of Germany," BBC Documentary, UK, 2010.
[132] Ibid
[133] Sicko, *Techno Rebels.*
[134] Peter Kim, ed., *Keyboard Presents the Evolution of Electronic Dance Music* (Lanham, MD: Backbeat Books, 2011).
[135] Reynolds, *Energy Flash*.
[136] Whalley, "Krautrock."
[137] Nikolaos Kotsopoulos, ed., *Krautrock: Cosmic Rock and its Legacy* (London: Black Dog, 2009).
[138] Mark J. Prendergast, *The Ambient Century: From Mahler to Trance: The Evolution of Sound in the Electronic Age* (New York: Bloomsbury, 2000).
[139] Moorefield, *The Producer as Composer*.
[140] Also known as 'Elektronische Musik' (translated to 'Electronic music' from German).
[141] Peter Kirn, ed., *Keyboard Presents the Evolution of EDM* (Lanham, MD: Backbeat Books, 2011), 3.
[142] Kotsopoulos, *Krautrock*.
[143] Nick Collins, Nicholas Collins, Margaret Schedel, and Scott Wilson, *Electronic Music* (Cambridge: Cambridge University Press, 2013), 14-20.

melodic and harmonic structure, providing a focus on free-form noise and sound (and Jazz) that was also inspired by the practices of Musique Concrète.[144]

Cluster created new musical possibilities with their improvised electronic manipulations, as there were no predetermined notes, pitch or rhythm. The melodic or tonal elements were produced by the manipulation of their instruments and devices, and through the way they allowed the sounds from various machines to evolve of their own accord. Throughout the first track, *15:*33 (originally released on Philips in 1971), a rise and fall of electronic pulses act as a counterpoint against the additional washes of textual electronic noises, with the sounds of the instruments verging on the unrecognisable. At times the timbres are distorted and dense, yet they provide space for more delicate, sparse and brittle sounds, establishing contrast in both space and texture. From droning noise to pulsing industrial tones, Cluster display a rich cacophony of sounds that disregard tonal qualities or the reverence for sounding like traditional instrumentation. They explore texture and space through an improvised approach on various electronic instrumentation and sounds.

The tracks on the album are quite long, a quality reflected in other Kosmische Musik tracks, with durations of approximately 15-20 minutes, allowing the musicians to tease out the textual qualities and sonic possibilities of their studio-instruments and devices throughout their performance. The long track durations also provide a platform for greater experimentation and exploration of timbres, permitting the different sounds to develop gradually over time.

Cluster performed with electronic instruments and devices, but they did not use any synthesisers. Moebius and Roedelius were both performing on 'consumer type electric organs'.[145] Taking a non-traditional musical approach gave Cluster the freedom to manipulate these instruments to create synthetic, foreign and unrecognisable timbres and textures, even though the instruments were recognisable, such as the popular home organ.

My practice embraces experimentation with electronic sounds and processes throughout my work. Cluster were exploiting their studio-instrument in an effort to make abstract sounds/tones. Their lively, machine-driven performance inspires my own aesthetic, created through an improvised exploration of dense layers of sounds. The folio piece *Sticky Machine Improvisation* (Appendix 1, R) demonstrates a thick layering of modular synthesiser sounds

[144] Whalley "Krautrock."
[145] Stephen Iliffe, "Cluster '71" Audio CD (*Water* liner notes), 2005.

and spatial effects all improvised live, creating a bouillabaisse of abstract electronic sounds and tones.

Michael Rother from the group NEU!, another important German musician at the time, joined Cluster briefly in 1973 to form a supergroup called Harmonia, which produced works of similar 'oscillating rhythms and "cosmic" music', according to Prendergast.[146] Their album *Musik von Harmonia* (Brain 1974) is an important work that should be acknowledged as a contributor to the evolution of Acid, given the group's electronic, studio-based and improvisational approach to composition. Harmonia, I would argue, reside somewhere between Cluster and Kraftwerk: their focus on new electronic sounds and the particular space they create align to Cluster's aesthetic, whilst the relentless ostinato 4/4 beat (also referred to as 'motorik')[147] and repetitious pulse and more melodic output aligns to Kraftwerk's popular appeal. As with Acid, an experiential practice of sound and timbre is reined in by the beat of the drum machine and repetitious nature of EDM that somewhat appeals to popular music tastes. This work builds on the previous Kosmische Musik artists, such as Cluster, but uses a more stated rhythm, bringing it closer to an EDM aesthetic. *Musik von Harmonia* has all the density and cacophony of electronic sounds that dance around the drum rhythms with a bubbling fluidity, demonstrating an Acid aesthetic.

2.2.1.4 Ryuichi Sakamoto

Japanese electronic group Yellow Magic Orchestra (YMO), led by Oscar-winning[148] composer Ryuichi Sakamoto, are considered pioneers of contemporary electronic music employing synthesisers, sequencers, samplers and drum machines.[149] Sakamoto was a classically trained composer who also experimented with electronic music at the Tokyo National University of Fine Arts. Mark Prendergast notes that Sakamoto's talent resides in his ability to 'absorb the best of Western music and combine it with East Asian sounds and structures'.[150] His practice values the experimentation of sound and styles whilst also transcending traditional music practices. The influence of a number of musicians and bands from The Beatles to Steve Reich, Brian Eno, Debussy and Kraftwerk,[151] can be heard across the works of YMO.

[146] Mark Prendergrast, *The Ambient Century*, (London: Bloomsbury, 2003), 294.
[147] Ulrich Adelt, *Krautrock: German Music in the Seventies* (Ann Arbor: University of Michigan Press, 2016), 18.
[148] Sakamoto won the Best Original Score in 1987 for *The Last Emperor.*
[149] Takehito Shimazu, "The History of Electronic and Computer Music in Japan: Significant Composers and Their Works," *Leonardo Music Journal* (1994): 102-106.
[150] Prendergrast, *The Ambient Century*, 348.
[151] Prendergrast, *The Ambient Century*, 348.

In particular, YMO's self-titled album from 1978 demonstrates a clash of abstract sounds mixed with what sounds like a shakuhachi, arranged and composed electronically. I contend that this has an Acid aesthetic, especially the first track *Computer Game,* due to the abrasive 303-type sound and a sequence that feels loose and improvised. The track is a bizarre soundtrack of angry, primitive electronic arcade games that simulate machine-gun lasers with out-of-space explosions sounds, all to a four-to-the-floor rhythm. These sounds came from mass-produced electronic instruments that were being rapidly developed by Japanese manufacturers.

YMO were fortunate during the 1970s to have immediate access to new electronic instruments from manufacturers like Korg, Yamaha and Roland. This significantly contributed to YMO's musical identity, firmly establishing them as an important electronic act. In particular, their track *1000 Knives* from their 1981 album *BGM*[152] was the first commercially released track to feature the fully programmable Roland TR-808 drum machine. The TR-808 went on to be the most used drum machine throughout Hip Hop and EDM styles, and in an interview with YMO, Lewis suggests that 'YMO may have invented Hip-Hop too'.[153] It is significant that many of the instruments used by YMO have since become commonplace instruments (and sounds) of the Acid and EDM genres, and are still revered by EDM artists today. When I began listening to YMO, their focus on electronic instrumentation was somewhat of a novelty for me, but as I listened more closely, I heard sounds that were completely foreign to me. There was a quirkiness to how their sounds interacted with the rhythm and pulse of their music; it was Disco, but without real or traditional instrumentation. The live performance *808 Electro Live Jam for 8.08 Day* (Appendix 1, S) features the TR-808 as a focused drum machine sound throughout the performance.

[152] Abbreviation for 'background music'.
[153] John Lewis, "Back to the Future," *The Guardian,* published 3 July 2008, http://www.theguardian.com/music/2008/jul/04/electronicmusic.filmandmusic11.

Figure 6. Roland TR-808 Rhythm Composer[154]

2.2.1.5 Charanjit Singh

Ten Ragas to a Disco Beat was originally recorded in 1982, rediscovered in 2002 and reissued in 2010. The original release was not a commercial success, but has since become revered by the popular-music press as predating Acid House music through Indian composer Charanjit Singh's focused use of the TB-303. A 2010 interview Singh makes it apparent that he was unaware of Western EDM.[155] Stuart Aitken discusses this further:

> While Ten Ragas is not the only pre-acid house record to use the 303, it's perhaps the only one that sounds like it should have influenced acid house (impossible, given that the musicians credited with giving shape to the genre could never have heard the album at the time).[156]

Although not directly influencing my practice in terms of musical expression, Charanjit Singh's work on his album *Ten Ragas To A Disco Beat* is significant in relation to this research, given the specific instrumentation with which he composed on this album. *Ten Ragas to a Disco Beat* predates Acid by five years, yet the album was completely composed

[154] Photo by Brandon Danielderivative, CC BY-SA 2.0, https://commons.wikimedia.org/w/index.php?curid=33527250.
[155] Rana Ghose, *Charanjit Singh: 2010,* November 30, 2010, viewed 27 December 2014. https://youtu.be/tT64B6vs9Mc.
[156] Stuart Aitken, "Charanjit Singh on how he invented acid house...by mistake," *The Guardian,* published 10 May 2011, http://www.theguardian.com/music/2011/may/10/charanjit-singh-acid-house-ten-ragas.

on electronic instruments from Roland, which are key to Acid's sonic identity. Singh reinterprets classical Indian Ragas and fuses them with Disco and electronic music using three instruments from Roland: the TR-808 drum machine, the Jupiter 8 keyboard synthesiser and the TB-303, which he used soon after Roland released them. My research aligns to Singh because we have a shared group of focused sounds created on similar devices, particularly the TB-303 and TR-808, and although Singh's music motivations are different to mine, we both embrace Roland's instruments.

Similar to early EDM DJs in Chicago and Detroit, Singh was inspired by 'the popularity of imported Disco records at the time, which made their way into Bombay's hip cognoscenti'.[157] Singh's motivation to use this newfound technology in an attempt to provide a different version of the classic Indian Ragas is similar to YMO's approach. He chose the Roland instruments because they were new at the time, as he explains to Aitken.[158] In 1981, there was no other programmable drum machine like the Roland TR-808, nor a combined synthesiser and sequencer dedicated to writing bass lines like the TB-303. Singh had to learn these new instruments and overcame the limitations of each device in a relatively short period of time.[159] It was also easier to integrate music technology from the same manufacturer.[160] This method is congruous to how EDM producers use this technology: some of the appeal of these instruments resides in the immediacy of their function and sound.[161] YMO are credited with the first commercial recording of the TR-808 drum machine, and Singh's *Ten Ragas To A Disco Beat* as a recent discovery is being credited as the first commercial recording of the TB-303[162] and the first Acid House work, be it 'by mistake', according to Aitken.[163]

The small selection of artists discussed above who predate Acid demonstrate that Acid has a quality and approach that foreshadowed the arrival of Roland's TB-303. Here I have shown how artists and their interactions with their studio-instrument helped to define a quality of Acid that goes beyond the specific choice of music technologies. The collection of artists discussed come from diverse cultures, further demonstrating that Acid has a quality

[157] Louis Pattison, "Charanjit Singh, acid house pioneer," *The Guardian,* published 9 April 2010, http://www.theguardian.com/music/2010/apr/10/charanjit-singh-acid-house.
[158] Aitken, "Charanjit Singh on how he invented acid house...by mistake."
[159] According to Pattison (2010), the whole album was recorded in two days.
[160] These instruments predate the MIDI specification.
[161] Analogue synthesisers and drum machines tend to have one knob or slider per function, making it easier for the user to manipulate the sound and hear those changes in real time. Many electronic instruments at this time did not have screens or sophisticated software governing their operation.
[162] Pattison, "Charanjit Singh, acid house pioneer."
[163] Aitken, "Charanjit Singh on how he invented acid house...by mistake."

that can transcend location and culture. The discussion of Para-Acid artists and their work has provided the foundational insight as to how Acid as a genre and practice emerged.

2.2.2 Acid Inception

Acid as a genre of EDM was born in 1987 as an offshoot of House Music, as discussed in Section 1.5.2. The signature sound that enabled Acid House to evolve from House was the Roland TB-303: its sound was so distinct and had such an impact on House Music audiences that the new genre seemed to require a different classification: Acid House. The track that gave rise to Acid House was *Acid Tracks* by a group of EDM artists known as Phuture.[164] Eshun describes *Acid Tracks* as:

> …an accident in which the TB303 bass synthesizer uses Phuture to reproduce itself, to multiply the dimensions of electronic sound to open up a nomadology of texturhythms, rhythmelodies…. Nothing you know about the history of music is any help whatsoever. What is this noise and where's it coming from? Brutally inexpressive woodblocks hammer out an unhuman irregularity, relieved by the stabs of basic synth.[165]

The track is widely regarded for generating the name of the genre itself, as Peter Forrest explains: 'in the nine months which followed the release of *Acid Tracks*, over 1000 similar records came out in Chicago alone'.[166] The drug-related connotations stem from the genre's popularity in the UK and the term 'acid' 'was a perfect complement for the increasingly popular rave movement, providing the catalyst for a monumental cultural shift'.[167] Phuture's *Acid Tracks* featured the sound of the TB-303 synthesiser along with the Roland TR-707 drum machine. Their use of the TB-303 on this track was contrary to the intended use of the TB-303.[168] Rather than using it as a basic bass accompaniment, Phuture tweaked the repetitious sequenced synth bassline, modulating the filter and resonance controls to give *movement* to its sound. Sicko describes this *movement* as the 'aural equivalent of liquid mercury'.[169] Tyree Cooper, a producer at the time, commented that 'it's the modulation of the frequencies of the bass line that keeps the track moving'.[170]

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[164] Also known as *Acid Trax.*
[165] Eshun, *More Brilliant than the Sun,* 95.
[166] Kempster, *History of House*, 19.
[167] Sicko, *Techno Rebels,* 105.
[168] The TB-303 was being used much like a drum machine, although its focus was producing bass sounds.
[169] Sicko, *Techno Rebels*, 104.
[170] Tim Lawrence, "Acid, Can You Jack?" Audio CD (Soul Jazz liner notes, 2005), 47. Originally quoted from Melody Maker 1988

Phuture defied the tonal limitations of the TB-303, considering that the device was rather constrained in its features in comparison to other synthesisers at the time. Phuture used the real-time controls of the TB-303 to widely vary the timbres, helping to emphasise and enhance the hypnotic character of the short, repetitive bass line. Phuture's handling of the TB-303's real-time controls enabled them to dramatically change the sound and fluctuate the timbre from a low throbbing synthesiser bass through to a highly resonant and abrasive sound of angry chirping birds. These manipulations were performed with a focus on accentuating the pulse of the track because they were restricted to playing back a stored sequence in the TB-303 sequencer, as they did not have the manual for the TB-303 and they were unable to program an effective melodic sequence.[171]

The movement of the TB-303 sound is a result of the artist responding to the strong hypnotic beat in real-time and modulating the movement of the TB-303 filter to complement the overall pulse of the track. Whilst the notes of the TB-303 sequence are repetitious, the changes in sound are dynamic and don't feel repetitive. Simon Reynolds describes the endless variation on the TB-303 sound on Acid Tracks as somewhere 'between a faecal squelch and neurotic whinny, between the bubbling of volcanic mud and the primordial low-end drone of a didgeridoo'.[172]

My practice is very much inspired by Phuture's focus on the TB-303. Much like Phuture, my programming of the TB-303 sequencer is random. My interactions with the TB-303 are also directly inspired by how Phuture jammed the real-time controls of the TB-303 to keep the track moving. The pulse and rhythm of the sequencer pattern on the TB-303 becomes a key element that is layered with other sounds. The tonal qualities are a lesser concern because I do not program the sequencer with a predetermined scale or series of specific notes. It is not until I pair the TB-303 with other devices and improvise with a series of machines that I can determine if the track is working. Movement is created by improvising the real-time controls on the TB-303 in response to the pulse of the track in real time.

Acid Tracks demonstrated that I didn't need to fully understand or appreciate intricate music rhythms or timings. At the time this approach inspired me even though I have come to develop a much better understanding of the technology. The track strongly demonstrated Theberge's 'democratization'[173] of music technology and the how the TB-303 was a 'very democratic instrument – a novice had just as good chance of producing a usable bassline as

[171] DJ Pierre in an interview about Acid Tracks on *Pump Up the Volume,* episode 1, (UK: Channel 4, 2001).
[172] Reynolds, *Energy Flash,* 25.
[173] Théberge, *Any Sound You Can Imagine*, 215-217.

did an expert musician'.[174] The minimal configuration and immediacy of a TB-303 supported by the TR-909 and TR-808 are demonstrated in the folio piece *303 + 808 + 909 = 2020* (Appendix 1, T).

2.2.3 Acid Professionalism

The EDM genres of House Music and Acid House had evolved into Techno by the early 1990s. Techno employed a more mechanical and industrial aesthetic to its sound, derived from the industrial city of Detroit in the USA. Techno embraced the use of drum machines and synthesisers for a more machine-led aesthetic that helped it distinguish itself from the more soulful Chicago House Music sound. Detroit Techno artist Juan Atkins commented that the first Acid House producers sought to 'distance House Music from Disco and from this Techno evolved'.[175] Overall, Techno sounded like 'a high-tech predominantly instrumental music'.[176] The sound that provided early Techno with its driving mechanical bass pulse and at times abrasive texture was the TB-303. Techno artists used the TB-303 with a predominantly harder biting edge, fuelling Techno's futuristic high-tech aesthetic that was inspired by Detroit's industrial landscape and the artists' love of science-fiction literature and films as forms of escapism.

Jeff Mills is one of Techno's pioneering DJs and artists. Based in Detroit, he was one of the founding members of the seminal Techno outfit Underground Resistance (UR), who brought a 'new aggression' to Detroit Techno.[177] In the early 1990s Mills started his own record label, Axis, and pursued a solo career. Jeff Mills's track *Step To Enchantment* demonstrates the next phase of Acid, which Shapiro labels as the 'Acid Professionalism' phase,[178] during which artists were gaining a better grasp of how to use the TB-303 and bringing the TB-303 under their control more confidently than had their predecessors.

Mills controls the sound of the TB-303 to create a rawness and grittiness that was new to Acid and that helped the genre evolve into Acid Techno. The tempo became faster than Acid House, providing a more machine-like Techno tempo than a funky, soulful House Music pulse. The short track duration, only three and a half minutes, is a little unusual for the time, as longer track durations were more common to EDM genres in an effort to appeal to DJs seeking to seamlessly mix tracks for dance-floor environments.

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[174] Lee, *Modulations*, 193.
[175] Lawrence, "Acid, Can You Jack?".
[176] Thornton, *Club Cultures*, 75.
[177] Lee, *Modulations*, 118.
[178] Shapiro, "The Roland TB-303 Bass Line."

In contrast to Phuture's *Acid Tracks*, which contains two different TB-303 sequences, Mills performs a single repeating TB-303 pattern. The only change to the TB-303 is its timbre. Mills modulates the filter, increasing the resonance and adjusting the amount of accent and decay to the sequenced bass line. He does this as an experienced DJ with an understanding of the dance floor and the intended audience. His performance on the TB-303 provides a dynamic moving timbre that supports pounding TR-909 drum rhythms. The TR-909 is continually looping as the mildly over-driven drum sounds are manipulated in real time. Adjusting each TR-909 drum sound in real time, Mills creates tension by holding back certain drum sounds, such as the ride cymbal and the kick drum, to allow the TB-303 to solo like a barking dog. His actions on the TR-909 are matched by his interactions with the TB-303 filter, with quick changes in the cut-off frequency on the TB-303 and quick volume changes in the individual TR-909 drum sounds. The track explodes with a blanket of white noise from the ride cymbals, the pounding kick drum and the insistent, sequenced TB-303 bass line. The slightly distorted TB-303 sound plays the dual role of bass and lead line. The tempo is approximately 138 beats per minute (BPM), establishing it as a Techno track, in contrast to the slower House tempo of 119 BPM.[179]

The simple volume fades at the beginning and end of the track characterise an excerpt of a live improvised recording. Mills's work is a combination of studio- and performance-based practices, and his commentary on the DVD *Exhibitionist 2* from 2015 provides insight to Mills's compositional practice. He discusses how he programs and performs with his TR-909 and TB-303. My practice aligns very closely to Mills's, through the same instrumentation and improvisational approach. The methods used by Mills on this track directly inspire my technique, where studio-based and performance practices intersect. Mills's work on this track demonstrates how minimal the musical elements of Acid Techno can be. The work *Acid Techno jam with TR-909, TB-303 Devilfish and Moog DFAM* (Appendix 1, U) is an example of my minimal approach with only a few devices (Figure 7)

[179] Snoman, *The Dance Music Manual*, 347.

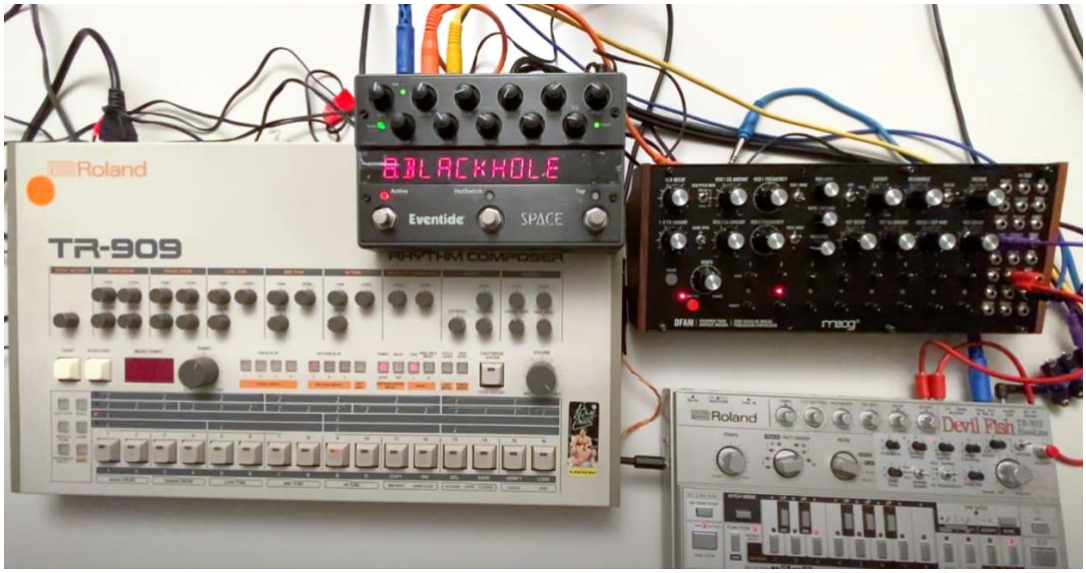

Figure 7. Example of a minimal set-up using only a TR-909, TB-303, Moog DFAM and Space pedal

Whilst Acid House tracks may have been relatively subtle in their ebb and flow and at times more melodic in nature, broadly speaking, Techno's micro fluctuations within the dense layers of sounds and beat-centricity tend to be more noticeable, such as the opening moments in *Step To Enchantment* when the TB-303 is first heard. The focus of Techno is the layers of rhythm and the beat: melody and pitch generally emerge as results of the layered sounds. Where *Acid Tracks* created distance and space with the TB-303 evolving gradually throughout the track, Mills crafts the TB-303 into a raspy percussive timbre. The arpeggiated line of the TB-303 on *Step To Enchantment* is far more manic and further dramatised by the faster Techno tempo. If, as Mike Berk states, 'House and Techno found its electric guitar in the 303',[180] then I would say that Mills was shredding it like a Heavy Metal guitarist performing a solo.

2.2.4 Acid Now

Roland's TB-303 has been cloned and copied by a number of music manufacturers, including Roland, since its discontinuation in the early 1980s.[181] The TB-303 sound is almost ubiquitous these days throughout EDM genres, and I have chosen the following recent works because they represent a broad range of applications of the TB-303 sound, comparable to and contrasting with my own practice.

[180] Lee, *Modulations*, 193.
[181] Approximately two TB-303 clones have been made by various manufacturers each year since Roland ceased manufacturing the original TB-303.

There are a number of artists I would like to cover in this section, and I acknowledge the important work of contemporaries such as Donato Dozzy, Bizz OD, 808 State, A Guy Called Gerald, Drexciya, Luke Vibert, Speedy J, CJ Bolland, Freddy Fresh, Hardfloor, Woody McBride, Lady Starlight, Miss Djax, Luke Slater, Tin Man, Paranoid London, Roy of the Ravers, Steven Julien, Regis, Surgeon, Underground Resistance, Ceephax Acid Crew and many more, but space is limited. I have chosen the following three artists, as they represent a diverse and contrasting mix of Acid and exemplify how the parameters of the sound and genre of Acid can be expanded. I would classify these artists as composing with a studio-instrument with the TB-303 as a focal point in their work. The work of these artists has been a great stimulus for my work and particularly for this project. The following will also support my assertion that Acid is not a fleeting genre, and that its sound continues to be a dynamic musical quality in contemporary EDM.

2.2.4.1 TM404

Swedish artist Andreas Tilliander, also known as TM404, composes with multiple TB-303s and drum machines of the same vintage, to show how the genre of Acid can be extended. His track *303/303/303/303/707/808* consists, as the title indicates, of four TB-303s, along with the TR-707 and TR-808 drum machines. Typically, Tilliander composes with tempi well below 119 BPM, and makes liberal use of time-based effects across multiple sources to create dense layers of sound. The result highlights each TB-303 with a particular presence within the composition. The multiple TB-303s are not immediately recognisable, as Tilliander applies varying amounts of delay and reverb to each one in an effort to create depth in the overall mix, in contrast to the identifiable bubbly or resonant sound of the TB-303. TM404 assigns different roles to his TB-303 through the variety of contrasting timbre settings for each one. His ability to craft multiple TB-303s in the same piece with different sounding qualities pushes the parameters of Acid because he is trying to find different contexts for the TB-303 sounds that do not conform to the genre's immediately recognisable resonant filter peaks. My practice is inspired by his ability to transform multiple TB-303s in ways that challenge the very sound of Acid. Folio works such as *Need To Get More 303s* (Appendix 1, V) and *30303030303030303* (Appendix 1, W), are both directly inspired by Tilliander and demonstrate how I've experimented with multiple 303s.

Overall, *303/303/303/303/707/808* demonstrates a reverence for the vintage instruments and their sound, resulting in a contemporary version of Acid. Tilliander's performance approach incorporates a strong Dub aesthetic with the extensive real-time application of time-based effects. The track has an organic feel, with the sounds having the quality of

being derived from nature. The polyrhythmic pulse of the TB-303 along with the use of spatial time-based effects helps to inform this organic aesthetic.

I would argue that this is an example of Acid being pushed beyond its stylistic restrictions, through slower tempos, subdued filter movements and dense textural qualities via time-based effects. Nevertheless, the work also demonstrates an Acid aesthetic through the default use of the TB-303, and whilst the TB-303 is predominately obscured, he does provide moments where small amounts of recognisable TB-303 sounds qualify the track as Acid. He creates different polyrhythms through his ongoing manipulation and real-time response to his studio-instrument comprising multiple TB-303s. When I met Andreas in early 2017 we discussed similarities in our practices. We share the same focus on devices such as multiple TB-303s, including the series of vintage Roland gear along with the newer Elektron machines, yet there are differences to the way I configure various permutations of my studio-instrument in comparison to his.[182] The folio work *Octatrack + A4 + TR09 +TB03* (Appendix 1, X) shows a small permutation with two Elektron devices and the TB-303 and TR-909 clones from Roland. In this work, the Elektron Octatrack[183] is live-sampling the TB-03 and TR-09,[184] and you can see my real-time interactions with this minimal studio-instrument permutation.

2.2.4.2 Plastikman

Canadian artist Richie Hawtin, AKA Plastikman, is regarded as an important and influential Techno artist who was part of Detroit's second wave beginning in the early 1990s. He was considered a 'controversial character in the evolution of Detroit Techno… plenty of people feel he shouldn't be considered part of Detroit Techno at all' because he was from Windsor in Canada, and not a Detroit native, according to Mike Rubin.[185] This is comparable to my professional name Honeysmack: newspapers[186] and the local EDM community[187] saw me as an identity on the periphery of the local Techno scene during the 1990s. The musical output of Hawtin and Honeysmack have some similarities, with both our work commencing around the same time. I was lucky enough to have briefly met Hawtin whilst he was on tour in Australia during the 1990s and gained some insight to his approach.

[182] This article provides insight to TM-404's studio. "TM404 – Against The Clock," Fact Mag, accessed 8 August 2017, http://www.factmag.com/2016/06/28/tm404-against-the-clock/.
[183] The Elektron Octatrack is a dynamic performance sampler, featuring eight audio tracks capable of radical sample processing. Source: https://www.elektron.se/legacy-products/, viewed November 8, 2019.
[184] The Roland TR-09 is a recreation of the TR-909 released in 2017.
[185] Lee, *Modulations*, 118.
[186] Cyclone Wehner 1999, "Smack Attacks", *Sun-Herald*, 27 May, 1999.
[187] "Honeysmack: Some Sort of Flickwit", *Inpress/Zebra* no. 560, 26 May 1999.

Hawtin's early work heavily featured the TB-303 along with Roland's TR-808 and TR-909 drum machines.[188] However, his instrumentation has since evolved and his use of the TB-303 was not a consistent feature, nor was it maintained in his music. During the late 1990s through to the early 2000s, Hawtin's music developed in sync with the evolution of musical technologies, shifting toward more computer- and software-based platforms such as Ableton Live[189] for composing and performing, although he built on the sounds of the TB-303 and other Roland boxes. In contrast, I have always maintained a focus on hardware, as it offers an immediacy and tactile approach that I find challenging with software.

Hawtin's work on *EX* (2014) represents a return back to the sound of the TB-303 and TR-808, although these were all software emulations or samples of the original. *EX* was a live performance recorded at the Guggenheim Museum, and Hawtin himself describes the work as something 'between an album and a live show'.[190] Labelling the body of work as not entirely an album suggests Hawtin's desire to attract a new audience whilst also respecting some of his long-time followers by reverting back to the sound that had made him an important artist. It also suggests Hawtin's response to the evolving contemporary music-buying public and how music consumption had changed since the early days of Plastikman. The digital revolution was changing the way people consumed recorded music. His history has seen recording formats such as vinyl records, CD and other digital formats through to today's music-streaming services.

Hawtin's artistic expression and commentary on consumerism can also be found in the title of his fourth studio album, *Consumed*, from 1998. The album's name suggests an appraisal of the growing popularity of EDM; it has some irony attached to it considering its experimental approach. This album is sparse in its instrumentation, predominately consisting of a few percussive sounds and a single repeating bass line per track. Much of this album's instrumentation can be attributed to the sound of the TB-303 and TR-808, which are subjected to heavy applications of spatial and time-based effects. Though the album is considered experimental in nature and somewhat ambient, 'the Acid and Techno motifs of Hawtin's previous work remain in place', according to Birchmeier's review.[191]

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[188] Maya-Roisin Slater, "Richie Hawtin on His Origins as F.U.S.E. and How He Made Techno in the Early '90s," *FACT Magazine,* 18 May 2019.
[189] Nicolas Bougaïeff, "An Approach to Composition Based on a Minimal Techno" (PhD thesis, University of Huddersfield, 2012), appendix 1.
[190] Richie Hawtin, "Plastikman at Guggenheim Museum NYC (2013)," 11 December 2013, http://youtu.be/WPJvkJHK22w.
[191] Jason Birchmeier, "*AllMusic Review,*" AllMusic, accessed 11 February 2015, www.allmusic.com/album/consumed-mw0000037411.

Consumed lends itself more to being played and listened to as a continuous body of work rather than individual tracks, and this particular concept is also a feature of his work *EX*. There are a number of other similarities between *EX* and *Consumed,* with both works presenting a dark mood and theme, awash with long, yet subtle, cinematic synthesised string sounds. This is all underpinned by the sound of Roland's instruments and the use of spatial effects to create contrasts in space between the percussive elements and the scope of the TB-303 bass sound. Given the sparseness of the tracks, Hawtin allows the TB-303 sounds to become a sonic focal point of the album. My track *Dark Acid Techno:DFAM + Machine Drum + Sherman Filterbank* (Appendix 1, Y) has the TB-303 as the primary sound with supporting drum sounds from the Elektron Analog RYTM drum machine.

More recently, Hawtin has embraced modular synthesis. His current performance instrument is a hybrid of TB-303 hardware clones, a modular synthesiser rig and typical DJ gear. Hawtin, a prominent EDM artist whose work has always incorporated an Acid aesthetic, includes the modular synthesiser in conjunction with other hardware; this demonstrates his motivation to push the parameters of Acid. He discusses how his studio-instrument allows him to explore 'small pockets of ideas' that evolve in the moment.[192] He talks about how important it is for him 'not to be bored whilst performing', and his hybrid system on stage helps to breed happy accidents through the interactions between hardware and software applications.[193] My practice embraces the value of being in the moment and exploring my studio-instrument with a degree of risk, as per Hawtin's practice, as I will discuss in the following chapter. Likewise, not being bored whilst performing helps to promote a strong connection between performer and audience, whilst promoting new improvisational and creative outcomes for each performance.

2.2.4.3 Squarepusher

Tom Jenkinson, also known as Squarepusher, is an EDM artist whose practice grew from his work as an electric-bass improvisor since the 1990s. His work is a clash of Breakbeat, Drum 'n Bass and other EDM styles, including Acid, evolving from a home studio with an array of Roland gear, including the TB-303, that defined many EDM styles.[194] Previously, Squarepusher has collided styles, with an element of Acid and the TB-303 sound never too

[192] Richie Hawtin, "Richie Hawtin – Apple Music Lab: CLOSER Masterclass & Live Performance (Full Version – Milan)," accessed 18 October 2019, https://www.youtube.com/watch?v=E85HdDQ2St0.
[193] Hawtin, "Richie Hawtin – Apple Music Lab"
[194] Lola DaMusica, "DnB 1996 (LolaDaMusica) Part1: Squarepusher," accessed 25 November 2019, https://www.youtube.com/watch?v=96PfTcGHZ4Q.

far away from his Drum ‘n Bass pursuits. His track *Vic Acid* from 1997 is one such example. On Squarepusher’s most recent release, *Vortrack*, Jenkinson pushes the limits of Acid by combining the key elements of the genre through the use of squelchy, resonant TB-303 and SH-101 synth sounds, with hyperactive scratching and broken-beat rhythms via Roland’s TR-606 and TR-909 drum machine sounds. Jenkinson pushes the tempo upwards and slices the TB-303 and TR-909 hi-hat sounds into micro pieces that scatter and jitter throughout the track. The TB-303 bass line dances around the drum beat through wildly contrasting filter modulation with resonant peaks. *Vortrack* returns to his post-rave productions by incorporating the hardware that he used early in his career and displays a contemporary progression from tracks such as *Vic Acid.*

His latest work, I would argue, is Acid on the fringe, extended well beyond its stylistic parameters, yet firmly recognisable as Acid. The short video *Modular Acid Techno banger with live sampling* (Appendix 1, Z) demonstrates how I push the parameters of Acid through the use of a modular synthesiser and live sampling of the Roland TB-03 (TB-303 clone). My ability to push these parameters has developed over time throughout my career as Honeysmack.

2.3 Professional Practice: The Honeysmack Story

My professional practice began soon after I completed my undergraduate degree in 1991 in Media Arts at the Royal Melbourne Institute of Technology University. After I answered an advertisement in the local Trading Post newspaper, a small record label took my demo tape to a trade show in Germany and soon afterwards licensed a four-track EP of acid tracks under the name Hysterical Systems[195] to the UK label Kickin’ Records in 1994. This was my first exposure to the commercial side of the music industry. Around the same time, I started my own small record label, Smelly Records, as an outlet for my musical output and collaborations. During the 1990s, EDM was growing in popularity in Australia but EDM artists were not a focus for major record labels at the time.[196] Smelly Records provided creative freedom and enabled me to experiment with different outputs under different names, whilst also supporting fellow producers, evidenced in the *Smelly Records Compilation* (Appendix 2, O) It was a labour of love and true to the punk philosophy I uphold: I was just happy that there was an outlet for my music that I could control, regardless of the admittedly bleak financial picture.

[195] Co-written and produced with Phillip Samartzis.
[196] At the time it was referred to as *underground* music.

DJing and producing EDM were almost indistinguishable during the 1990s, as some DJs were also producing original work in their home studios. Whilst EDM artists produced new original work in their studio, DJs would perform their work by playing back their recordings on vinyl. There were limited places to hear or perform new original work, and DJing at clubs and events was a means of exposing new work to audiences. It was rare for EDM artists to perform their work live, as this would require them to take most of their studio gear out on stage. The performance of original EDM was typically heard when DJs performed the work by mixing and blending it with other works in a DJ set.

I also had experiences as a DJ in Melbourne clubs and radio during this time, although I quickly found it uninspiring and wanted to challenge myself further. I found that the culture around DJing didn't align with me personally or professionally. Wanting to carve my own path and unique artistic voice, I was critical of DJs who typically played other people's music and questioned why they were beginning to be revered for doing so. Around 1995 I began performing as a live EDM artist as an alternative to DJing, and I felt that the idea of composing the music in front of a live audience would be far more interesting, whilst offering a different experience for the EDM community. The changing permutations of my studio-instrument and the element of risk made each of my performances unique. I will further discuss how I perform with my studio-instrument in Chapter 3.

Figure 8. Performing as Honeysmack at Revolver Upstairs, Melbourne, 1999[197]

[197] This photo became the cover image to Melissa Butters's book *Twenty Years in the Belly of the Beast* (Melissa Butters, 2020), about the venue Revolver Upstairs where I have been frequent performer since it opened in 1997.

One of my early first commercial breakthroughs came as a result of a request for a promotional track for a compilation for a long-running Melbourne Techno club night called Club Filter, where I was a regular live performer. There was no money or contract: I was just happy to release my music anywhere. The track featured a short sampled loop from the song “Walk on By” by Burt Bacharach, and jamming with it on my sampler along with my Roland TR-909 and TR-808 drum machines and a TB-303 synthesiser.[198] I released a CD with the track, suitably titled *Walk On Acid* (Appendix 2, F). Without any marketing campaign or support, national radio station Triple JJJ start playing the track on rotation and it became highly requested. During this time larger record labels, including Sony Records, started to show interest in my music, resulting in my signing a deal with Dancenet/Mushroom Distribution Services (MDS) in 1998. As the track had a sample from Burt Bacharach, MDS had to clear it before it could be released, something I knew nothing about at the time. As MDS started manufacturing vinyl and CDs there was no confirmation of the sample being cleared by Bacharach’s publisher. MDS were concerned and told me they might have to give 100% of the song-writing royalties to Bacharach, which I didn’t quite understand, but I was happy to comply. The day the records and CDs needed to have the labels printed, MDS received information that the track would be a 50/50 split with Bacharach. MDS were very happy, but I was only focused on the track being released. Soon afterwards MDS released my full length album *Fuck Bubble* in 1999 (Appendix 2, Q) although on the day it was released, about half their personnel vacated their roles in the business due to a mass exodus as senior staff left to work for another label, leaving my manger, myself and a few MDS staff to work out what to do next. The people who championed my music at MDS were gone by the time my album was released, and I decided to leave the label as soon as possible.

Upon leaving MDS, I was told unofficially that the US record label Zomba/Jive (the same label to which Britney Spears was signed towould be setting up an office in Melbourne and were very interested in talking to me. I began contractual negotiations with Zomba in the same year that I received a nomination for *Walk On Acid* (Appendix 2, F) from the Australian Recording Industry Association (ARIA) for best dance music release in 1999. Despite my current release being with MDS, Zomba flew me up to the ARIA awards in Sydney to sit with them during the award show. In 2000 I signed with Zomba, becoming one of the only Australians to be signed to the label. The negotiation took almost two years, and in 2001 I

[198] These instruments have remained a focus of my music, and I still use them today.

delivered a full-length album to the label. However, Zomba would never release this album.

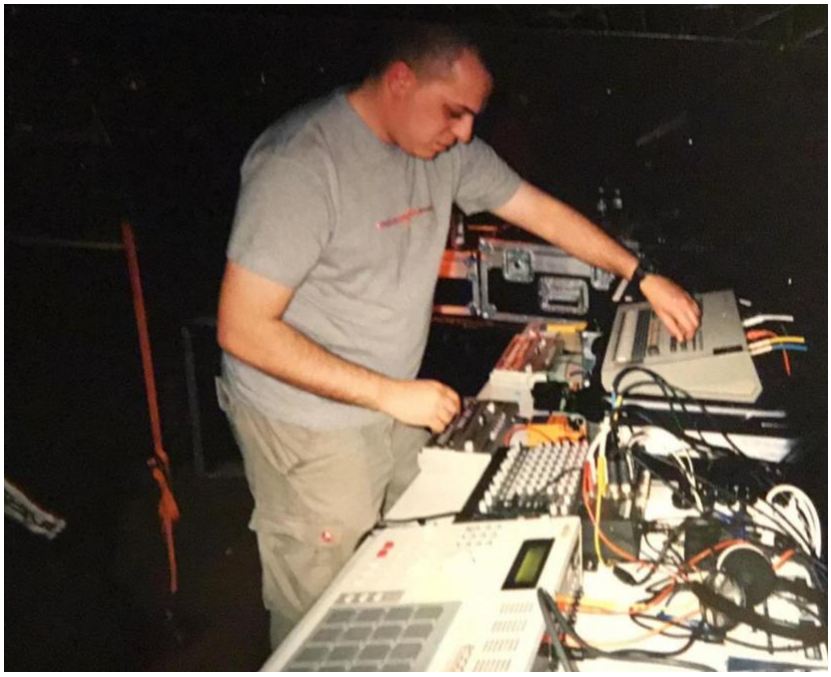

Figure 9. Performing as Honeysmack at the HiFi Bar, Melbourne, 2000[199]

In 2002, US singer Britney Spears starred in the movie *Crossroads* followed by a promotional tour in Sydney. As I was signed to the same label as Spears, Zomba thought it would be a great idea for me to support Britney in her brief appearance at Fox Studios in Sydney. I was asked to perform two tracks from my upcoming album before Britney took the stage. Needless to say, the Honeysmack performance of live, abrasive Acid music was not received well by the predominately pre-pubescent female audience screaming for Britney. The punk in me resurfaced and decided to offend the audience as best as I could, and so I made the music more manic and distorted in the moment along with shouting obscenities to the audience. It quickly became evident I was added to support this show without considering how different my music was to Britney's. Here I was, a little-known and predominately underground EDM artist performing on the same event as one of the biggest pop stars at the time. The audience were not interested in my performance and were just screaming for Britney. As I came off stage, I was surprised to hear the director of Zomba remark how amazing my performance was and insisted we use some of the footage in upcoming video clips. But I told my manager rather abruptly that there was no way this footage was going to be used. My performance was poorly executed, and it was drowned out by screaming teenagers. I was embarrassed by the whole event and started to realise

[199] Photo courtesy of Mark Robinson.

that Zomba might not have been the best fit for my music output if they felt this performance was worthy.

In 2002, Zomba Australia closed down without my album *Rock* (Appendix 2, R) being released.[200] I began to realise my music was not for popular taste, but my experiences with major labels did not thwart my musical pursuits. Rather, they provided greater clarity about what I wanted I do: I wanted to continue to experiment, explore and expand on my practices as a live EDM artist. Ironically, EDM and Acid are now a large part of the popular music discourse, making my music somewhat commercially viable at last.

2.4 Chapter Summary

Advancements in music technology from the 1960s onwards have transformed the way music is made and heard. This has expanded the role of the music producer from engineer and organiser to auteur throughout the 20th century, as Moorefield discusses. EDM composers are more commonly referred to as 'producers' because the compositional practice they employ is focused on their studio-based practice. Whilst the EDM producer may or may not possess any traditional musical training, understanding the complexities of studio technologies and practices is crucial in the creation of EDM. The label *producer* is fitting for EDM artists, as their particular skillsets include the wide range of studio practices required to complete their work, in addition to the array of technologies with which they compose. Moorefield discusses how studio production and the notion of the music producer evolved from Phil Spector's Wall of Sound to the sophistication of EDM styles, all with the studio as the central musical instrument.[201]

The artists discussed here have a focused studio-based approach, with many of them interacting directly with machines and manipulating sound as their main outcome. I would summarise the approaches discussed as being a machine-led approach, whereby they are working with a combination of studio- and performance-based practices. The real-time approach taken by these artists further contributes to greater experimentation within the genre and sound of Acid. Their work has represented the qualities of Acid that were defined in the previous chapter, particularly the artists who came after Phuture, who have all pushed the limitations of the genre. I would argue that this further demonstrates the impact Acid continues to have across EDM styles.

[200] I did release the album *Rock* independently the following year through Shock Records.
[201] Moorefield, *The Producer as Composer*.

Chapter 3: CONCEPTS, TOOLS AND COMPOSING

In this chapter I will explore my studio-based practice as a professional EDM producer and performer. I will discuss the concepts that form the basis of my practice, including the tools that form my studio-instrument and how I perform and compose with it. As discussed previously, my practice builds on the legacy of the compositional practices of early electronic studios, and is inspired by many electronic musicians and their work. My compositional practice began around the same time as EDM practices were forming during the late 1980s. This chapter will outline the key conceptual frameworks: studio-as-instrument, my permutative approach, how I use modular synthesis and the concept of the producer-as-composer. This chapter will conclude with a discussion of my performance approach.

3.1 Methodology

This project engages practice-led processes of my professional practice as producer-as-composer. My practice situates the studio as the instrument itself, not just as the audio engineering facility by which compositions are documented. The studio is the environment where my compositions are conceptualised, performed, realised and completed, and its design demonstrates how my practice falls within the category of Acid.

There are two key steps to how I make use of my studio-instrument. First is the assemblage of the studio-instrument, for which I choose and connect different devices. Once the studio-instrument has been assembled, the second step is to perform with it, whereby I alternate between the roles of a conductor directing an ensemble and a performing musician within that ensemble.

The studio environment evolved from a facility used exclusively by audio engineers for audio production into a creative facility used by a range of different music practitioners. The roles of musician, producer and engineer were segregated professional roles and did not converge until the introduction of affordable multitrack recording in the 1960s.[202] Until this time, the studio environment was a place where a performance was captured, replicated and recorded. The studio-as-instrument concept is born out of electronic and tape technology developments. This opened the way for the role of producer to evolve beyond a technical role into that of a creative author. The studio and its technology unlocked an ‘infinite set of

[202] Moorefield, *The Producer as Composer*, 54.

sounds an artist can work with, in comparison to a traditional composer working with a finite set of possibilities' based on their chosen orchestration, according to Brian Eno.[203]

My studio is the environment where every step of the compositional process is conceptualised through to completion. Emerging from the tape manipulations of Musique Concrète and early electronic music studios, Brian Eno popularised concepts of post-World War II practices and describes the practice of the studio-as-instrument as the 'merging of compositional craft, arrangement, performance, arrangement and production all into a single continuum'.[204] This research and the methodologies herein would not be possible without the evolution of technologies from tape to digital that eventually led to the democratisation of music technology from 1980s, as discussed by Paul Théberge.[205]

Practice-led research is an established research method characteristic of creative-arts practitioners.[206] An important aspect of practice-led research is that 'the practice can occur at any time during the research process and plays the important role of generating knowledge and understanding'.[207] It allows researchers to understand the nature of what is studied from multiple aspects. The explorations within this research are continually evolving, with each performance resulting in a new work. The dynamic nature of both my studio-based and performance-based practices are most appropriate for practice-led research. The interior perspective presented through this methodology allows for greater interaction and understanding of my work within the broader context of EDM practices.

Composers and musicians often use practice-led research as it reflects the nature of their ongoing practice. Dean and Smith advocate for a range of special approaches that practitioners may choose to go about their creative exercise and research.[208] They suggest two frequently used approaches: first, 'a process-driven approach that is not described by a precise start or end objective'; and second, 'a goal-orientated method that has a clear start and end point'.[209] The process-driven approach is generally used throughout this research, as I often start a piece without a pre-determined objective. Whilst there is the broad objective

[203] Cox and Warner, eds., *Audio Culture*, 130.
[204] Sean Albiez and David Pattie, eds., *Brian Eno: Oblique Music* (London: Bloomsbury Publishing, 2016), 154.
[205] Théberge, *Any Sound You Can Imagine*, 72-74.
[206] Estelle Barrett and Barbara Bolt, *Practice as Research: Approaches to Creative Arts Enquiry* (London: IB Tauris & Co. Ltd, 2007), 186-190.
[207] Lauren Redhead, *An Exploration of the Idea and Importance of Practice-Led Research in the Current Climate*, 2012.
[208] Roger Dean and Hazel Smith, *Practice-led Research, Research-led Practice in the Creative Arts* (Edinburgh: Edinburgh University Press, 2010), 23.
[209] Dean and Smith, *Practice-led Research*.

of creating music and extending the stylistic parameters of Acid, the results are only fully formed when I combine my performance and my studio-based practices.

Brad Haseman discusses how practice-led researchers 'do not commence a research project with a sense of a problem'; rather, there is an 'enthusiasm of practice'.[210] This describes how my composition approach begins. Upon entering my larger studio, I am met with a number of choices as to which pieces of gear I will use to start my composition; this happens before a sound is heard. The first set of questions I ask myself concerns what I am trying to sound like, what gear might achieve this and who the intended audience is. Then I proceed to experiment with different pairings of gear, and commence a micro-evaluation: was there a result, can it be documented within the functions of the machine or will my muscle memory (the next time I turn on the machines) return to same position? As Geoff Lowe wrote, 'I see, I think, I wonder', and this is a reflexive process that is continually repeated throughout my practice.[211] Once the performance has ended or the recording finished, the experimentation continues in an effort to create new works that are unique and resonate with audiences.

3.2 A Studio-Based Concept of Practice

There are two key conceptual frameworks for my research: the studio-as-instrument and producer-as-composer approaches; both build on the legacy of early electronic music studio practices. Kraftwerk toured their recording-studio set-up through the 1970s,[212] predating EDM artists such as Squarepusher, Daft Punk and Autechre, who gave rise to the category of 'performing producer' as they performed with their entire studio on stage.[213] Moorefield describes how the composer, producer, performer and engineer became one, and it is the concept of studio-as-instrument that brought these practices together. Moorefield's producer-as-composer framework is key to my compositional practice. Coming from a fine-arts background, I did not have any traditional music training; rather, my undergraduate and post-graduate studies were focused on media arts, including sound and moving image. Much like the visual arts studio, the music studio provided the means for me to explore and create musical works directly with the medium (sound) within my studio-instrument.

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[210] Brad Haseman, "A Manifesto for Performative Research," *Media International Australia* 118, no. 1 (2006): 98-106.
[211] Geoffrey M. Lowe, Peter Prout, and Karen Murcia, "I see, I think I wonder: An evaluation of journaling as a critical reflective practice tool for aiding teachers in challenging or confronting contexts," *Australian Journal of Teacher Education* 38, no. 6 (2013): 1.
[212] This stopped in the early 2000s when Kraftwerk adopted laptops for their performances in place of their entire recording studio.
[213] Moorefield, *The Producer as Composer*, 102-103.

3.2.1 Studio-as-Instrument

Beginning with the phonograph in the early 1900s through to the development of magnetic tape in the 1940s and into digital media, recorded sound has been widely available.[214] Both phonographs and tape were initially regarded as a medium for capturing and transmitting performances, much like a sonic version of a camera. The creative potential for recorded sound as the medium for composing was realised with Musique Concrète and Pierre Schaeffer's taped-music explorations in the early 1950s.[215] Using pre-recorded media to create his musical collages, Schaeffer is acknowledged as the first studio-based composer, as his studio and all its audio recording, playback and manipulation facilities were his *instrument*.[216]

More recently, Brian Eno's discussions of the studio as a compositional tool have described the studio-as-instrument approach as similar to a 'painter working directly with their medium, working directly onto their canvas: they always have options as to how they add or subtract to their work'.[217] This reflects how I compose: with an array of different technologies at my disposal, I am continually exploring different pairings of equipment until the work starts to reveal itself on the canvas – the audio recording. Eno discusses how making music with the studio-as-instrument greatly differs from the way composers work with notated music.[218] When working directly with sound, 'there is no transmission loss between the composer and the sound'.[219] There is almost no preconceived idea as to what I am about to make, besides wanting to make something that is in the realm of the Acid genre.

Thus, my studio-based practice builds on the legacy of Schaeffer and Eno. My studio has different permutations for every composition, whereby I decide on the series of different devices that will comprise my studio-instrument. This choice is unique for each composition. As an electronic producer since the early 1990s, I have amassed a large collection of equipment (Appendix 5) that provides a wide range of creative options, analogous to the palette of paint used by a visual artist. Exploring new sounds, interactions and outcomes from combining vintage and newer technologies allows me to extend the timbral, textural, metrical, temporal and rhythmic qualities of Acid.

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[214] Nick Collins and Julio d'Escriván, eds., *The Cambridge Companion to Electronic Music* (Cambridge: Cambridge University Press, 2017), 14-16.
[215] Ottorino Respighi's *Pini di Roma* (1924) did include a phonograph recording of bird songs as part of the composition.
[216] Collins and d'Escriván, eds., *The Cambridge Companion to Electronic Music*, 25-26.
[217] Cox and Warner, eds., *Audio Culture*, 129.
[218] Albiez and Pattie, eds., *Brian Eno: Oblique Music*, 29-33.
[219] Albiez and Pattie, eds., *Brian Eno: Oblique Music*, 29-33.

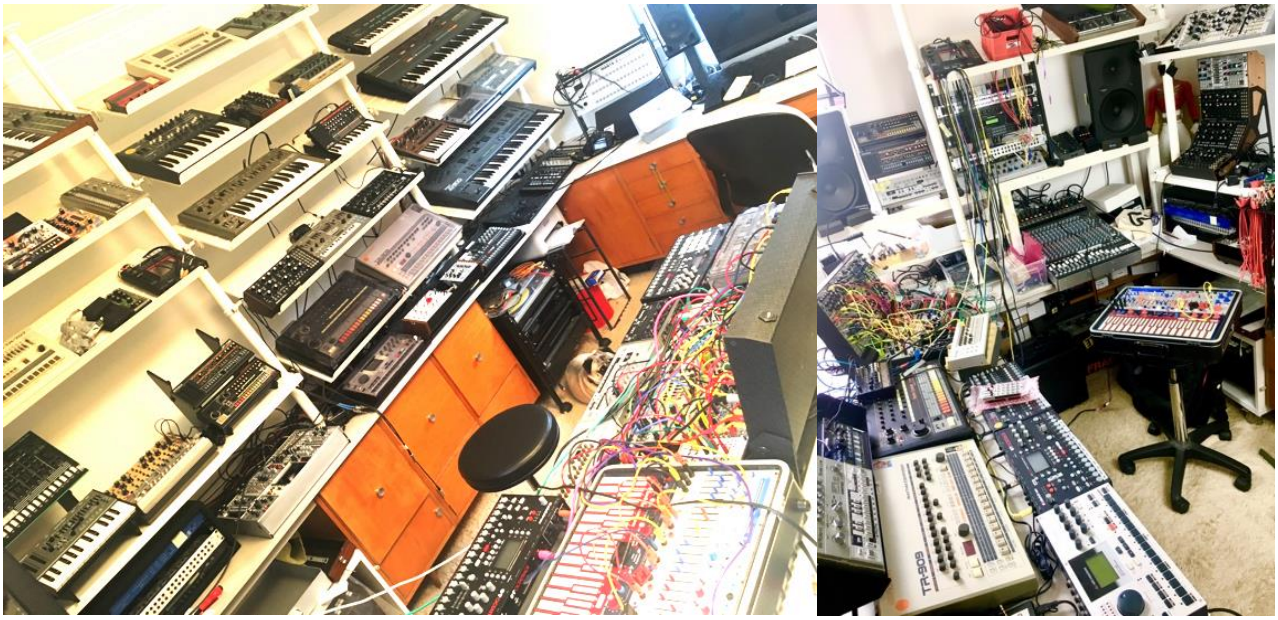


Figure 10. My larger studio space and set-up

What follows is an outline of the process I engage when composing with my studio-instrument. My first action is choosing what machines will be paired; typically these are a drum machine, such as the Roland TR-909 or TR-808, with a synthesiser, such as the TB-303. Still, this is merely a starting position, and I will inevitably go through numerous configurations. Being malleable with my choices is crucial, as different machines provide different sounds and or functions.

Eno discusses how his compositions begin in relation to the facilities within his studio and what he can achieve considering the equipment that is available.[220] My compositions also begin in relation to the array of different devices (facilities) available to me, although the choice of different devices remains dynamic and variable.

3.2.2 Permutative Approach

My studio-instrument is comprised of several devices. These include an assortment of drum machines, effects units (including guitar pedals), synthesisers (keyboard, desktop and modular), mixing consoles, sequencers, outboard processors, samplers and MIDI synchronisation boxes.[221] How I connect and pair different devices that make up my studio-instrument helps to illustrate a significant aspect of my studio-based practice: what I label a

[220] Cox and Warner, eds., *Audio Culture*, 127-130.
[221] See Appendix 5: List of Studio Gear.

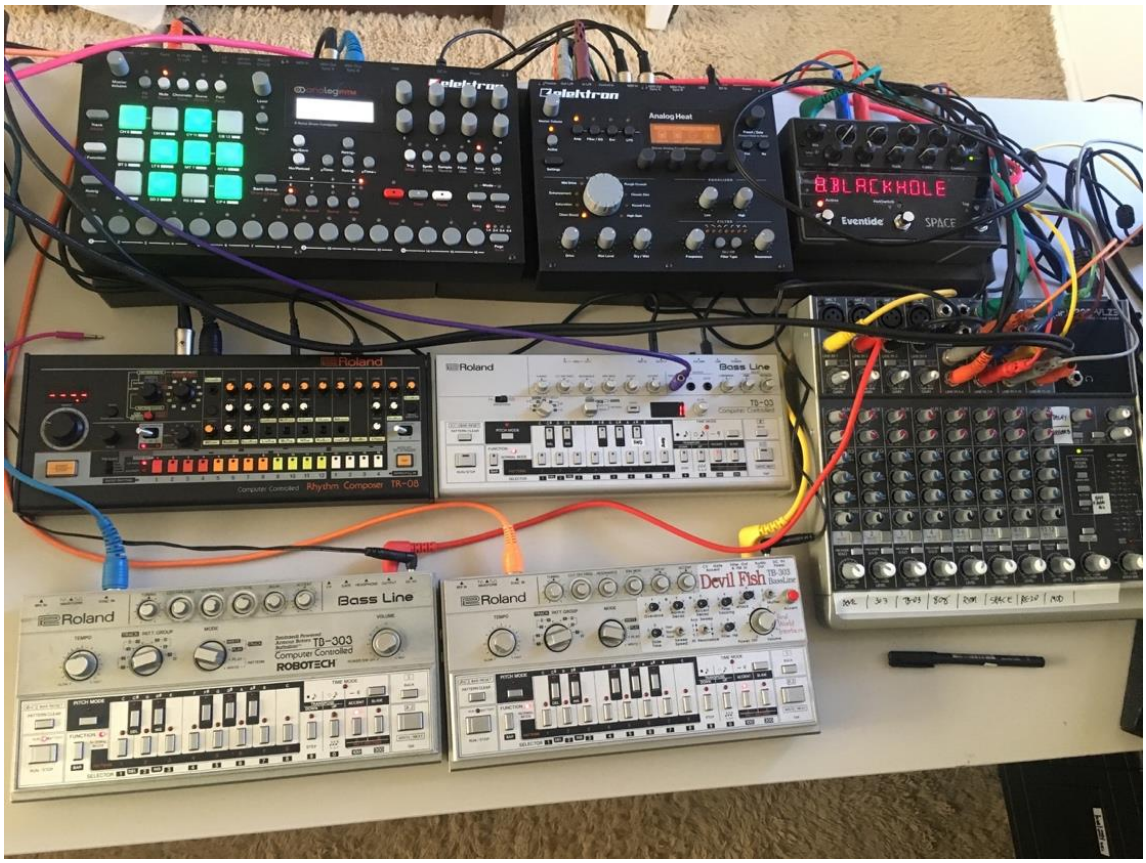
permutative approach. The first part of my studio practice is to assemble my studio-instrument with two main permutations of my instrument to consider. As I begin to hear the results of different pairings of devices and how different sounds, textures and rhythms are interacting with one another, I will often interchange, add or subtract devices from my studio-instrument. Continually experimenting with different devices and how they affect the composition is key to my practice. The set of devices is dynamic, and the heuristic approach of choosing different devices continues until the composition has been performed and recorded. This initial step of my practice is analogous to a traditional composer writing a score, or a 'system as score'. [222] This provides the framework for my permutative approach, whereby the different devices I include and the choices I make become analogous to my score. Changing the devices changes the score I am working with, but ultimately the different permutations of my studio-instrument itself have become a malleable score, the results of which I can hear in real time.

There are two principal starting points for each permutation. The first is a larger studio facility that contains my collection of devices. It operates as a modern EDM studio with new and vintage analogue and digital equipment, which are used in different configurations based on a selection of devices. This is achieved through a process of trial and error to see and hear what pairing of devices will create the work.

The other is a live instrument, assembled out of equipment available from the larger studio, and designed for live performances. The live instrument is also dynamic in its design and is always changing. This allows for ongoing experimentation with different machines and adds a genuine uniqueness to each performance. The live instrument is also assembled based on my understanding of what will resonate with broader audience tastes. My experience as a live EDM artist has provided me with a deep understanding of the dance floor that enables me to experiment with different permutations of equipment in an effort to push the creative outcomes.

[222] Craig Vear, *The Digital Score: Musicianship, Creativity and Innovation* (London: Routledge, 2019), 101.


Roland
TR-909
Roland
TR-707


Elektron
Analog Heat
BLACKHOLE
Eventide
SPACE
Roland
Bass Line
TB-303
Computer Controlled
ROBOTECH
Devil Fish

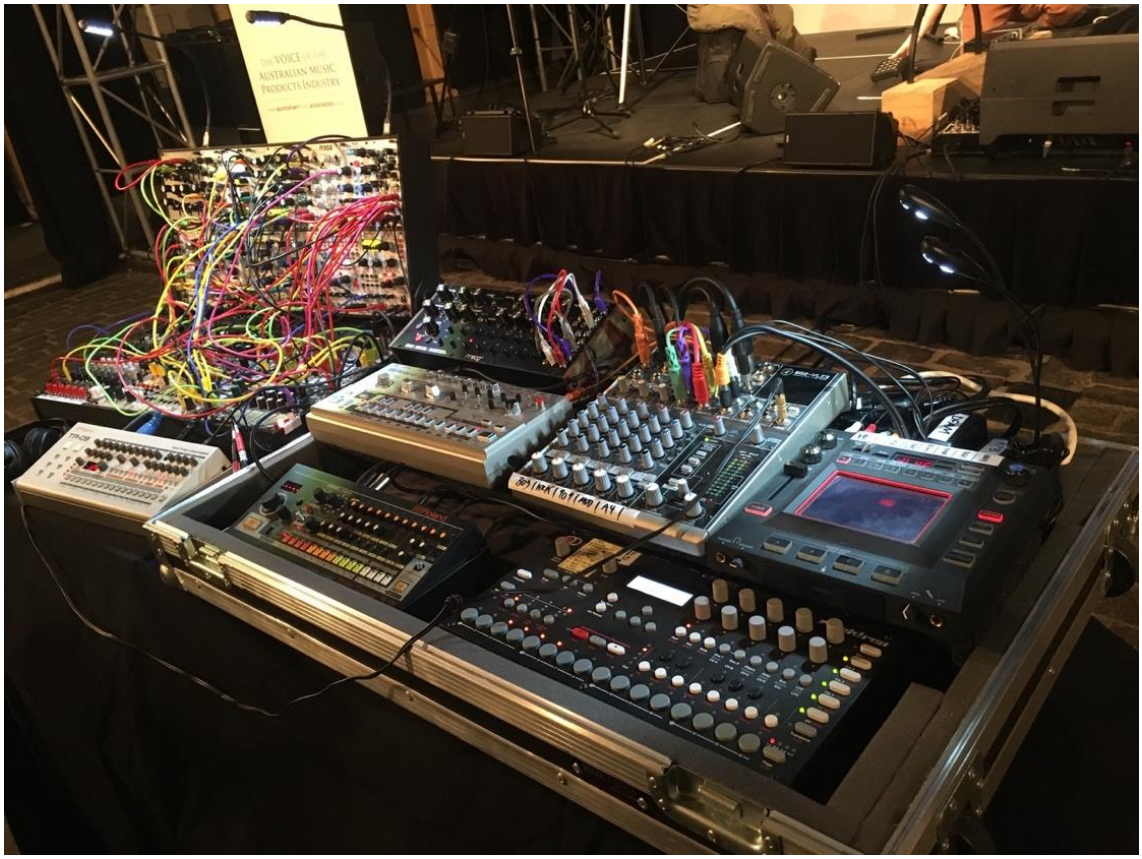


Figure 11. Examples of different live studio-instrument permutations

3.2.3 Modular Synthesis Practice

My use of modular synthesisers builds on the early designs of Don Buchla and Bob Moog, whose designs paved the way for the contemporary, mass-produced synthesiser.[223] My practice associates with what Joseph Paradiso labels 'The Modular Explosion', as modular synthesisers were costly and inaccessible to me earlier in my career.[224] I would argue that the popularity of modular synthesis and the numerous manufacturers today further contributes to the democratisation of technology, with more people having access to a plethora of new creative devices.

Paradiso discusses how modular synthesis had become somewhat unpopular by the 1980s after the digital revolution, and rose again in popularity from the mid-1990s to its renaissance today.[225] Dieter Doepfer of Doepfer Musikelektronik is widely considered responsible for creating the contemporary modular synthesis format called Eurorack and for making it

[223] Holmes, *Electronic and Experimental Music*, 479-480.
[224] Joseph A. Paradiso, "The Modular Explosion – Deja Vu or Something New?," Voltage Connect Conference, Berklee College of Music, 2017.
[225] Paradiso, "The Modular Explosion".

affordable.[226] Doepfer cites the collectors' market as a reason for developing his modular systems:[227] 'When the prices for second-hand Roland TB-303s inflated, I decided to go back to my roots and designed the MS-404.'[228] The MS-404 was a TB-303 clone made by Doepfer in 1994, and as the MS-404 grew in popularity and customers were asking for additional features, Dieter seized the opportunity to create the Eurorack format, at which time he converted the MS-404 into individual modules.[229]

Doepfer's relationship with the TB-303 and its influence on his own modular synthesis design is parallel to the relationship I have with the TB-303 and my use of modular synthesis. The TB-303 has shaped my practice for many years. As an EDM producer, exploring new ways to expand upon the sound of the TB-303 has been a focus of my studio practice. This has been achieved through experimentation with the device, and by pairing the TB-303 with drum machines and non-modular synthesisers across different permutations.

Since 2015 I have included modular synthesisers within my practice. It has greatly increased the number of creative possibilities available to me, and works well within my real-time performance practice, even while the TB-303 remains central to my approach. Modular synthesis and its unrestricted nature provide an incredible number of new sounds that enable me to go beyond preset synth timbres, textures and modulation options, with unique metrical and rhythmic possibilities. The hands-on nature of these instruments complements my improvisational approach. As previously discussed, Eno positions the facilities within a studio-as-instrument as analogous to a visual artist's palette of paint. My modular synthesis practice aligns with Eno's position, as I view the multiple modules as a parallel to visual-art practices. The modules are the paints that are mixed and connected (patched) together and applied through my actions onto my sonic canvas. The mix of modules and my interactions with them create different images and textures, much like paint. Some areas of the canvas may reveal a realistic or recognisable sound, such as a drum sound, while other images might be more abstract or textural, creating a spatial effect. Every new module and configuration within my rig offers a new creative means to craft, process and manipulate sound or change the rhythm of the track.

[226] Paul Nagle, "Modular Profile: Dieter Doepfer", Sound on Sound, published April 2020, https://www.soundonsound.com/people/modular-profile-dieter-doepfer.
[227] Bjørn and Meyer, *Patch & Tweak,* 352.
[228] Bjørn and Meyer, *Patch & Tweak,* 352.
[229] Bjørn and Meyer, *Patch & Tweak,* 352.

The physical nature of the modular synths (and hardware devices more broadly) allows me to 'play' the rig in a manner similar to that of a traditional instrument. Unlike software synthesisers, Eurorack synth modules typically offer one knob/slider per function; this lets me hear and see the results of my physical interactions with the modular rig. The array of knobs, sliders and patch cables (Figure 12) provide visual feedback, without the need to scroll through menus or pages. Contemporary EDM artists who use modular synthesisers, including Hawtin,[230] Steevio[231] and Theakston, all discuss the value of knowing your instrument, similar to how a traditional musician understands their physical connection, and how to interact, with their instrument.

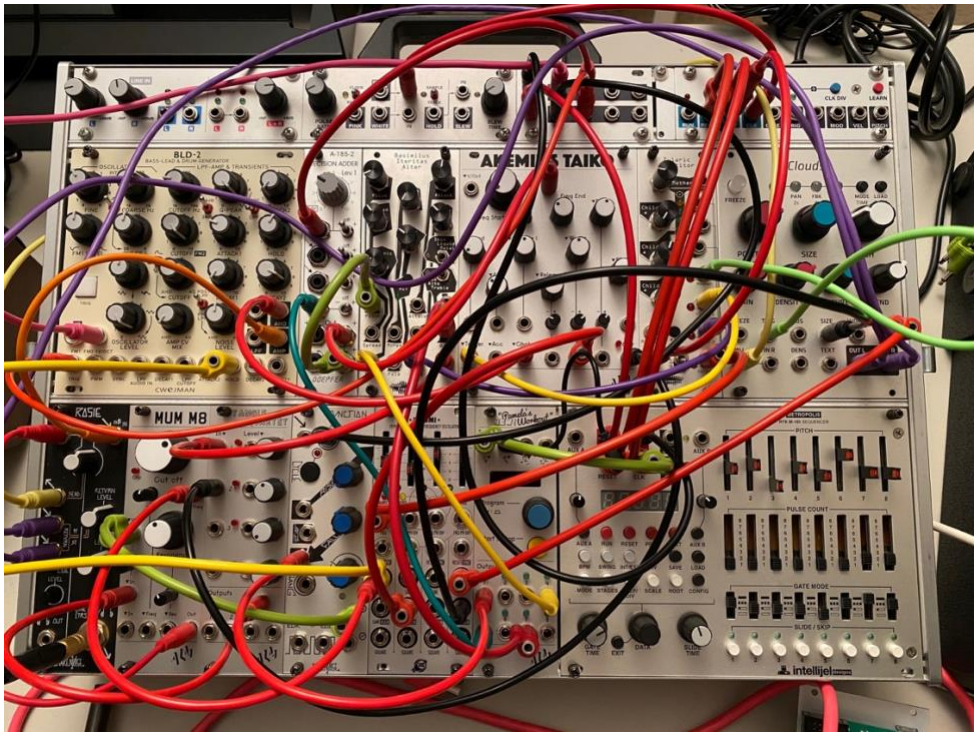


Figure 12. Example of a typical smaller modular synthesiser configuration

The patch cables that connect each module also contribute to the physical nature of how the modules are connected and how changing these connections inform the choreography of the performance. Not only am I manipulating the real-time controls found on each module and device, but I also focus on different areas of my rig in an effort to maintain or change the direction of the performance. During the performance I choose what actions will take place based on what I am hearing in the moment: whether I build on what is taking place or radically change the sound, sequence or effects in order to move the performance forward.

[230] Hawtin, "*Richie Hawtin – Apple Music Lab."*
[231] Oliver Warwick, "A Guide To: Modular Synthesis," XLR8R, published 6 April 2016, https://xlr8r.com/features/a-guide-to-modular-synthesis/.

These choices are the results of how I configure the different modules and my physicality and choreography during the performance. My live performance with the modular rig *Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular* (Appendix 1, AA) shows how I interact with the modular synth for 40 minutes. This piece provides insight to how I explore the different modules through my physicality and how these actions progress the performance.

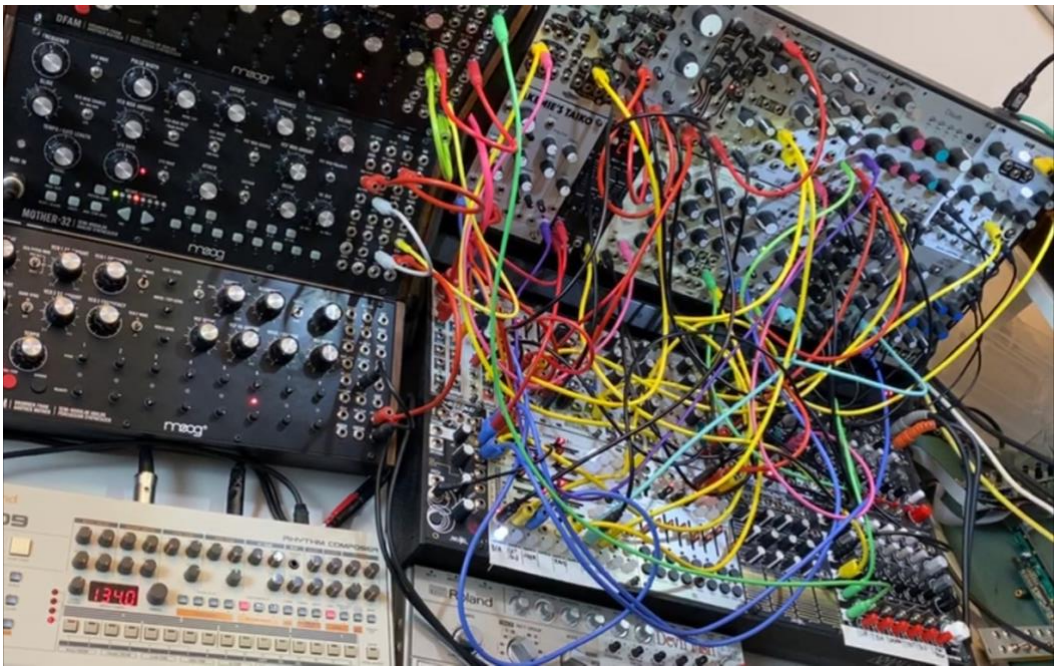


Figure 13. Example of the modular synthesiser patched for the performance of *Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular* (Appendix 1, AA)

Overall, my modular synthesiser enables unique outcomes each time I perform because I change the configuration of the modules within my rig to suit the context of the intended audience, and ultimately, to explore the medium and genre. This approach avoids the rig becoming stagnant, as Hawtin discusses in his masterclass,[232] but it also stimulates my performances through the element of risk and experimentation (to be discussed later in this chapter). Additionally, many synth modules do not have presets or memory capabilities, and if they do, I tend to make the choice of not recalling specific presets or make use of memories, as each time the modular rig is powered on the entire rig is reset. Whilst the rig may have patch cables connected in the same way, the rig will sound and respond differently on every power cycle. This makes it exciting for me as my interactions and approach will differ each time I turn it on.

[232] Hawtin, *Richie Hawtin – Apple Music Lab*."

3.3 Studio Considerations

Music technology, via machines such as synthesisers, drum machines, effects, modular synthesisers and other studio devices, defines the sonic possibilities of my composition, and broader EDM practices inform the construction and formal aspects of these works. As an EDM producer, my focus is continually occupied with Butler's four main functions of EDM production: 'synthesis, processing of sound, sequencing and sampling'.[233]

- Synthesis – a process where an electronic device produces a wide variety of sounds by generating and combining electrical signals of different frequencies and waveforms. Various performance surfaces, with or without a keyboard, interface with platforms ranging from analogue or digital technologies, and combinations thereof. Some synthesis methods, such as filtering, also inform how a sound is processed. Whilst all my work is electronic and relies on multiple synthesisers and synthesis approaches, *Sticky Machine Improvisation* (Appendix 1, R) demonstrates an evolving mix of different synth voices and processes on the modular synthesiser.

- Processing of sound – the application of elements of audio production, created by effects units/modules and mixing consoles (from large to small). Audio effects types include modulation, time-based, spectral and dynamic effects. This can also be heard through different synthesis processes and how sound is arranged over time, such as via a sequencer. For example, the performance *Acid Crash* (Appendix 1, DD) sees me processing the modular synth through various types of filters and effects through the Octatrack. The cacophony of sounds – synth voices, TB-303 and percussive sounds – are continually processed through my actions on my studio-instrument in an effort to create new and interesting sounds and rhythms that inform the direction of the performance.

- Sequencing – a process undertaken by a device that stores (or records) sonic events as voltages or MIDI information and can be edited or played back in real time or pre-programmed. The sequencer is an important performance interface and an alternative to the keyboard interface. The sequencer can also inform the how a sound can evolve over a period of time. The live recording *Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular* (Appendix 1, AA) shows my interactions with the Moog Mother 32 and Drummer From Another Mother (DFAM) sequencers.

[233] Butler, *Unlocking the Groove*, 60.

At 23:00 I can be seen making adjustments to the DFAM and the sequencer on the modular synth, which alters the sound and direction of the performance.

- Sampling – a process involving the recording and playback of sound. This enables the re-manipulation of sound from pre-existing sources; in other words, the reuse of a portion (or *sample*) of a sound recording. Samples may include audio that is rhythmic, melodic, textual and textural, and any other sounds of my choosing. I tend to do live-sampling: I take the audio from my modular rig and sample it in real time and rearrange the audio all without stopping the playback of the studio or the performance. For example, in *Acid Techno improv with Octatrack, Avalon and modular synth* (Appendix 1, BB) the Elektron Octatrack is receiving audio from the Avalon Bassline (TB-303 clone) and a new variation of the sequence in created in real time. I do not save the sampled audio, as my focus remains on a real-time approach rather than recalling previous sampled material.

These four main functions form the focal areas of my practical decision process when choosing what devices to use. Some devices are specific to each function – for example, a mixing console relates explicitly to the processing of sound – although it is not uncommon for a single device to have multiple functions. Consequently, I choose multiple devices that cover the same areas, each with their own different qualities and limitations.

The studio-instrument is similar to a collection of acoustic instruments, such as a traditional orchestra or multi-instrument ensemble. Another analogy would be to liken the studio-instrument to a single acoustic instrument, with all the different devices within the studio-instrument acting as different parts of an acoustic instrument. For example, a guitar is made up of several different components: neck, nut, body, pickups, bridge, strings, fret board and so on. Similarly, my studio-instrument is made up of drum machines, synthesisers, effects units, mixer and so on, and each device needs to be connected to the others to form an instrument. Five primary groups of key processes or components define my use of the studio-instrument: (1) synchronisation and clock source, (2) mixer considerations, (3) drum-machine considerations, (4) synthesiser options and (5) sequencer and pattern writing.

3.3.1 Synchronisation and Clock

Synchronisation is the blood flow of the studio-instrument: somewhat of a hidden process, yet vital to maintaining the tempo and rhythmic qualities of a track. EDM compositions are the result of multiple rhythmic layers and subtle adjustments within these layers. The more

synchronisation options and timing offsets that are available across different devices, the greater the scope to explore and create unique results.

Synchronising is critical to maintaining and managing the temporal qualities across various devices, like a traditionally notated score and the role of the conductor. The way in which different devices are synchronised informs the pulse and rhythm of my compositions. Devices such as drum machines with built-in sequencers also have features that can 'shuffle' and syncopate the beat, and when these offsets are mixed with other machines, a 'metrical dissonance' emerges that can ultimately inform the rhythmic feel of a composition.[234] Philip Sherburne describes Acid and Techno as a 'highly economical form of dance music stripped of anything that might detract from the beat'; this suggests that small temporal changes can have considerable implications for the pulse of a track. [235] The folio track *Happy 3.03 Day* (Appendix 1, CC) is an example of how I experimented with tempo and shuffle to create different rhythmic nuances. This track is quite slow in tempo, with the varying amounts of shuffle/swing creating an uneasy and loose pulse.

A MIDI device is a typical choice when undertaking synchronisation, as they tend to be the most reliable master clock.[236] Prior to the MIDI specification in the early 1980s, there were no industry standards for linking devices from different manufacturers.[237] MIDI messages carry control information, including clock signals for synchronising tempos across different devices. Blending new and vintage machines requires a combination of multiple synchronisation interface protocols in an effort to keep everything in line. My practice often includes the combination of MIDI and control voltage (CV) and gate protocols, like those found on modular synthesisers, to synchronise my devices.

CV/gate was somewhat superseded by digital synthesis and the introduction of the MIDI specification, although the recent rise in the popularity of modular synthesisers has seen a

[234] Butler, Unlocking the Groove, 216-221.
[235] Cox and Warner, eds., *Audio Culture*, 322.
[236] MIDI (Musical Instrument Digital Interface) is a digital communications protocol standardised in the early 1980s that allowed a variety of electronic musical instruments to be linked with each other.
[237] There are other analogue clock protocols, such as DIN Sync and CV/gate, that predate MIDI. When these analogue clock protocols are converted and connected to MIDI devices they bring older and contemporary technologies together to provide different temporal outcomes and timing qualities. DIN Sync was a synchronisation standard used by Roland in the early 1980s; it was superseded by MIDI. DIN Sync uses the same connector as MIDI, although DIN Sync is a low-frequency pulse and not digital. DIN Sync is found on iconic Roland machines such as the TR-808, TR-606, MC-202 and TB-303. As Roland made the transition to the MIDI specification in the 1980s, machines such as the TR-909, TR-707 and TR7-27 had both MIDI and DIN Sync capabilities.

return to CV/gate devices. CV/gate is a standard on modular synthesisers and is also found on new devices such as Roland's Boutique series.[238] The CV/gate protocol is as follows:

- CV: Control voltage levels are used to control functions and various parameters within synthesisers, including pitch or other aspects such as the cut-off frequency of a filter. Voltages can fluctuate in different shapes (waveforms) and levels (amount of voltage within a specific range).
- Gate: A gate is a special kind of voltage that is used to inform the timing and length of an event. A gate signal typically rises to +5 volts when an event is required, and sustained until it drops to 0 volts to indicate the end of the event. The sharp attack and sharp release of a gate signal gives it a square waveform.

Combining devices with different sync protocols can affect a track with a variety of unique timing effects including syncopation, swing, micro-timing and polyrhythms. MIDI devices with on-board sequencers like drum machines, and in particular the TR-909, have the ability to 'shuffle' the drum pattern,[239] where the sequencer can slightly delay or pull the events just behind the pulse, giving the pattern a humanistic feel, rather than events all conforming to a strict, quantised grid, which creates a very mechanical rhythm. Combining one drum machine's shuffled drum beat with the beat from a straight, non-shuffled drum machine or synthesiser can imbue a track with unique rhythmic qualities. My live performance *Acid Crash* (Appendix 1, DD) features the shuffled drum patterns from the Roland TR-707 working in combination with non-shuffled patterns from the modular synth, TB-03 and Octatrack, all creating a heavy groove with lively movement throughout the 38-minute set. Hawtin discusses how he built his aesthetic between Techno and Acid House using the syncopated 16-note drum patterns on the TR-909 and offsetting the TR-909 pattern with five note polyrhythms on the TB-303.[240] My work builds on this practice with different polyrhythmic combinations.

3.3.2 Mixer

EDM production is analogous to analogue synthesis (also known as subtractive synthesis).[241] My compositional process engages multiple layers of percussive rhythms and

[238] The Roland Boutique series are clones of some of their vintage and iconic synthesiser and drum machines of the 1980s, with Roland offering some CV/gate capabilities in the new products.
[239] 'Shuffle', as labelled by Roland on their drum machines from the 1980s onwards, is also commonly referred to as 'swing'.
[240] Slater, "Richie Hawtin on His Origins as F.U.S.E."
[241] Snoman, *The Dance Music Manual*.

sounds originating from synthesisers, drum machines and effect units. Rather than using the mixer to simply balance and combine sounds, I use it as a creative tool, shaping equalisation and audio effects to enhance, reveal or hide sounds. I deconstruct these layers with the mixer until I'm left with a pleasing harmonic interplay and rhythm, which is how music was produced before there were digital interfaces, MIDI mixers or mixers found in software such as DAWs. Regardless of the environment, live in front of audiences or in a recording studio, my interaction with the mixer and controlling my mix remain the same. Like a conductor's baton, the mixer is means of communicating my musical ideas.

Dennis DeSantis discusses the value of 'arranging as a subtractive process',[242] where one fills the arrangement with a particular density of material and then begins the process of stripping the density away to reveal the work. DeSantis discusses this in terms of the difference between a visual artist starting with a blank canvas, or a sculptor who begins with a block of clay. I have adapted this approach, whereby I build a density of sounds via the mixer, allowing me to then subtract by muting or fading a sound out of my mix. The mixer is my carving tool in this regard. This practice also allows me to quickly audition devices during the initial stages of building a particular studio-instrument permutation, where there can be a tendency to continuously add more devices in an effort to hear what sounds work together.

As a result, the mixing console becomes the centre of the studio-instrument, the hub for routing and summing audio signals. The mixer blends various sound sources and outputs the sum to a recording device. Whilst the mixer might be considered a utilitarian device, within the studio-instrument it has the ability to shape sounds and texture. It assists with the arrangement of a track via muting and unmuting channels, like that of a traditional conductor directing the dynamics of the performance by continually adjusting the volume of each sound, channel or device. Considering that sound is the direct medium of my work, balancing the different sounds from various devices is an important process for each composition. The live performance video (and album release) *Live From Mysteryland 2020* (Appendix 1, N) shows that the mixer is central to where I position myself physically throughout the performance, as I need to continually make sonic adjustments to shape the direction of the performance.

[242] Dennis DeSantis, *74 Creative Strategies for Electronic Music Producers* (Berlin: Ableton AG, 2015), 300.

Figure 14. Photo from *Live From Mysteryland 2020* (Appendix 1, N) where the mixer is centred in the performance space

3.3.3 Drum Machine Considerations and Choices

While the TB-303 is at the core of Acid, all the drum machines and the rhythms they produce are the foundation of EDM music-making. Butler proclaims 'that drums *are* the music' when it comes to EDM. The process of choosing drum sounds is based on three key factors: the kick-drum sound in particular, alternate or auxiliary percussive sounds in general and how the sequencer operates from a functional standpoint. The type of sounds a drum machine makes is guided by the type of synthesis the machine employs: analogue, digital or a hybrid of both. The two drum machines that are most prominent in my work are the Roland TR-808 and TR-909.

The TR-808, an analogue drum machine, was one of the first fully programmable drum sequencers. and has been a staple of Hip Hop and EDM genres since the 1980s.[243] The TR-808 does not sound like a real drum kit and did not effectively try to emulate one, leading Eshun to assert that 'there are no drum machines, only rhythm synthesizers'. He describes the TR-808 as a synthesiser that plays back sequences of 'automatic intensities, pitch and noise'.[244]

[243] *808*, directed by Alex Dunn (Atlantic Films, 2015), Film.
[244] Eshun, *More Brilliant than the Sun,* 78-79.

Figure 15. Roland TR-808 pictured with the recent Roland TR-08 clone as used in the work *Happy 8.08 Day* (Appendix 1, MM)

Early digital technology modelled sounds that sonically resembled acoustic instruments somewhat more effectively than had analogue synthesis. Roland's TR-909 drum machine is a hybrid of digital and analogue synthesis; the concept of combining the different synthesis types was new at the time of its release in the early 1980s. The TR-909, the first MIDI drum machine from Roland, followed the TR-808.

Producers of House Music, and particularly of Techno, in the late 1980s embraced the unique sounds of both the TR-808 and TR-909, showing 'little interest in supposedly realistic drum sounds, and the resolutely-*synthy* outputs of the 808 and 909 fit their needs perfectly'; this helped Techno to break away from House music.[245]

The way I use the TR-909 contrasts the brittleness of its cymbals with the snap of its kick. Once I build a density of rhythmic layers, the TR-909 ride cymbal has the ability to raise the energy in a track, because its sound contains a large amount of white noise that fills the high-frequency space. The ride works well with the hi-hats on the offbeat, re-emphasising the kick drum's pulse. The sound of the TR-909 is dominant and it can maintain a track all on its own. Jeff Mills is well known for his use of the TR-909. Typically, during one of Mills's Techno DJ sets he will stop playing records and perform live with just a TR-909 and no other sound source. My composition *Techno: 909 + MachineDrum + Sherman Filterbank*

[245] Lee, *Modulations*, 192.

(Appendix 1, Q) is focused on a TR-909 except for a single distorted tom-drum sound from Elektron's MachineDrum.

3.3.3.1 Kick Drum

The type of kick sound I choose is crucial to my work as it provides the composition with one of its most immediately identifiable sonic qualities. Kick drums in this research fall into two categories: (1) the TR-909 type kick originating from the Roland TR-909, and (2) the TR-808 type kick, originating from the Roland TR-808. There are other drum machines that emulate the TR-909 and TR-808 kick, and I use a combination of authentic TR-808 and TR-909 kicks along with the clones, because the clones tend to have additional tone shaping control that were not available on the original TR-808 and TR-909 machines.

I favour the TR-909 kick drum as its sound has a clearly definable hard chesty punch with an "endlessly desirable combination of low frequency energy and mid frequency noise".[246] It is a transient kick drum with a fast attack envelope and control over tuning (pitch), decay and attack. The TR-909 kick doesn't require much audio processing in order for it to be prominent in a mix, making it a very immediate kick sound. With the right amount of weight in the low end, the TR-909 kick can "cut through other low-end sounds in mix with ease".[247] It is the engine room of my studio-instrument. Almost every track of mine begins with a TR-909 kick drum sound. *Acidy Techno with MC-202, TR-909 and modular synth* (Appendix 1, LL) is a piece that brings the TR-909 kick into focus as it drives the pulse of the track.

The TR-909 kick is also responsible for characterising my works as 'bangers'. The term banger that is used to describe an EDM track is a colloquial adjective that come about around the height of the party club scene in the early 2000s.[248] A 'banger' stands out as being an exceptional piece of music through the emphasis on the kick drum sound and pulse, such as the TR-909 kick, as demonstrated throughout the live performance *Honeysmack live at Awesome Soundwave LIVE* (Appendix 1, AA).

The TR-808 kick drum is also a very recognizable but for different reasons than the TR-909 kick. The TR-808 kick is defined by its booming sub harmonic character. Its adjustable long decay can fill the lower frequency spectrum with a rumble that can vibrate dance floors. The

[246] Dave Felton, ed., *The Secrets of Dance Music Production* (Attack Magazine 2016), 14.
[247] Kempster, *History of House*,163-165.
[248] Tiger Webb, "Where Does the Term 'banger' Come From?," published 20 December 2017, https://www.abc.net.au/news/2017-12-21/where-does-the-term-banger-come-from-music-parks-and-rec/9275652.

lower sub-harmonic rumble of the TR-808 kick can easily dance around the other low-end sounds in a track as evidenced in the folio composition *Acid Dub:303 /TB3 /Avalon /777 /VolcaBass/808/RYTM* (Appendix 1, T). The TR-808 does not have the attack or snappiness of the TR-909 but with its low end character the TR-TR-808 can also play the role of the bass instrument, which is a common practice in Hip Hop.[249] The TR-808 kick drum can go incredibly low, making it one of the most recognizable drum sounds in EDM and Hip Hop music in general since the 1980s.[250]

3.3.4 Synthesiser Choice and Options

The choice of sounds can affect and considerably change the style of a track, particularly in many EDM genres where the most prominent synth sound will characterise the track and provide a stylistic identification. Primarily, the choice of synthesiser is based on how easily I can program a sound and access the various functions across a particular device to make the creative process as fluid as possible. Other attributes that contribute to my decision-making when choosing a synthesiser are as follows:

1. Overall timbre and colour, which are informed by a combination of filter types, oscillators (analogue and digital), modulation sources and destinations, onboard effects and other sound-design functions.

2. Real-time control considerations, including how many knobs, sliders, modulation wheels and other physical interfaces are present on a synth. The more real-time controls, the better immediacy I have to shape the sound and sequence. In addition, these controls come in two main forms: one knob per function or multifunction. One knob per function, such as on vintage analogue synthesisers like the Roland TB-303 and modular synthesisers, are preferred. Some contemporary synthesisers may contain knobs that are assignable, including Elektron's Analog Four; moreover, some Eurorack modules have multifunctional and user assignable knobs. These are effective but may not be as immediate as one knob per function.

3. Ergonomics and front-panel design. Vintage synthesisers typically have easy-to-read \ front panels, although contemporary synthesisers such as Elektron's devices have small LCD screens providing access to different pages to change different functions

[249] Chris Norris, "The 808 Heard Round The World," *The New Yorker*, 13 August 2015, https://www.newyorker.com/culture/culture-desk/the-808-heard-round-the-world.
[250] *808.* Directed by Alex Dunn.

> of the device.[251] Some Eurorack modules have limited physical space, making it difficult to read labels, along with very small LED screens. Being able to effectively and quickly identify what I am manipulating can prove advantageous, as it is easier to make intentional changes during a performance when the front-panel design is clear. On the other hand, accidental changes made through inadvertent touching of the wrong button, knob or slider can still yield happy accidents that change the direction of the performance in an intriguing way.

I also prefer a synth that is compact in physical size so that I can see everything with a snapshot glance, in order to be responsive during a performance. Being able to manipulate various synth parameters across multiple synthesisers whilst also manipulating drum machines and managing the mix (including outboard effects) via the mixing desk, all in real time, is crucial to the sound of the final track, because I am essentially working with an instrument in real time and creating the music in the moment.

While the decision as to which synthesisers I choose for a particular work remains fluid, I also prefer synthesisers without a keyboard. My practice is focused on how I blend and layer different rhythms and sounds in real time from various devices. Therefore, performing with a keyboard interface offers negligible benefit, as I only require an interface to enter events, rather than to perform specific tones. Elektron's synthesisers, such as the Analog Four, Monomachine, Digitone and Octatrack, offer flexibility to manipulate and craft sound without a fully functional keyboard. The modular synthesis environment provides a plethora of hands-on options, while semi-modular synthesisers such as Moog's Mother 32 (M32) and the Moog Drummer From Another Mother (DFAM) offer an immediate compact interface that supports my real-time approach. Work such as *Drone Techno with Primary Oscillator + DFAM + Digitone* (Appendix 1, NN) and the live performance *Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular* (Appendix 1, AA) demonstrate my approach with a mix of these synthesisers without the use of a keyboard interface. As a non-traditional trained musician who composes with music hardware, the sequencer is my preferred interface, particularly synthesisers with in-built sequencers such as the Roland TB-303 or those found on the Elektron range of devices.

[251] This is typically referred to as 'menu diving'.

3.3.5 Sequencer

As introduced in Chapter 1, the music sequencer is a device (or software application) that can record, edit or play back music by handling note and performance information in several forms, typically CV/Gate and/or MIDI.[252] The sequencer is a device that stores voltages or events, and can be played back under different types of control, including actions that come from the user's physical interactions and from the ways different devices are interfaced and connected to each other. The sequencer can record, edit and play back different events including modulation amounts. The event information stored on each device could be the equivalent to traditional notation, whereby each sequence (and the event data) is comparable to small amounts of a notated score that is written into each sequencer's memory. However, contemporary hardware sequencers, such as those found on Elektron devices and across modular synthesis, can extend well beyond the playback of notes. These qualities include a variety of events that do not relate to pitch, such as timbral variations, modulation amounts and other sonic characteristics that are subject to the functionality of the device. In this regard, writing sequences on synths or drum machines is akin to traditional score-based writing. I gravitate toward different types of sequencers because of their immediacy and the ease with which I can program my patterns and rhythms.

The first type of sequencer I commonly use is Roland's *x0x* step sequencer, which first appeared on the TR-808 and TR-909 drum machines.[253] It has 16 steps that run along the bottom of the instrument (Figure 6), and defaults to a 4/4 time signature, representing one bar. Each drum sound on the device can be entered by pressing the corresponding step. The interface allows for immediate visual feedback, providing a tool that is 'simple and hands-on, all with perfectly quantized rhythms that generate endless loops'.[254] A pattern can be entered (or recorded) in grid mode, with the steps being entered across the grid as the sequencer loops. The alternative mode is to tap the selected drum sound in real time. I enter kick drum and hi-hat patterns in grid mode to establish the foundation of the beat. The next choice is a mix of 'grid' or 'tap' modes to fill the pattern with more backbeat drums to syncopate the pattern. Sequences are normally kept to a maximum of one bar because it allows me to quickly edit my patterns in real-time. The short video *90909090909090909* (Appendix 1, OO) demonstrates how quickly I can create a pattern on the TR-909 in 'tap'

[252] Andrea Pejrolo, *Creative Sequencing Techniques for Music Production: A Practical Guide to Pro Tools, Logic, Digital Performer, and Cubase* (Milton, UK: Taylor & Francis, 2011), 48.
[253] *x0x* commonly refers to the group of drum machines Roland produced through the 1980s with model names such as TR-606, TR-707, TR-808 and TR-909; all had the same type of step sequencer first found on the TR-808.
[254] Butler, *Unlocking the Groove*, 64-65.

mode. Having the immediate visual feedback of seeing the complete measure is important to managing the content I have programmed.

Figure 16. Roland TR-909 pictured in my studio

The layering of different sequenced lines creates the harmonically rich results that give each track its unique characteristics. The work *303 + 808 + 909 = 2020* (Appendix 1, T) demonstrates the simple layering of TR-909 and TR-808 drum machine patterns. The performance *Honeysmack Live Acid Techno Improvisation 40min Jam* (Appendix 1, GG) demonstrates a more complex layering of the TR-09, multiple 303 patterns and various sounds and sequences from the modular rack that are also being sampled and resequenced in real time via the Octatrack to create a density of evolving rhythms and synthesiser sounds.

The other sequencer, found on the TB-303, can record up to 16 steps of pitch information along with accents and slide (portamento) events, with the selection for the timing of the events being semi-quaver, rest or tie.[255] Whilst this might seem limiting with respect to writing specific or detailed sequences, the simplicity of the TB-303 sequencer allows me to quickly write and edit random sequences and then contextualise them with other devices. My approach to the TB-303 sequencer forces me to be fluid with how I write to it and combine it with other sounds. I tend to be very quick with my programming to keep writing new sequences, as I'm not sure what will work until I contextualise it within my studio-

[255] Section 1.8 gives more information on the Roland TB-303.

instrument. As the sequencer cannot be edited in real-time, I need to write a number of patterns on the TB-303 in preparation for my performance.

While a full discussion of another group of sequencers, modular synthesisers, is beyond the scope of this exegesis, I favour modular sequencers that can be edited in real time and offer performable functionalities. For instance, being able to change and manipulate the sequencer during a performance helps to create happy accidents that change the direction of the performance. Modular sequencers include gate/trigger-type sequencers, which trigger percussion voices, and step sequencers, which can send pitches or act as modulation sources, throughout my modular rig. The performance *Acid Crash* (Appendix 1, DD) demonstrates how I use the modular sequencer Metropolis by Intellijel in real time to sequence the modular rig, whilst complementing the TB-03 sound and patterns.

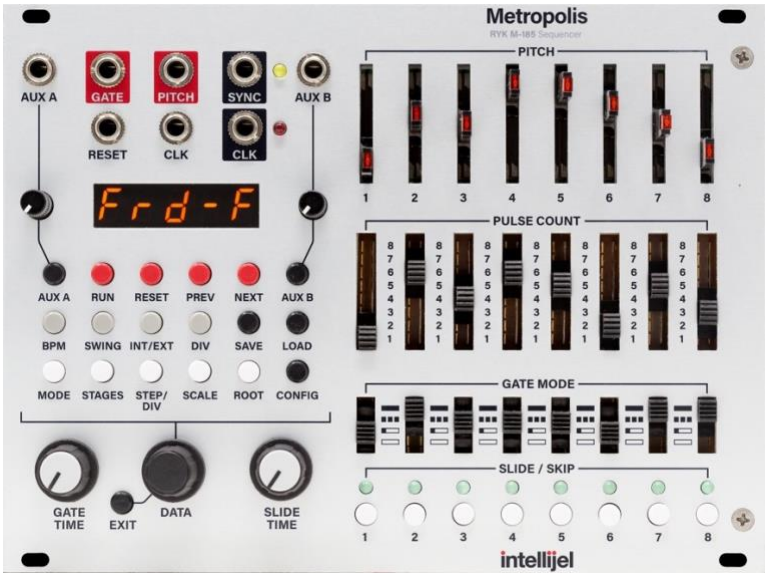


Figure 17. Metropolis sequencer Eurorack module by Intellijel

3.4 Performance-Practice Approach

This section will discuss how I perform with my studio-instrument, both in front of live audiences[256] and within my actual studio, where I am always performing (or jamming with my studio-instrument) as though there is a live audience watching and listening, but, like my approach in a live setting, it is not the replication or performance of a pre-composed work.

[256] Performing to live audiences can be both physical, as in live-music venues and spaces, and virtual, as on digital streaming platforms via social media.

The manipulation of devices, including any pre-programmed sequences within my studio-instrument, forms the principal real-time component of composing. Still, certain elements do need to be prepared prior to performing because of technical limitations on vintage devices (including the TB-303 sequencer) that will not allow patterns to be written or changed in real time. The distinction is that although I program some of these machines prior to performance, they are programmed independently of any preconceived arrangement, because the arrangement only emerges during the performance. Mark Butler uses the term 'building blocks' to refer to constructive elements that do not simply precede an EDM performance but form an intrinsic part of the composition during the performance. Butler describes the various building blocks as 'modules' or 'modular elements' that are 'interchangeable objects subject to appropriation within the performance'.[257] The choice as to which patterns will be incorporated into a composition takes place in real time during the performance. The assorted patterns available to me from various devices act as building blocks of material I can use during a performance.

My real-time performance practice enables me to challenge the stylistic parameters of Acid and the commercial practices of EDM, in part because Acid compositions are typically studio-based, fixed works designed for playback by DJs. Acid can also be typically characterised by the sound of the TB-303 (Chapter 1), and my work makes significant use of this synthesiser throughout.

As a professional EDM artist with international record deals, I found that my studio-based work did not always conform to the output that record labels desired. My performance is where I push the parameters of the genre, and I can share this experimental experience with the audience in real time as a dynamic, experiential event. Over the years I have adapted my performance approach into my studio practice, as this makes for increasingly distinctive creative work. Normally, when composing in the confines of a studio, one has the privilege of choice and the capacity to work in a timely manner by recalling works in progress and crafting works over undefined periods of time. Since my works are composed in real time, I do not use a DAW to arrange them. Rather, my output can *only* be realised as a live, in-the-moment performance-type event in conjunction with my studio-instrument.

During a live performance, I can make a range of changes to various parts of my music without needing to conform to an arrangement that will suit the needs of the recorded format. For example, in a live performance I could apply considerable amounts of reverb to a TB-

[257] Butler, *Playing with Something that Runs*, 122.

303 sound for an extended period of time to build the dynamics and drama. Similarly, I could apply the same live technique in a studio recording but allow the quality of the effect to ring out, rather than craft the effect to a specific arrangement grid. The recordings, whilst still valuable, are static, and do not present the dynamic energy of the live performance; rather, they express a different energy that can be hard to translate to the recorded medium. *MERK* (Appendix 1, U) is an example of how a slower tempo and excessive amounts of reverb can work in the album format on *Post Acid* (Appendix 1, V), yet performing a track like this live could prove challenging; it is more of a listening track than a piece people can dance to. Performing live has an immediacy, with the feedback from audiences being almost instantaneous, and creating a kind of energy that cannot be achieved in the recorded format.[258]

3.5 Performing with My Studio-Instrument

Performing live with an electronic instrument can be rather different to performing with an acoustic instrument. Whilst both have limitations based on design, electronic instruments tend to offer a wider variety of sounds from a single unit.[259] In discussing digital instrumentation, Aden Evans notes that 'electronic instruments previously ignored the aspect of music production'.[260] Evans makes a strong statement on how electronic instruments changed the way musicians performed. Many electronic instruments were designed to reproduce the sounds of acoustic instruments, with the drum machine as a good example. In general, with drum machines the user has access to a variety of drum sounds that can be arranged within a single device without the need of a real drummer or drum kit. Writing music and designing all its processes were quite separate from the practice of audio production until music (and audio) technologies became more affordable and accessible during the 1980s. Théberge calls this the 'democratization of the (music) studio'.[261] As home studios grew during this time, the results a home studio producer could achieve were starting to match the quality of those achieved in professional studios, and EDM practices began to emerge.

[258] Performing live during the COVID-19 pandemic has been in the form of live streams from my studio, and this requires me to project how the audience might react.
[259] Devices can range from the relative simplicity of stand-alone synthesisers and drum machines to the complexity of a modular synthesiser.
[260] Aden Evens, *Sound Ideas: Music, Machines, and Experience* (Minneapolis: University of Minnesota Press, 2005), 90.
[261] Théberge, *Any Sound You Can Imagine*, 215-217.

Butler acknowledges the production process as being an 'integral part of the EDM compositional process'.[262] Evans further writes that electronic-music performers are concerned with 'producing the right notes during a performance, but the synthesizer introduces another phase to the performance, sound design'.[263] As Butler and Evans demonstrate, there are two actions taking place: the performance of the notes and the results of the production process. In the creation of EDM, the production process includes the generation and manipulation of new electronic sounds, a sonic practice also associated with sound design. When assembling my studio-instrument, I consider the access to the physical controls I may need over my machines, because, as with traditional instruments, the ergonomic design and limitations when performing with my instrument will affect the composition, as discussed previously. The greater access I have to a variety of real-time controls within my studio-instrument, the more options I have to shape sounds and manipulate patterns during a performance. This enables the possibility for more-varied creative outcomes, although the selection process is also based on the logistical concerns of a given performance and where it takes place.

An example that exemplifies my performance with my studio-instrument is the album *Post Acid* (Appendix 1, V), which I completed for the Awesome Soundwave label in early 2020. I was asked by the label to record an album and I had to explain how I perform with my studio-instrument and through the performance the individual works appear. For this album I was invited to record at Awesome Soundwave's studio, although I had to bring along a large permutation of my studio-instrument. Since I don't spend time preparing or crafting sounds, sequences or phrases, there can occasionally be times, particularly in my own home studio set-up, when the performance is not working and there are no effective results. I was a little concerned that this could happen when I recorded at the Awesome Soundwave studio. To overcome this, I designed my studio-instrument with a number of redundancies in the form of multiple similar devices, such as three types of TR-909s. This excessive number of devices allowed for greater exploration during the performance. In the event there were moments that did not work. The album was performed over two days with approximately 11 hours of recording, with highlighted sections extracted as individual tracks for the album. EDM magazine *Decoded* spoke to me about the album in early 2020, when I provided more details as to how I performed with my studio-instrument.[264]

[262] Butler, *Unlocking the Groove*, 49.
[263] Evens, *Sound Ideas*, 90.
[264] Ian French, "'The 303 Has Become the Electric Guitar of Electronic Dance Music' – Honeysmack," *Decoded Magazine,* published 17 March 2020, https://www.decodedmagazine.com/honeysmack-interview-2020/.

Figure 18. Studio-instrument used for the recording of the album *Post Acid* (Appendix 1, V)

3.5.1 Interaction Process

Kim Bjørn's book *Push Turn Move* examines interface designs of electronic instruments and explores how their function and design link the performer to the machine. Bjørn describes the relationship between artist and instrument as 'a complicated affair involving senses, brain processes, computing, electrical routing, physical movement and many other things'.[265] Bjørn describes the interactions between the artist and their instrument as a 'feedback loop' that passes through three distinct stages: 'user, interface and system'.[266] The following describes how I apply Bjørn's three stages of interaction to my own practice:

1. User: By way of my own physiology, my brain turns memories into muscular actions, and my sensory receptors listen to the aural and visual results and react. I continue to input information and receive feedback, and in my reactions to that feedback, new actions follow. My physiology is like a perpetual machine that is always ready to respond and react to the input surrounding it.

[265] Bjørn, *Push Turn Move*, 26.
[266] Bjørn, *Push Turn Move*, 26.

2. Interface: The interface receives input from the user and, in turn, presents information in the form an audible, visual or tangible feedback. The interface in this research is the real-time controls found on the various machines and devices that make up the studio-instrument. Visual feedback is often provided by LCD screens and LED lights, as well as the physical positions of potentiometers, faders and other hardware controls. This visual feedback provides measurements of time, volume and amounts of activity to which I can then respond to progress through a performance.

3. System: My instrument is the system that processes the input from the user through the interface, presents the results as audible or visible results. The system takes input from the state of the interface and translates it into actions, computations or voltage. My system is a complex web of interconnected machines that includes a wide variety of vintage and contemporary synthesisers and drum machines.

Bjørn proposes that the feedback loop created between these three stages is the result of the human-machine interaction:

> If the feedback is immediate (less than 0.1 second) the user has a feeling of directly creating the reaction. If the feedback loop lasts for more than one second, the user will notice that it is actually the system creating the feedback. Immediate feedback is desirable for a functional, reliable or even usable or pleasurable experience.[267]

It is when the 'system' (my studio-instrument) starts creating its own feedback loop, as Bjørn states, that this process contributes to what I label a machine-led aesthetic. This is how the machine informs outcomes based on how I have patched the instrument and my interactions with it during a performance. The metaphor of the duet is another way to describe my interactions with my studio-instrument, whereby I perform *with* my instrument. I provide input to my instrument and it responds in certain ways, to which I then further respond, creating a feedback loop.

3.5.2 Risk and Happy Accidents

When performing with my studio-instrument and pockets of feedback loops appear, this can generate happy accidents that may quickly develop into the featured sound or motif of a track. Particularly through my modular synthesis approach, I make use of modules that can randomise events that encourage small pockets of new ideas. For example, random

[267] Bjørn, *Push Turn Move*, 26.

amounts of voltage can be sent from a random-voltage generator (such as the module by ALM Busy Circuits known as 'Pamela's New Workout') to vary the cut-off frequency of a synthesiser's filter to create timbral movement without the need to vary the pitches within a pattern. *Modulate Everything* (Appendix 1, FF) demonstrates how random voltages are sent to various filters and effects to create a cacophony of sounds, rhythms and timbres, and it is this kind of randomised movement that can quickly become a focused pattern/sequencer in a performance. Random-voltage generator modules help to create smaller incidental actions that I would normally do from time to time with my own hands, although this allows me to refocus my attention on the manipulation of other parts of my instrument, helping to establish that the performance is not entirely generative and that I do make conscious decisions. The results might feel less machine-like because I can react to the output of my instrument and make an informed decision about how I want the performance to progress. During my set-up I deliberately design patches that allow certain modules to evolve based on their interactions with other machines (modules) within my instrument. As the patches become more complex, so too do the results. The live performance *Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular* (Appendix 1, AA) demonstrates the result of complex patching and how this informs the direction of the performance. This approach adds a liveliness and dynamism to the performance that helps me maintain my interest as the improvising performer. This is achieved through a machine-led aesthetic, because I ultimately delegate certain functions to various modules and machines, but although I am led by the machine, I maintain control as the person who is conducting the composition. Ultimately, I can decide when and how I intervene, or allow the system to generate and evolve based on the functionalities and limitations of my studio-instrument.

Professor George Lewis discusses how immediate performing differs from traditional composing, and how many snap decisions are made in the moment. He describes that improvisors work in terms of loosely defined shapes, 'which can be defined in terms of characteristics such as volume direction, pitch direction, duration, rhythm regularity, pitch or duration transposition, time between major changes in output or input, pattern finding, and frequency of silence'. [268]

The devices I use, including looped phrases and pre-programmed sequences, form my pre-existing elements, but they are not part of a pre-existing work. Lewis describes the different qualities and actions a good improvisor must have and do, including that they 'have to keep

[268] Chadabe, *Electric Sound*, 300.

track of the context in which they place the sounds they are making and hearing'.[269] He further states that a fast, general analysis is required rather than an exhaustive transcription'.[270] This requires 'massive but musically important data reductions', according to Lewis.[271] When assembling my studio-instrument, I am also conscious of the amount of pre-existing elements I need to create, so that I can channel my focus and actions when it comes to performing. I need to be mindful of the balance of creating enough pre-existing elements, but also limiting the number to leave enough room to build and layer these elements during my performance. The inclusion of the modular synthesiser contributes to a variety of elements (patches) that cannot exist until they are contextualised during my performance.

UK artist and modular synth expert Alex Theakston (under the name Mylar Melodies) discusses his approach to performing and composing with modular synthesisers via his popular YouTube channel, and highlights his belief in the importance of 'knowing your instrument' to be a better improvisor.[272] Steevio connects the practices of the improvising Jazz musician with his modular synth approach and labels his work as 'machine Jazz'.[273] Knowing my studio-instrument, including its limitations and scope, is key to my performance practice, especially when considering the complexities of a fully patched system containing modular synthesisers, drum machines, and more.

Theakston discusses the value of risk as 'giving up some control to the machine' (the modular synthesiser in his case) and being in the moment, which then allows him to react in real time to something that he is hearing in order to keep building and deconstructing layers of sounds that in turn become the composition.[274] This also aligns with Derek Bailey's celebration of the moment,[275] as the complexity of a modular synthesiser performance can make it hard to replicate after a performance. Similarly, Theakston talks about how the additional element of risk during a performance 'makes for more interesting work'.[276] Risk can also contribute to pushing the parameters of the genre, because it increases the chances of happy accidents. My thorough understanding of both my instrument and my

[269] Chadabe, *Electric Sound*, 300.
[270] Chadabe, *Electric Sound*, 300.
[271] Chadabe, *Electric Sound*, 300.
[272] Mylar Melodies, "The Journey into Live Modular Synths, a Talk by Mylar Melodies," YouTube, published 27 September 2018, https://www.youtube.com/watch?v=c_WiOiWhPDQ.
[273] suzybeeMINDTOURS, "Freeform Techno / Machine Jazz Demo2 – Steevio," YouTube, published 6 November 2019, https://youtu.be/LVX89bPkGMc .
[274] Mylar Melodies, "The Journey into Live Modular Synths."
[275] Derek Bailey, *Improvisation: Its Nature and Practice in Music* (New York: Hachette Books, 1993), 142.
[276] Mylar Melodies, "The Journey into Live Modular Synths."

compositional practice allows me to experiment with taking risks to keep my work interesting and unique.

My approach to understanding my studio-instrument could be similar to how one practices with an acoustic instrument in order to master it, although knowing my studio-instrument is a more dynamic practice, as it is in a constant state of change, with many more variables than most acoustic instruments. Knowing my studio-instrument is a complex affair that requires me to understand an elaborate blend of electronic devices and audio technologies, including how they are connected and how my interactions will inform the work in real time. My relationship with my studio-instrument requires me to simultaneously be a programmer, audio engineer, producer and performer, although there will be times during a performance where one aspect will be the focus, such as balancing the volumes of different sound sources or manipulating the filter of a synth voice.

As my performance practice evolves, I am making more use of my modular synthesiser rig as part of my studio-instrument, as it provides more scope to shape my work in real time. This requires a somewhat more intimate knowledge of my instrument, considering how often I rearrange my rig due to the introduction of new synth modules, as well as my overall permutative approach to my instrument. I don't believe that being a master of every possible function of my instrument, and particularly my modular rig, makes for better results, for while it is vital to know my instrument, it can be exciting to discover new possibilities through happy accidents. I feel that the discovery of new functions within my instrument (i.e., modules within my modular synthesiser) during a performance helps breed unique outcomes. Given the flurry of activity during my performance, happy accidents help to refocus my attention towards different sounds and motifs and can affect the overall direction of the performance.

In an article on modular synthesis in *XLR8R* magazine, English artist Steevio discusses how his studio-instrument in the 1990s was based on a TR-909 drum machine, an SH-101 synthesiser and two TB-303s. He discusses how he wanted to explore other hardware within his set-up, but modular synthesisers were not affordable until the 2000s. He soon designed an instrument based on modular synthesis as an improvisational instrument, noting that 'the whole point of it was to make an instrument that was pure improvisation, so you don't think about the arrangement, you just do something when it feels right at that moment. I wanted the whole thing to be holistic, so every part of what's going on is affecting every other part of

what's going on'.[277] This is the same focus I adopt with the relationship I have with my studio-instrument when performing. Not only does the design of my instrument need to provide me with a palette of sounds I can manipulate in the moment, but I also need my instrument to interact with itself. The moments during a performance where I take risks and change direction as a result of happy accidents inform new creative outcomes and push the boundaries of Acid and Techno, all in real time.

In addition, the beginnings of my commercial practice as the artist Honeysmack were largely a series of happy accidents I encountered whilst exploring the limitations and functionalities of various devices. As a young artist my access to gear was limited, and this situation forced me to extract as much as I could from a few pieces, such as the TR-909 and TB-303. This is where I first developed my belief in the value of taking risks and embracing happy accidents as essential components of the creative process, and how much they inform my work. Today my collection of gear has grown, although my practice continues to embrace the same approach to risk-taking in an effort to create unique results for every performance.

3.6 Beyond Acid

The track I produced for Carl Cox's label Awesome Soundwave, *MERK* (Appendix 1, U), demonstrates how I have pushed the parameters of Acid. This track consists of a TB-303 with heavy amounts of reverberation sampled in real time via the Elektron Octatrack.[278] The Octatrack was set up in a way that it captured (sampled) a 16-step sequence of the TB-303, then divided the recording into eight slices, which it randomly re-pitched and modulated while adding additional reverb. During the performance, I used the crossfader on the Octatrack to transition between the live version of the TB-303 and the sampled slices randomly sequenced by the Octatrack.

The track contains only a kick drum and a TB-303, with both sounds affected by varying amounts of long-decaying reverberation. The excessive use of reverberation turns the track into a suffocating echo chamber of Acid. The long track duration allows time for the spatial effects to evolve and transform the texture of the track. The tempo still pays homage to Acid, although it feels considerably slower due to the sparseness and dissonance of the TB-303 pattern and the liberal use of reverb. At times, the sound of the TB-303 is almost

[277] Warwick, "A Guide to Modular Synthesis."
[278] The Octatrack's assignable crossfader added to its unique performance possibilities. Source: https://www.elektron.se/legacy-products/ viewed November 8, 2019.

unrecognisable due to the sliced Octatrack samples. Yet, the track provides moments where the typical version of the bubbling resonant ‘wapp’ of the TB-303 sound is heard, providing just enough likeness to the original TB-303 sound. Overall, the track is a single-take, live improvised performance, reducing Acid to its bare essentials of a kick drum and TB-303 whilst extending beyond its stylistic parameters. The extension of Acid is demonstrated through the track’s sound-design qualities, such as the textural density created by the excessive use of reverb. This is further enhanced by the restrained performance of the TB-303’s filter modulation, as there is enough movement to recognise the TB-303, but through the use of real-time sampling, grabbing small bites of the TB-303 to help create an uneasiness that ultimately transforms the TB-303 sound into something completely new. Additionally, the original duration of the track of more than 17 minutes was edited down to 12 minutes to fit on the record, exceeding the typical duration of an Acid composition. I would argue that *MERK* is on the threshold of Acid and a push to a Post-Acid definition of Acid. The short video clip on my Instagram page provides insight into how I performed the track (Appendix 1, JJ).

3.6.1 Pushing the Defining Parameters of Acid

While *Walk on Acid* and *MERK* demonstrate an early and more recent composition, respectively, the following is a summary of how my practice has pushed the defining parameters of Acid that were outlined in Chapter 1:

Tempo: During my performances I set tempos that exist outside the Acid tempo range. Whilst performing, there are moments where I decrease the tempo to fewer than 40 beats per minute (BPM), then slowly begin to raise the tempo back to an Acid tempo (110-140 BPM). This dramatic fluctuation of tempo adds to the dynamics of the performance and demonstrates to audiences that the performance is truly live and improvised. At times, usually during the final moments of my live set, I will increase the tempo to 300 BPM while creating a wall of electronic noise, which reinforces the liveliness of the show and helps distinguish my performance from the next DJ or performing artist. In the live performance *Honeysmack Live Acid Techno Improvisation 40min Jam* (Appendix 1, GG), towards the final minute of the set, I slow the tempo to 99.8 BPM, going slower at the end of the piece.

Time signature: The kick drum and the TB-303-sequencer default to a 4/4-time signature, although I use other sequencers from other devices with different time signatures and metric

qualities.[279] Polyrhythms are a feature of my work and I apply this to tonal and percussive sounds in an effort to create a particular density of rhythms that is unique to my work. Whilst the repetitious four-to-the-floor rhythm grounds the main pulse of my work, weaving different rhythms in real time during the performance, both subtly and harshly, helps create interesting rhythms that push and pull against the main pulse. The real-time composition for Australasian Computer Music Conference 2020, *Acid Dub: real-time composition for ACMC2020* (Appendix 1, HH), is a complex mix of changing polyrhythms on three different 303s whilst the TR-808 maintains a steady 4/4 pulse. Whilst this piece is focused on the 303 sound, the mix sound processing, effects and rhythms provide a different colour to the 303, further demonstrating new possibilities within the genre of Acid.

Duration: My live performances are typically one hour long, and, on a macro level, I consider the entirety of each performance as a single body of work. This extends the duration of Acid beyond the typical 3:00-10:00 minute durations of recorded Acid works. On a micro level there are different sections throughout the live performance that could also be considered individual works, and I can explore the durations of those micro sections without any preconceived timeframe except for the total time allocated to my performance. The micro sections can be momentary or last several minutes, and my improvisational approach informs how I respond in the moment and when I transition from one section to another. Overall my live show is one contiguous, non-stop, live Acid performance.

Common Instruments: Whilst I incorporate many of the common instruments associated with Acid, such as Roland's TB-303, TR-909 and TR-808, there are many other different instruments and sounds I incorporate in my work that constitute a permutation of my studio-instrument (Appendix 5). The piece *303 + 808 + 909 =* 2020 (Appendix 1, T) demonstrates what I would label a traditional sound palette of Acid, with the three key Roland boxes. In this piece I have intentionally unprocessed the sound of the three boxes in an effort to show the common instruments of Acid in their natural form. The addition of my modular synthesiser rig affords me the ability to create even more new sounds in real time during a performance, and to build upon and expand the typical sound palette of Acid.

Texture: A large focus of my actions during a performance is how I manipulate texture through different applications and amounts of audio and spatial effects. Whilst there may be some pre-existing routings to different effects modules or units throughout my instrument, when I perform, I can effectively manipulate the number of effects applied to different areas

[279] All of my drum machines, synthesiser and sequencers default to a 4/4 time signature.

of my instrument. During my performance I can make wildly contrasting adjustments that can create both dynamic and subtle textural changes throughout my work. My improvisational approach allows me to extend on the typical texture of Acid by sustaining longer and louder amounts of effects than might sound appropriate in the recorded format. The piece *30303030303030303* (Appendix 1, W) demonstrates how I apply various amounts of reverb in an effort to add an evolving texture to the 303 sounds. The reverb processes the sound of the 303 into something of a textural smoke haze rather than the identifiable bass synth sound.

Structure: On a macro level, there is only the broader start, middle and end to my live performances. On a micro level, I have the flexibility to arrange the smaller sections within my performance to be either repetitious or concise, because there are no preconceived arrangements to which I am adhering. The arrangement on a micro level can be the result of a small technical limitation of a device or the occurrence of a happy accident. The particular permutation of my studio-instrument for a given performance is designed to allow my improvisation and happy accidents to guide the structural aspects of my work. Unlike structuring and arranging work for the recorded format, there is no restriction as to how I direct my energy, which allows me to experiment with and extend beyond the structural expectations of Acid. The balance and expressive drive that inspire me are being in the moment, listening to the result of my actions in real time and seeing how far I can push the parameters of the overall sound, rhythm and timbre of the work.

Timbre: The TB-303 is a defining sound of Acid, largely characterised by how the low-pass resonant filter is modulated throughout a work. My performance allows me to explore the extreme contrasts of the TB-303 sound and its filter. At times I will make the TB-303 sound more like a bass line, reducing the filter and resonance amounts, whilst in contrast I can also make the TB-303 highly resonant, all during the same section of my work. During my performance I will dynamically change the timbral state of the TB-303. Some of my work also features multiple TB-303s, and providing each TB-303 with a distinct timbral quality greatly extends the options offered by a single TB-303 in a work. The timbral qualities of multiple TB-303s are also informed by my textural and structural manipulations during a performance.

3.7 Chapter Summary

My studio-instrument is assembled as one would build an analogue synthesiser. I start by connecting my devices together, exploring different permutations until I find the right density

of sounds that complement or contrast with another. These sounds are then sequenced as I build up one or more layers of rhythmic patterns of various densities. The sum of these sounds as they move through a track weaves a complex texture of micro-layers, 'a maze of dissonance, a mosaic of rhythmelodies, an aural algebra that confounds counting'.[280] When I feel I have reached the level of density that I require, I begin a subtractive process in which I eliminate devices and remove musical elements such as patterns or parts of patterns in real time.

My career as an experienced live-EDM performer working in nightclubs, event spaces, large outdoor festivals and gallery spaces since the early 1990s has given me a perspective on how to shape the volume, density, mass, timelines and other elements to create, maintain and modify the energy of the space, and to shape my sound within and beyond the Acid genre. When artists push the limitations of particular EDM styles, as I do, new styles and genres can emerge, and these are often born out of the artist's performance practice.

Presenting Acid as a real-time performance provides a different context to the way it is typically experienced. My live approach reveals a new composition that is produced in real time in front of an audience each time I perform. The studio-instrument is assembled such that the concept of play, and more so the concept of risk, are embraced during the performance, promoting happy accidents that allow me to reside in the moment. The outcomes are unique and non-replicable, as my responses will differ for every performance, allowing for greater exploration and the extension of the genre of Acid with each live show.

The inclusion of the familiar TB-303 sound helps to characterise the output as Acid, although my practice explores other sounds and methods that are a derivative of the TB-303 sound and sequencer. Many modules within my modular synth rig are inspired by or emulate the sound and features of the TB-303. An example is the Eurorack module *M303* by the manufacturer Acidlab, which is an emulation of the 303 oscillator and filter. This module has multiple CV inputs that offer control over various areas of the module, including the filter, pitch and envelope; they enable more modulation opportunities than available on the original 303, as presented on the short video *M303 Test* (Appendix 1, II). When I use the *M303* in conjunction with a real TB-303 I can extend upon the familiar sound of Acid because I can modulate the filter and oscillator in ways that were not previously possible. Additionally, my approach to modular synthesis means that every time I patch a module, such as the M303, a new result will emerge for every performance. There are also times where I will incorporate

[280] Eshun, *More Brilliant than the Sun*, 108-109.

multiple TB-303s in an effort to explore the context of Acid as a focused sound source; examples include *Acid Dub: 303/TB3/Avalon/777/VolcaBass/808/RYTM* (Appendix 1, EE), Need To Get More 303s (Appendix 1, V) and *Acid Dub: real-time composition for ACMC2020* (Appendix 1, HH). These videos contain multiple TB-303s and different clones of the 303 as the focused sound, building a particular density of Acid and showing how multiple 303s can be explored in the same work. Still, doing this type of performance in front of live audiences has its challenges.

In my experience, performing live EDM in front of audiences provides an authenticity that can only be felt by a live audience, as they can see the mechanics of how the artist is interacting and performing with the instrument. I would argue that this is more engaging than a DJ playing a prerecorded track. While the actions of a DJ are typically confined to two turntables (and combinations including laptop and compact disc players) and a mixer, my instrument offers a spectacle of lights, patch cables and other devices with a variety of functionalities with which I can physically engage. In my experience, audiences seem to see and hear the effect when I interact with my instrument. Composing in real time with a studio-instrument in front of live audiences faithfully demonstrates how Acid is created in front of their very eyes.

Figure 19. Performing live at Bunker Open Air, Melbourne, 2015

Chapter 4: CONCLUSION

4.1 Summary

This research project has outlined the evolution of my practice as one that expands upon the sound and genre of Acid. My performance practice illustrates this exploration and extension, and I have framed this within the studio-instrument concept. Section 1 of this document provided the context to my practice with a historic overview of EDM and the evolution of Acid, including the definition of Acid as a genre. Chapter 1 clarified the difference between DJing and what I do as a live EDM producer and performer, and was further contextualised through a brief survey of early electronic-music practices and how the application of studio practices has inspired and informed this research. An introduction to the evolution of Acid highlighted its inherent qualities, providing me with a foundation by which to measure the ways I have contributed and extended upon the parameters of the genre and its sound. This definition also makes a contribution to the compositional practice of Acid, as this is the first focused and collated characterisation of the sound, style and genre of the genre.

The second chapter provided a review of the key artists who have inspired my practice. These artists and their works were discussed chronologically and presented within the context of a genealogy of Acid from Para-Acid practitioners to my contemporary peers. This discussion demonstrated the breadth of Acid's evolution and characterised how different artists worked within the genre of Acid and pushed EDM in new directions. The chapter also provided insight into my professional work as Honeysmack and how my commercial career and artistic journey have shaped my practice.

The remainder of the project focused primarily on my own practice. Starting with Chapter 3, I outlined my own compositional practice as an EDM composer and performer under the Honeysmack name, and my contribution to the context presented in the first two chapters. I described the concepts and tools that I use to compose and began to create the conceptual framework of the studio-instrument. This chapter also outlined how I use my studio-instrument and how it is uniquely assembled from various studio devices in preparation for my performances. I use a permutative approach to separate the assembly of my studio-instrument from how I incorporate and make use of modular synthesis throughout my practice. This chapter went on to explicate my method for selecting different devices while assembling my studio-instrument, including the selection and engagement of synchronisation protocols, mixer, drum machines, synthesisers and sequencers.

The discussion of my performance practice and how I make use of my studio-instrument concluded Chapter 3. My performance practice was described in terms of how I *collaborate* with the machine to perform and compose in real time. I also discussed how my studio-instrument is analogous to an acoustic instrument, yet the dynamic approach to different permutations promotes further risk and an increase in the likelihood of happy accidents. Embracing these accidents often informs a change in the direction of the work, and relinquishing some control to my studio-instrument contributes a uniquely creative outcome for each composition.

4.2 Final Observations

This research project has provided an opportunity for me to cast a critical eye over my creative work and development as an artist, and to situate these within the context of an ever-evolving approach to electronic music-making. The overall challenge in creating new, original and commercially viable EDM is a balance between revering stylistic parameters that define particular genres, and extending those qualities. Through my research I have developed a definition of the sound of Acid (as discussed in Chapter 1), and I have been able to push against, or beyond, these stylistic parameters throughout my career. I feel that my most recent album challenges Acid in terms of form and sound to such an extent that I chose to label it *Post Acid* (Appendix 1, V), although I still have much more to explore and contribute to Acid and its continuing evolution.

EDM genres are created, produced and presented to audiences at an expedited pace, particularly through the proliferation of computer technologies and music production software. [281] This output is further assisted by the sharing power, speed and access of social media.[282] Artists now have additional channels to access audiences, and they can publish their work far more independently than ever before.[283] My outputs have continued to expand and develop in line with the fluctuations of the music industry, although my contribution embraces an approach that is somewhat unpredictable, with a focus on challenging audiences and the EDM community at large. My social media posts (Appendix 4) and most recent albums *Post Acid* (Appendix 1, V) and *Live From Mysteryland 2020* (Appendix 1, N) demonstrate how my performances consistently push the parameters of the Acid and Techno genres.

[281] Simon Emmerson, *Living Electronic Music* (Farnham, UK: Ashgate Publishing, Ltd., 2013), 111-113.
[282] Danny Feinstein and Colin Ramsay, "The Rise of EDM," *Berklee College of Music – Music Business Journal*, accessed 13 November 2020, http://www.thembj.org/2012/10/the-rise-of-edm/.
[283] Kusek and Leonhard, *The Future of Music*, 104-113.

When I began this research project, I saw a radical disruption to the music industry, most recently as the result of the COVID-19 pandemic. Performing live has been an important part of my professional career and evolution as an artist, but still, surprising results have come about given this otherwise unfortunate disruption. My practice begins in my larger studio; therefore the transition from performing in front of live audiences to that of broadcasting from my personal studio has had little effect on the way I perform. I have found new ways to share my work over social media (Appendix 4) via live streaming, and continue to increase my audience. At a time when most EDM DJs and performers have no venue in which to perform, I have managed to maintain a healthy schedule of live shows throughout 2020, including several high-profile shows, with the three biggest audiences of my career for *Honeysmack live at Awesome Soundwave LIVE* (Appendix 1, M) in April, *Live From Mysteryland 2020* (Appendix 1, N) in August and *Awesome Soundwave Live Online Festival III* (Appendix 1, O) in December 2020.

The Honeysmack journey demonstrates my ongoing contribution and commitment to the EDM community through the music and performances I have completed since the mid-1990s. I continue to value and pursue unique and original ways to create my work. I am excited by what creative opportunities will continue to emerge as a result of new technologies and my interactions with them. This is what defines me artistically, professionally, academically and personally, and I take great pleasure in sharing this with others. This does not conclude my research, as I look forward to creating and performing Acid Techno bangers well into the future.

Figure 20. Photo taken from *Live From Mysteryland 2020* (Appendix 1, N)

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APPENDICES

Appendix 1: Creative Folio

The following audio recordings, full length albums, live performances and video works make up the creative portfolio; all are accessible by clicking on the title:

Audio Recordings

A.	*MERK*	2020	12:12
B.	*M2M2M2*	2020	3:31

Full-Length Albums

C.	*The Broken Acid Experiment*[284]	2018
D.	*Post Acid*	2020
E.	*Live From Mysteryland 2020*	2020

Live Performances

F.	Live at Bunker Open Air 5 (excerpt), February 2015	20:25
G.	Live at Piknic Electronik, 2017. Sidney Myer Music Bowl	62:06
H.	Live at Melbourne Music Week (excerpt), November 2017	1:00
I.	Live at Resonant, November 2018	41:44
J.	Live at Acid Slice, March 2019	73:13
K.	Live at Technoir, March 2019	59:51
L.	Live at Acid Slice, January 2020	54:05
M.	Live at Awesome Soundwave, Beatport Live, April 2020	60:29
N.	Honeysmack Live From Mysteryland 2020, August 2020	60:29
O.	Awesome Soundwave Live Online Festival III, December 2020	56:59

Video Works

P.	*Dub Techno Jam with Roland System 500, TR-8, TB-03 and SH-01a*	2020
Q.	*Techno: 909 + MachineDrum + Sherman Filterbank*	2015
R.	Sticky Machine Improvisation	2018
S.	*808 Electro Live Jam for 8.08 Day*	2020
T.	*303 + 808 + 909 = 2020*	2019
U.	*Acid Techno jam with TR-909, TB-303 Devilfish and Moog DFAM*	2020
V.	Need To Get More 303s	2016

[284] The Broken Acid Experiment was an experimental rock project co-written by Tarek Smallman, Mike Callendar and myself.

W.	*30303030303030303*	2018
X.	*Octatrack + A4 + TR09 +TB03*	2017
Y.	*Dark Acid Techno:DFAM + Machine Drum + Sherman Filterbank*	2018
Z.	*Modular Acid Techno banger with live sampling*	2019
AA.	*Improv Live Acid Techno with 2x Moog DFAMs, M32 and Modular*	2020
BB.	*Acid Techno improv with Octatrack, Avalon and modular synth*	2020
CC.	*Happy 3.03 Day*	2020
DD.	*Acid Crash*	2020
EE.	*Acid Dub: 303/TB3/Avalon/777/VolcaBass/808/RYTM*	2016
FF.	*Modulate Everything*	2018
GG.	*Honeysmack Live Acid Techno Improvisation 40min Jam*	2019
HH.	*Acid Dub: real-time composition for ACMC2020*	2020
II.	*M303 Test*	2019
JJ.	*Video Performing Merk in the studio*	2018
KK.	*Buchla Easel Techno*	2018
LL.	*Acidy Techno with MC-202, TR-909 and modular synth*	2020
MM.	*Happy 8.08 Day*	2018
NN.	*Drone Techno with Primary Oscillator + DFAM + Digitone*	2018
OO.	*90909090909090909*	2020

Appendix 2: Other Audio Recordings outside of PhD period 1995-2012

Audio Recordings

A.	*Which Side*	1995	10:15
B.	*Allied*	1996	5:08
C.	*Bathed*	1996	4:56
D.	*Satin Surprise*	1997	1:42
E.	*Cherry Pepper*	1997	5:29
F.	*Walk On Acid (original mix)*	1998	8:40
G.	*Big Pappa Pump*	1999	3:53
H.	*Gold 303*	2002	3:24
I.	*Bang The Box*	2003	4:55
J.	*Brainss!* (as Acid Jacks)	2006	5:21
K.	*Awake Since '78* (as Acid Jacks)	2007	6:43
L.	*Brain Juice*	2008	2:57
M.	*Surge Strip*	2011	6:54
N.	*202AD*	2012	5:46

Full Length Albums

O.	*Smelly Records Compilation*[285]	1996
P.	*Honeysmack Live*	1997
Q.	*Fuck Bubble*	1999
R.	*Rock*	2003

Appendix 3: Interviews and Tutorials 2017-2020

A. *How to program a Roland TB-303 with David Haberfeld*, Melbourne Conservatorium of Music – The University of Melbourne, September 21, 2017, video, https://youtu.be/qLX01cscS0A

B. *Honeysmack Interview: How to make a slamming acid 303 track, Decoded Magazine*, March 17, 2020, video, https://www.facebook.com/Decodedmagazine/posts/3298051546890566

C. "'The 303 Has Become the Electric Guitar of Electronic Dance Music' – Honeysmack", *Decoded Magazine*, March 17, 2020, https://www.decodedmagazine.com/honeysmack-interview-2020/

D. Interview with Honeysmack, *6am Group*, January 28, 2020, https://www.6amgroup.com/in-interview-with-honeysmack/

Appendix 4: Social Media Channels

Instagram: https://www.instagram.com/_honeysmack_/

YouTube: https://www.youtube.com/user/Honeysmacked

Soundcloud: https://soundcloud.com/honeysmack
https://soundcloud.com/david-haberfeld

Facebook: https://www.facebook.com/Honeysmack303/

[285] Although this album was a compilation of different artists, all the tracks were either produced and written in collaboration with myself: Pfiffco with Philip Samartzis, PIN with Voitetck Anderson and Graham Mono with Adam Raisbeck and Scott Armstrong.

Appendix 5: List of Studio Gear

Drum machines:

- Dave Smith Instruments Tempest, Analog Drum Machine (2011)
- Elektron MachineDrum SPS-1 UW MkII (2005)
- Elektron Analog RYTM MkI (2014)
- Korg Volca Beats (2013)
- Korg Volca Kick Analog Kick Generator (2017)
- Roland TR-808 Rhythm Composer (1980)
- Roland TR-909 Rhythm Composer (1983)
- Roland TR-606 Drumatix (1981)
- Roland TR-707 Rhythm Composer (1985)
- Roland TR-727 Rhythm Composer (1985)
- Roland TR-8 Rhythm Performer (2014)
- Roland TR-09 Rhythm Composer (2016)
- Roland TR-08 Rhythm Composer (2017)

Synthesisers:

- Abstrakt Instruments Avalon Bassline (2015)
- Buchla Music Easel (2013, originally 1973)
- Casio CZ1000 (1985)
- Clavia Nord Micro Modular (1998)
- Dave Smith Instruments Mopho (2008)
- Elektron Analog Four MkI (2012)
- Elektron Monomachine SFX60+ MkII (2004)
- Elektron Digitone Polyphonic Digital Synthesizer (2018)
- Korg 707 (1987)
- Korg Volca Bass (2013)
- Korg Volca FM (2016)
- Korg Volca Keys (2013)
- Korg MS-20 (1978)
- Korg Monologue (2017)
- Korg Monotribe (2011)
- Ladyada x0xb0x (2006)
- Leploop V2 (2015)
- Moog Mother-32 Semi Modular Synthesizer (2015)
- Moog Drummer From Another Mother Percussion Synthesizer x2 (2016)

Roland JD-800 Programmable Synthesizer (1991)
Roland JP-08 (2015)
Roland Juno-106 Polyphonic Synthesizer (1984)
Roland JX-03 (2015)
Roland MC-202 Micro Composer (1983)
Roland SH-101 (1982)
Roland SH-01A (2017)
Roland TB-303 Bass Line (1982)
Roland TB-303 Devilfish modification (1982)
Roland TB-03 Bass Line (2016)
Roland TB-3 Touch Bassline (2014)
Yamaha DX-100 Digital Programmable Algorithm Synthesizer (1985)
Yamaha DX-200 Desktop Control Synthesizer, FM Synthesis (2001)
Yamaha TG-33 Tone Generator (1990)

Samplers:

Akai MPC-500 (2007)
Akai MPC-1000 (2003)
Akai MPC-2000 (1997)
Akai MPC-2000XL MIDI Production Center (1999)
Elektron Octatrack Dynamic Performance Sampler MkI (2010)
Ensoniq ASR-10, Advanced Sampling Recorder (1992)

Sequencers:

Doepfer MAQ16/3 MIDI Analog Sequencer (1993)
Korg SQ-1 (2013)
Yamaha RM1x Sequencer Remixer (1999)

Effects (including guitar pedals and filters):

Boss RDD-10 Digital Delay (1985)
Boss SE-50 Stereo Effects Processor (1990)
Boss HM-2 Heavy Metal pedal (1983)
Boss DS-1 Distortion (1978)
Elektron Analog Heat Stereo Analog Sound Processor MkI (2016)
Eventide Space pedal (2011)
Ensoniq DP/2 Parallel Effects Processor (1995)
Korg Kaoss Pad 3 (1999)

Korg Mini-Kaoss Pad (1999)

Roland VT-3 Voice Transformer (2014)

Roland RE-20 Space Echo (2010)

S-Cat DUBSTA Digital Delay (2009)

Sherman Filterbank 2 (1996)

TC Electronic Fireworx (1998)

TC Electronic Flashback delay and looper pedal (2011)

Mixers:

Boss BX-80

Mackie CR1604

Mackie VLZ1202

Mackie VLZ802

Mackie 1640i

Mackie 24•8

Playdifferently Model1 DJ mixer

Modular synth modules:

The following are some examples of different modular rack configurations with which I have performed over the years.[286]

[286] These images are configured and generated by www.modulargrid.net.


Mixup
Quadra
Loquelic Iteritas Percido
Plaits
Launch Codes
Atlantis
Metropolis
intellijel
Mutable Instruments


Loquelic Iteritas Percido
AKEMIE'S TAIKO
Plaits
VARIGATE 4+
Mixup
DFAM
DRUMMER FROM ANOTHER MOTHER
SEMI-MODULAR ANALOG PERCUSSION SYNTHESIZER
moog
intellijel


CHIMERA
Triatt
Clouds
texture synthesizer
WMD
intellijel
Mutable Instruments
TIPTOP audio
μZeus


Atlantis
Rainmaker
AKEMIE'S TAIKO
Plonk
MUM M8
Mixup
Mixup
Clouds
Quadra
QUAD CLOCK DISTRIBUTOR
QUAD PINGABLE LFO
8 BIT CIPHER
μMIDI
RASIE
VARIGATE 4+
Triatt
OVERSEER
Metropolis
Grids
CVGT1
intellijel
Mutable Instruments
WMD


AKEMIE'S TAIKO
Clouds
Rainmaker
Atlantis
CHIMERA
8 BIT CIPHER
Mixup
Mixup
Triatt
Quadra
QUAD CLOCK DISTRIBUTOR
QUAD PINGABLE LFO
OVERSEER
MUM M8
Metropolis
MUTINATOR
PRESSURE POINTS

Appendix 6: Commercial Discography 1994-2019

2019 Troma (vinyl EP), Patch.CV, USA
Moderate Heat (MP3), Acid Slice Records
2018 White Sock in the Red Wash (MP3), Clip Art Music
Honeylab EP (MP3), Brain Food Records
2017 Acid Brush (CD/MP3), TB-303 Owners Club Vol.3 – Acid Chicken, Hong Kong
Gear Acquisition Syndrome, Synthi100, Melbourne Recital Centre
2015 Sublating The Symbol - A Recording of Australian Art Music (CD), Ars Publica, Italy
2014 This Is Acid (EP), Hackers, Australia, USA
2013 Let Me Be Free (CD), Brainwave Labs, Detroit, USA
2011 Surge Strip (MP3), Hand Made Acid, Australia
Comfortable Position EP (4xFile MP3), Hand Made Acid, Australia
2D Eleven EP (5xFile MP3), Hand Made Acid, Australia
Nipple Wash EP (3xFile MP3), Hand Made Acid, Australia
2010 Crazy Legs (3xFile, MP3, EP) Trouble & Bass Recordings, USA
2009 Toyota, Scion CD Sampler V.25 (CD) Trouble & Bass Recordings USA
Chord EP (CD, EP) Citizen Records, France
2008 Aciiieeed! Volume 7 (10xFile, WAV) Communiqué Records, USA
Crux Da House (CD, Album, Mixed) Moist Music, USA
2007 Awake Since 78 (4xFile) Xylophone Jones Records EU, USA
Disco Shoes (12") Thunder Finger Records, USA
Live Recorded At Rock Werchter (CD, Mixed, Comp) Lektroluv, Belgium
Je Ne Vous Oublierai Pas (CD) Institubes, Octave Lab, France
Whow (CD, Comp) Unique, France
Mookie (3xFile, MP3) Trouble & Bass Recordings, USA
2006 Onelove: Bring It On (3xCD, Mixed, Comp) Sony/BMG, Australia
2002 Dance (CD, Maxi) Jive Electro/Zomba Australia, UK
Give Me Liberty (CD, Maxi) Jive Electro/Zomba Australia, UK
Variable Resistance (CD) San Francisco Museum of Modern Art, USA
2001 Big Day Out Bix 2001 (2xCD) Shock, Australia
Every Picture Tells A Story: Volume 3 (2xCD) MUD, Australia
2000 Big Day Out 00 (2xCD) Shock, Australia
1999 Walk On Acid (CD, Maxi, 12”) DanceNet Australia, UK
[Ph]iltered (CD, Comp) Pacifica Records, UK
Great Southern Jam – Debonair Volume One (CD) Mushroom Australia
Bigger Than Tina Soundtrack (CD) Palace Films/Festival, Australia
1998 La Discothèque Fantastique (CD, 12”) DanceNet Australia, France
The Apollo Festival '98 - Soundtrack (2xCD, Comp) Central Station Australia
1997 Love Parade: Dr Motte Mix (CD) Filter, Germany

1996 Big Gold (10") Smelly Australia, UK, USA
Blue Sector: The Masters Of Melbourne (2xLP) Blue Sector Records, Australia
1995 Zeitgeist - Spirit Ov Thee Times (Comp) If?/ Nova Zembla Netherlands
Cynosure - Soapland EP (12") Smelly, Australia, Germany, UK
1994 Hysterical Systems EP (12”) Kickin Records UK, Germany
1993 Tweak Capsule (12") Candyline Records, Shock, Australia, UK

Remixes (selected):

2013 Equinox (digital), Morphology 1.0, USA
2012 Dance Music (CD, MP3), Freakshow Disco Productions, Australia
2011 Tits! (EP, MP3), Ministry of Sound, EMI Australia
2009 Chord EP (CD, EP) Citizen Records France
Mr. Wobble's Nightmare (9xFile, MP3, EP) Tigerbeat6 USA
Nightlovers (File, EP) DJs Are Not Rockstars UK
Northern School (4xFile, MP3) Tigerbass Records USA
2008 Bring It On Rarities & Remixes (11xFile, MP3) Skint Records UK
Fog Bank (3xFile, MP3, 320) Trouble & Bass Recordings USA
Yeah That Wide (12") Impossible Odds 2008 USA
Hey Jack! EP (5xFile, MP3, EP) Idiot House, Australia
House #1 (10xFile, MP3, Comp) Operating System UK
Jack It (12") Freakz Me Out Italy
Laugh Cry Live Die (Single) Back Yard Recordings USA
I Ain't Wid It (12”) Palms Out Sounds UK
What Of Our Future (17xFile, MP3, Comp) Kitsuné Music France
Bring It On (CD, 12” Maxi) Skint Records UK
Club Para (File, WAV, Single) Gobatcha France
Dance Among The Ruins (12xFile, MP3) Ultra Records USA
Electrophant (12") Groove Fanatics Italy
2007 I Ain't Wid It (CD, Maxi, Promo) Public Opinion Music/Shock, Australia, UK
NonStop (12") Skilled Records UK
Onelove - Smash Your Stereo (3xCD, Comp, Mixed) Sony BMG Music Australia
Undisco Me (CD, Maxi) Rebirth Records/Silver Label Italy
2006 Munter Of Puppets (12") Freakshow Disco Productions, Australia
2002 Arse Huggin' Pants / Bo Bo (CD, Maxi) Universal Music, Australia
2000 Rollin’ (CD, Maxi) Festival Mushroom Records 2000 Australia

Tracks Appear On:

2012 Dance Music, (CD) Disco Freakshow Productions, Australia
2009 Toyota, Scion CD Sampler V. 25 (CD, Comp) Trouble & Bass Recordings USA
2008 The Jukes Of Bangington - Part 1 (File, MP3) Idiot House, Australia

Aciiieeed! Volume 7 (10xFile, WAV) Communiqué Records, USA
Idiot House Of Horrors Volume 1 (File, MP3) Idiot House, Australia
The Jukes Of Bangington EP Pt 2 (File, MP3, EP) Idiot House, Australia
Metal Mania (2xFile, MP3) Idiot House, Australia
Snare Stare EP (5xFile, MP3, EP) Idiot House, Australia
Crux Da House (CD, Album, Mixed, Promo) Moist Music, USA

2007 Live Recorded At Rock Werchter (CD, Mixed, Comp) Lektroluv, Belgium
Je Ne Vous Oublierai Pas (CD) Institubes, Octave Lab, France
Whow (CD, Comp) Unique, France

2002 Variable Resistance (CD) San Francisco Museum of Modern Art, USA

2001 Big Day Out Bix (2xCD) Shock, Australia

2000 Every Picture Tells A Story: Volume 3 (2xCD) MUD, Australia

1999 Big Day Out 00 (2xCD) Shock, Australia
Summer Sampler (CD) DanceNet, Australia
[Ph]iltered (CD, Comp) Pacifica Records, UK
Great Southern Jam – Debonair Volume One (CD) Mushroom, Australia
Queen Kat Carmel & St. Jude (CD) Trout Films/ABC, Australia
Bigger Than Tina Soundtrack (CD) Palace Films/Festival, Australia

1998 Live At Your Mama's (CD) Truck Musik, Australia
The Apollo Festival '98 - The Soundtrack (2xCD, Comp) Central Station, Australia

1997 Zeitgeist 3 (CD) IF? Australia
Love Parade: Dr Motte Mix (CD) Filter, Germany
Club Filter (CD) Filter, Australia

1996 Smelly Records Compilation (CD) Smelly, Australia
Blue Sector Vol 2: The Masters Of Melbourne (2xLP) Blue Sector Records, Australia
Zeitgeist 2 (Comp) IF? Australia

1995 Zeitgeist - Spirit Ov Thee Times (Comp) If?/ Nova Zembla Netherlands
A Melbourne Underground Dance Compilation (2xLP) Nova Zembla Netherlands

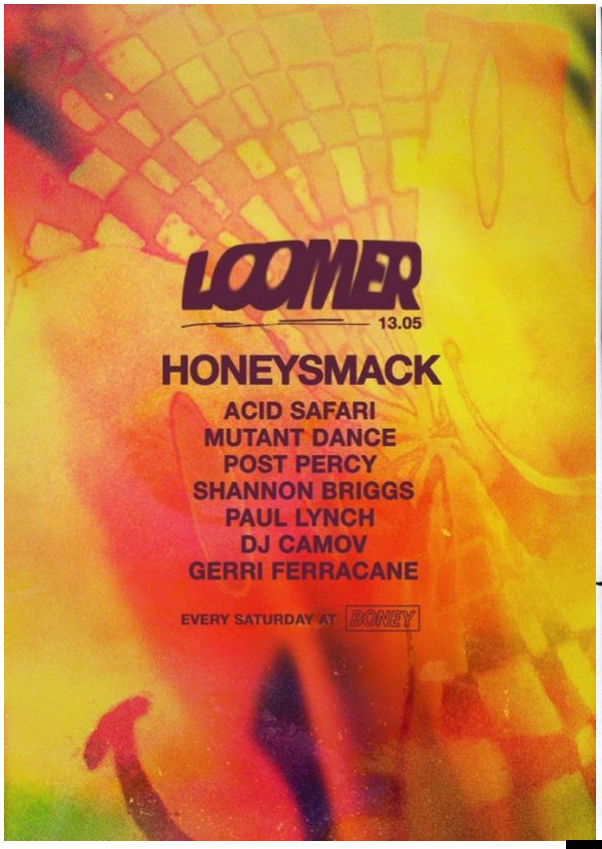
1994 Tranzfusions (LP) Shock, Australia

Appendix 7: List of Key Live Performances 1997-2020

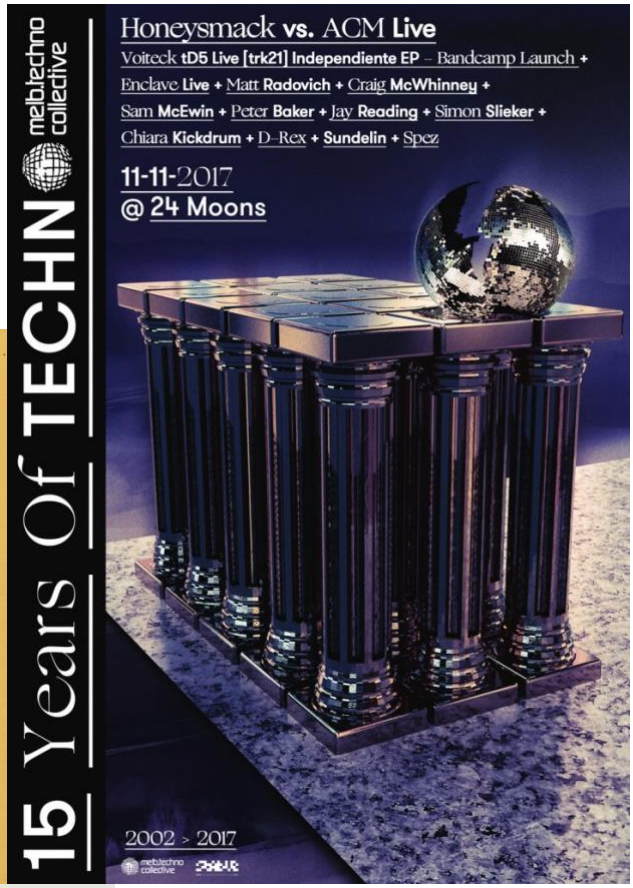
2020	Awesome Soundwave III, global stream
	Mysteryland 2020, The Netherlands
	Awesome Soundwave | Beatport Live stream, global
	Festival No.23 Lancefield Victoria
2018	WOMADelaide, Adelaide
2017	Melbourne Music Week, Melbourne
	Leaps and Bounds Festival
2015	Shir Madness, Music Festival, Melbourne
2012	Melbourne Music Week, Melbourne
2011	Future Music Festival, Melbourne
	Melbourne Music Week, Melbourne
2010	Creamfields Festival, Melbourne, Sydney, Brisbane
2009	Big Day Out, Melbourne
	Stereosonic, Melbourne, Sydney, Brisbane, Adelaide, Perth
	Bloody Beetroots Australian tour, Melbourne, Sydney, Brisbane, Perth
	Parklife, Melbourne
2008	Stereosonic, Melbourne, Sydney, Brisbane, Adelaide, Perth
	Future Music Festival, Melbourne
2007	Parklife, Melbourne
	Good Vibrations Festival, Melbourne
	Daft Punk tour, crew party Melbourne
2006	Digital Festival, Melbourne
	St. Kilda Festival, Melbourne
2004	Advent Jah Festival Melbourne
	Pharmacy Winter Carnival Melbourne
	Super Freaky Kinky, Byron Bay
	Adrenalin, Adelaide
	Earthcore Music Carnival, country Victoria
2003	Two Tribes, Melbourne
2002	Big Day Out, Melbourne, Sydney, Gold Coast, Adelaide, Perth
	Britney Spears, Crossroads tour, Sydney
	Lucid Evolution, Sydney
2000	Welcome 2000 Melbourne
	The Fuse Brussels, Belgium
	Beach Festival The Hague, Netherlands
	Metro Cardiff, UK
	Every Picture Tell a Story, Melbourne
	Falls Festival, Lorne

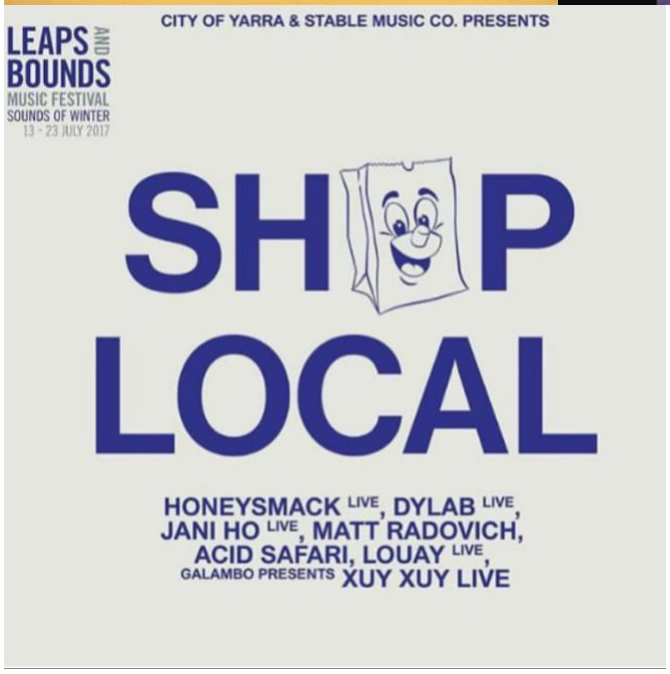
1999	Two Tribes, Melbourne
	Adrenaline, Perth
	St. Kilda Festival, Melbourne
	Big Day Out, Melbourne, Sydney
	Earthcore Music Carnival, country Victoria
	Meredith Music Festival, Meredith
	Pushover Youth Festival, Melbourne
1998	Two Tribes, Melbourne
	Stone Fest, Canberra
	Big Day Out, Melbourne, Sydney
	Hardware Universe 98, Ballarat
	Every Picture Tell a Story, Melbourne
	Falls Festival, Lorne
	Offshore Festival, Melbourne
	Pushover Youth Festival, Melbourne
	Apollo Music Festival, Melbourne
1997	Meredith Music Festival, Meredith
	Enchanted Forrest, Adelaide
	Earthcore Music Carnival, country Victoria
	TransAtlantic, Melbourne
	Halcyon Knights, Melbourne

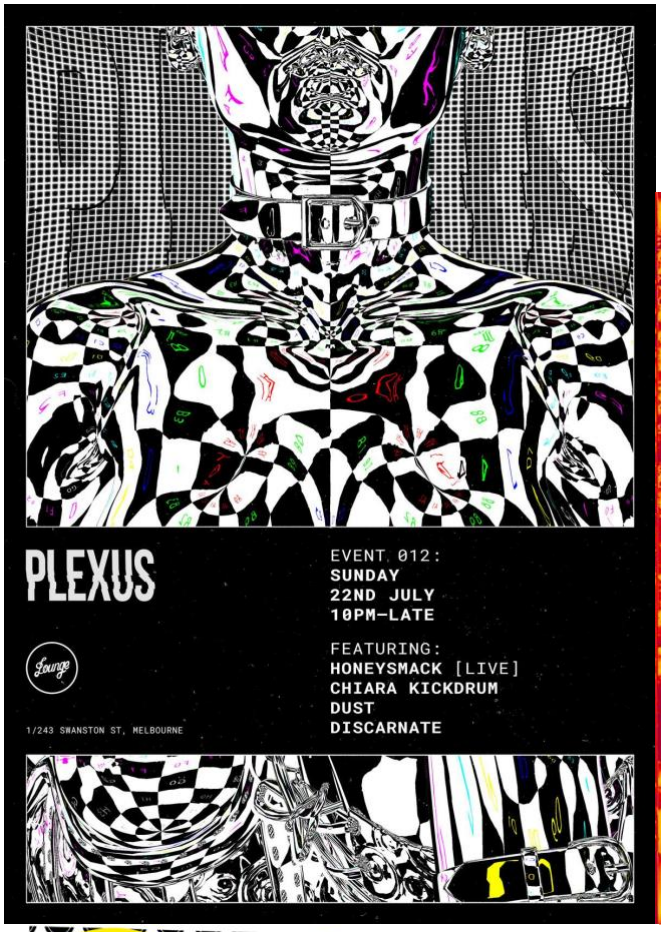
Appendix 8: Selected Live Performance Programs 2014-2019




SATURDAY 21 FEBRUARY
3:00PM — 12:00AM
BUNKER
RAILWAY HOTEL BRUNSWICK
291 ALBERT STREET
BUNKER OPEN AIR 5
HONEYSMACK (LIVE) / DAVE PHAM / DJ KITI
LOUIS MCCOY / D-REX (LIVE) / ADRIAN BELL / JAKE MCDONALD


melbtechno collective
15 Years Of TECHN
Honeysmack vs. ACM Live
Voiteck tD5 Live [trk21] Independiente EP – Bandcamp Launch +
Enclave Live + Matt Radovich + Craig McWhinney +
Sam McEwin + Peter Baker + Jay Reading + Simon Slieker +
Chiara Kickdrum + D-Rex + Sundelin + Spez
11-11-2017
@ 24 Moons
2002 > 2017


CITY OF YARRA & STABLE MUSIC CO. PRESENTS
LEAPS AND BOUNDS
MUSIC FESTIVAL
SOUNDS OF WINTER
13 - 23 JULY 2017
SHOP
LOCAL
HONEYSMACK LIVE, DYLAB LIVE,
JANI HO LIVE, MATT RADOVICH,
ACID SAFARI, LOUAY LIVE,
GALAMBO PRESENTS XUY XUY LIVE


PLEXUS
EVENT 012:
SUNDAY
22ND JULY
10PM–LATE
FEATURING:
HONEYSMACK [LIVE]
CHIARA KICKDRUM
DUST
DISCARNATE
Lounge
1/243 SWANSTON ST, MELBOURNE


LOADING ERROR
003
HONEYSMACK [LIVE]
ACID_SAFARI
DYLAB [LIVE]
DJ_KITI
REKLINER
19/08/17
24_MOONS


ACID
SLICE
BONEY
2/03/19
11-LATE
LIVE
HONEYSMACK
SANEFACTOR
DYLAB (JACK TRAX)
DJs
EMILY ROSEMAN (COOL ROOM)
JAMES STEER (DEEP CHORD MELBOURNE)
C:1 (SUPER ENJOY)
VISUALS
BRKNFIXIE
303%
NON
STOP
ACID
BONEY


PIKNIC
ELECTRONIK
MELBOURNE
HONEYSMACK LIVE


MUSIC
IS THE
ANSWER
+ AFTER
PARTY
EAT THE BEAT
MAIN ROOM
MANU NEVES
SANGALLI · JPA
CHRISS MATTÒ
MATT RADOVICH
KITCHEN
CHIARA KICKDRUM
LOUAY · ACID SAFARI
HONEY SMACK
#111 · SAT 16 FEB · 322 LT COLLINS ST
Melove
Agency

NOV
18

MMW: DJ Hell, Honeysmack, Dj Kiti, Acid Safari & Sundelin

Public · Hosted by Melbourne Music Week and Stable Music

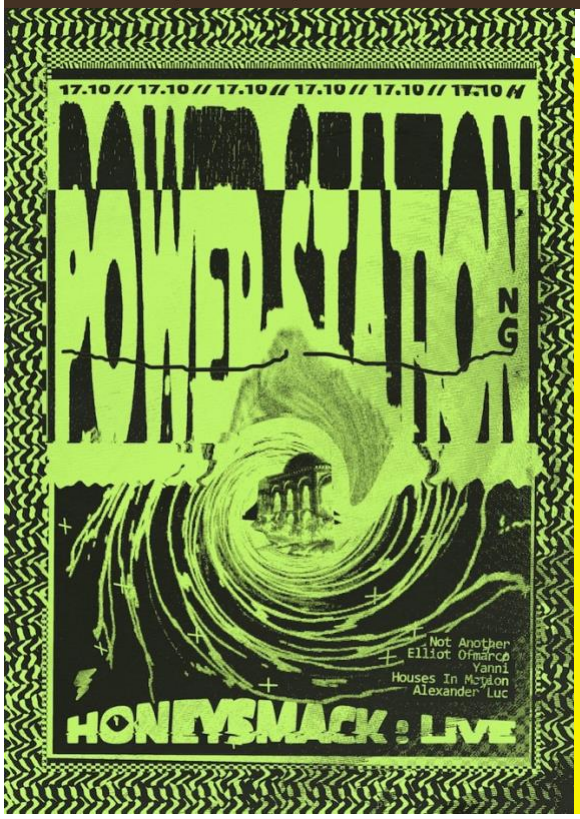
Babylon & Stable Music present

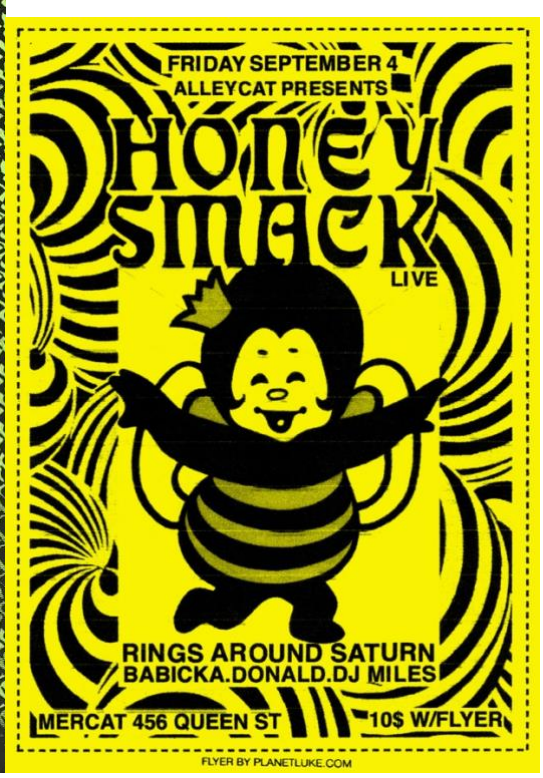
The
HOUSE OF GOD

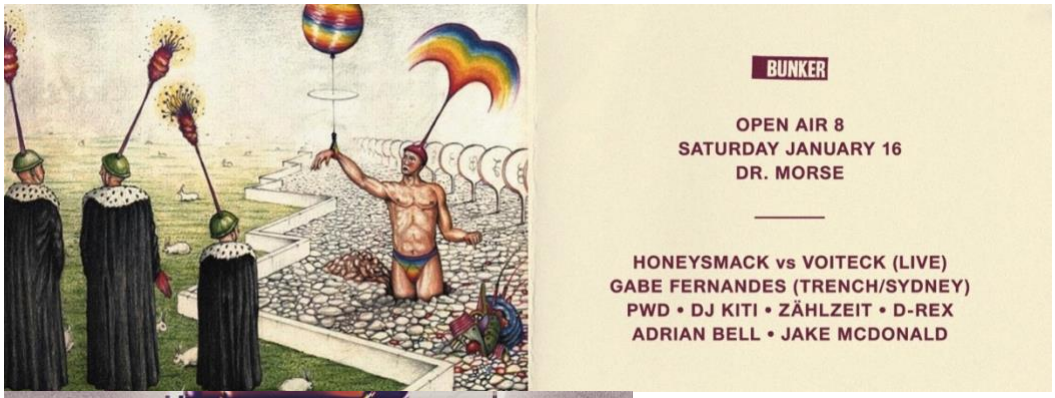
Only at Babylon Festival
23rd - 25th February MMXVIII

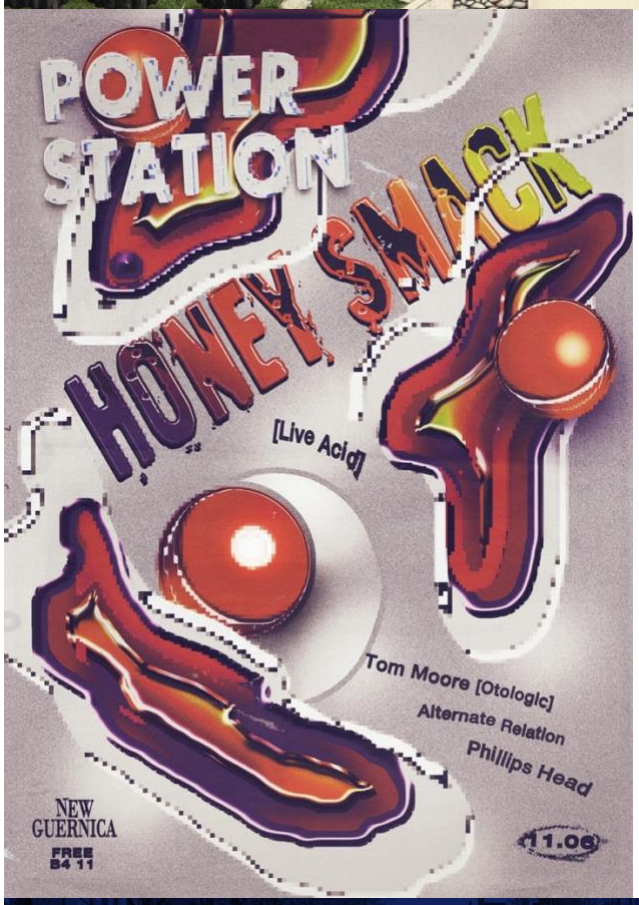
Fri Feb 23		Sat Feb 24	
15:00 - 16:00	Sam McEwin	11:00 - 12:00	Acid Safari
16:00 - 17:00	Jay Reading x Peter Baker	12:00 - 13:00	Luke Stein live
17:00 - 18:00	Matt Radovich	13:00 - 14:00	Brooke Powell
18:00 - 19:00	SCAN X live	14:00 - 15:00	Kirk Chetcuti
19:00 - 20:00	Machete	15:00 - 16:00	SPEZ B2B Pete Laskis
20:00 - 21:00	Mitch Luby B2b John Doe	16:00 - 17:00	Etwas x Matteo Freyrie
21:00 - 22:00	Chriss Mattó	17:00 - 18:00	Sly Faux
22:00 - 23:00	Mha Iri	18:00 - 19:00	Hyper Binary
23:00 - 00:00	Karl Devic	19:00 - 20:00	Craig McWhinney
00:00 - 01:00	Illuccio	20:00 - 22:00	HONEYSMACK live
1:00 - 2:00	Digital Primate	21:00 - 22:00	PWD
		22:00 - 23:00	ACM live
		23:00 - 00:00	Mickey Nox x Caine Sinclair
		00:00 - 01:00	Chiara Kickdrum x Sundelin


the wall
MELBOURNE
X
melb.techno collective
OCTOBER 1ST
WITH WALLSTERS
HONEYSMACK (LIVE)
VOITECK (LIVE) • UNDEFINED
MATT RADOVICH • PWD
DATURA • GLASS MIRRORS
SAM MCEWIN • BOSCO • FENDI
AARON STATIC • OLIVER FRANCIS
RAILWAY HOTEL
BRUNSWICK
FREE BEFORE 9PM • $5 BEFORE 12AM / $10 AFTER • FACEBOOK.COM/THEWALLMELBOURNE


17.10 // 17.10 // 17.10 // 17.10 // 17.10 // 17.10
Not Another
Elliot Ofmarco
Yanni
Houses In Motion
Alexander Luc
HONEYSMACK : LIVE


FRIDAY SEPTEMBER 4
ALLEYCAT PRESENTS
HONEY SMACK
LIVE
RINGS AROUND SATURN
BABICKA.DONALD.DJ MILES
MERCAT 456 QUEEN ST
10$ W/FLYER
FLYER BY PLANETLUKE.COM


BUNKER
OPEN AIR 8
SATURDAY JANUARY 16
DR. MORSE
HONEYSMACK vs VOITECK (LIVE)
GABE FERNANDES (TRENCH/SYDNEY)
PWD • DJ KITI • ZÄHLZEIT • D-REX
ADRIAN BELL • JAKE MCDONALD


POWER STATION
HONEY SMACK
[Live Acid]
Tom Moore [Otologic]
Alternate Relation
Phillips Head
NEW GUERNICA
FREE B4 11
11.06


WARS
PRESENTS
LOKAAL 002
HONEYSMACK
MATT RADOVICH - DYLAN GRIFFIN - MATT KOVIC - SPEZ
MICKEY NOX - CAINE SINCLAIR - JOHN DOE - PETE LASKIS
KIRK CHETCUTI - MITCH LUBY - LAURA KING
JUNE 15, 2018 / NEW GUERNICA
2/318-322 LITTLE COLLINS ST
MELBOURNE - 3000

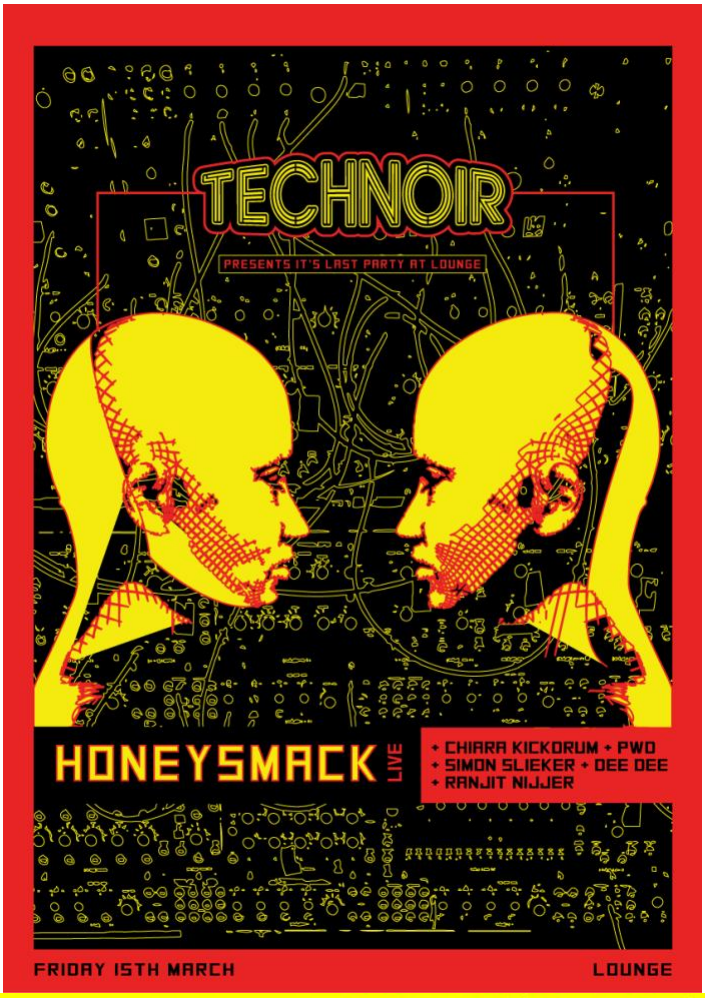
MELBOURNE CONSERVATORIUM OF MUSIC 2018

SYNTHI 100 LIVE

Wednesday 16 May, 3.00pm

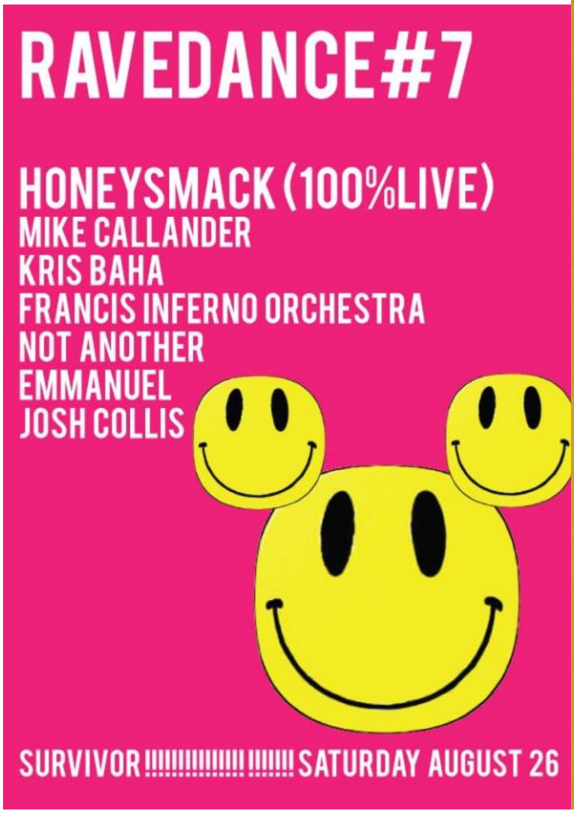
Streamed globally, this online event presents new interactive works featuring live performances on the Synthi 100 by Interactive Composition staff David Haberfeld, Anthony Lyons and Mark Pollard with pre-concert talk by Les Craythorn. This project connects to the Grainger Museum exhibition, *Synthesizers*: Sound of the future.

Where: This concert will be streamed
mcm.unimelb.edu.au/community-engagement/concerts


TECHNOIR
PRESENTS IT'S LAST PARTY AT LOUNGE
HONEYSMACK LIVE
+ CHIARA KICKORUM + PWD
+ SIMON SLIEKER + DEE DEE
+ RANJIT NIJJER
FRIDAY 15TH MARCH
LOUNGE

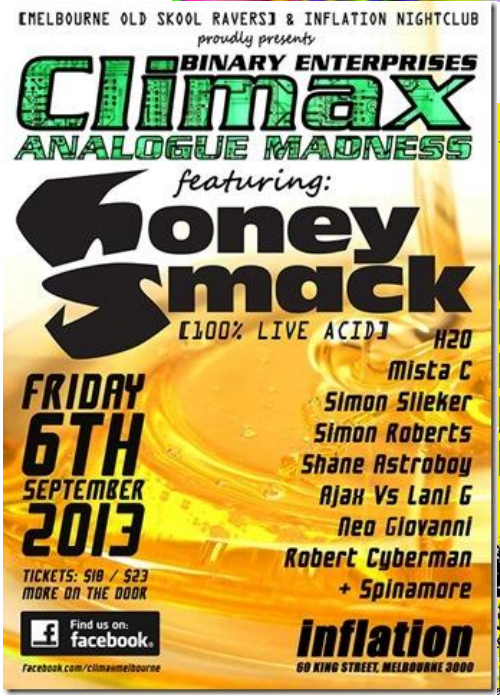

LOOP
PROJECT SPACE & BAR
SAT 31/3 MARCH
SLICE
SLICE & ACIDCHICKEN PRESENT:
ACID SLICE
10PM - 3AM IFREE ENTRY!
FEATURING:
C:I
DYLAB
ACIDALIUS
HONEYSMACK
NEIL ORCHARD
VJ: EAR MIND EYE
LOOP BAR 23 Meyers Pl. Melbourne
www.slicerecords.com.au | www.acidchicken.com


HONEYSMACK
LIVE
ACID
BUNKER
KRIS BAHA
MYLES MAC
EMMANUEL
MOVE YOUR FEET
ISAAC FRYAR
DEMARCO
POWER STATION
19.07.14
WHEN YOU'RE HIGH AS SHIT AND WANT TO FLIP THE SWITCH


RAVEDANCE#7
HONEYSMACK (100%LIVE)
MIKE CALLANDER
KRIS BAHA
FRANCIS INFERNO ORCHESTRA
NOT ANOTHER
EMMANUEL
JOSH COLLIS
SURVIVOR !!!!!!!!!!!!!!! !!!!!!! SATURDAY AUGUST 26

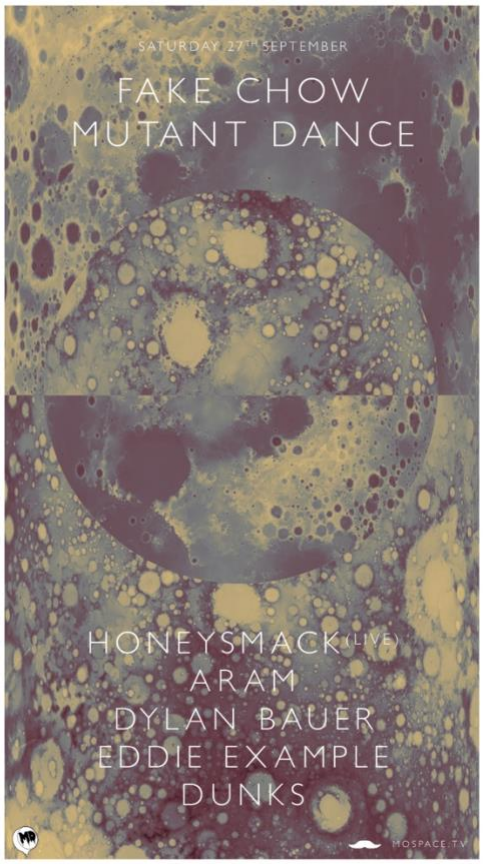

TECHNOIR
9TH ANNUAL XMAS PARTY
HONEYSMACK Live
SIMON SLIEKER
DEE DEE
RANJIT NIJJER
QUALE
(VISUALS BY BLUEMD)
WEDNESDAY 25TH DECEMBER
$15
10PM

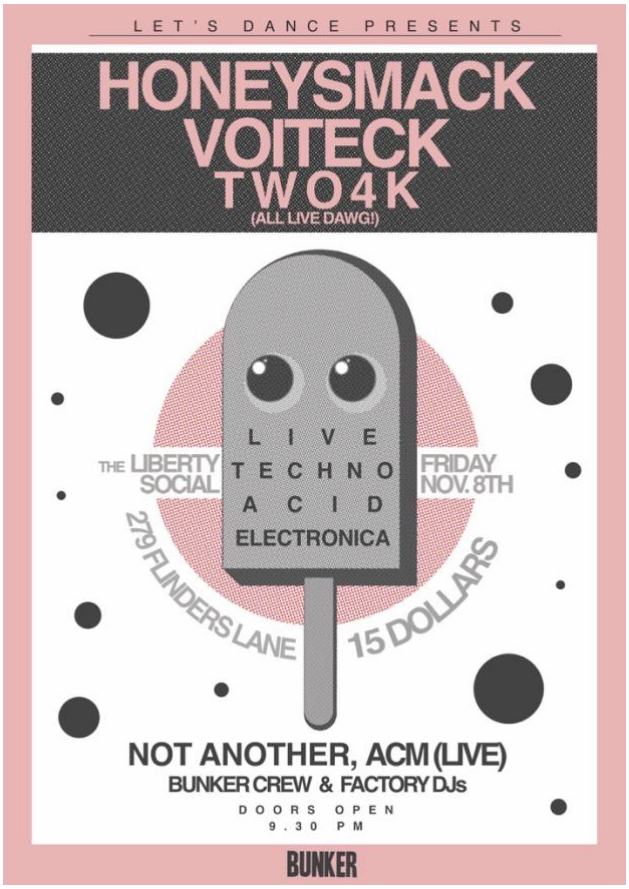

SATURDAY JUNE 28
SURVIVOR!
CLUB OF TRIPPERS
ACID FESTIVAL 4
HONYSMACK LIVE
MIKE CALLANDER
KRIS BAHA
ARAM
COMPLETELY FUCKING BONKERS


[MELBOURNE OLD SKOOL RAVERS] & INFLATION NIGHTCLUB
proudly presents
BINARY ENTERPRISES
Climax
ANALOGUE MADNESS
featuring:
Honey Smack
[100% LIVE ACID]
FRIDAY 6TH SEPTEMBER 2013
TICKETS: $18 / $23
MORE ON THE DOOR
Find us on: facebook
Facebook.com/climaxmelbourne
H2O
Mista C
Simon Slieker
Simon Roberts
Shane Astroboy
Ajax Vs Lani G
Neo Giovanni
Robert Cyberman
+ Spinamore
inflation
60 KING STREET, MELBOURNE 3000


ACID
SLICE
C:1
25TH JANUARY
10PM-4AM
WOODY'S BAR
64 SMITH ST
$15
CLAUDIA SIN
DYLAB
HONEYSMACK
KETTOKAI
RMR
ENTROPY SOUND SYSTEM
303% ACID MUSIC


Next Saturday!
CAT HOUSE PRESENTS
HARDWARE
THEORY
11.01.20
LIVE
@_HONEYSMACK
@ACMTECHNO
@JANIHOLIVE
@COMPOSITECONE
#HEMLOCKLADDER
@LOSTREFLEXION
HONEYSMACK LIVE
ACM LIVE
JANI HO LIVE
HEMLOCK LADDER LIVE
COMPOSITE CONE LIVE
LØST REFLEXION LIVE


SATURDAY 27TH SEPTEMBER
FAKE CHOW
MUTANT DANCE
HONEYSMACK (LIVE)
ARAM
DYLAN BAUER
EDDIE EXAMPLE
DUNKS
MOSPACE.TV


LET'S DANCE PRESENTS
HONEYSMACK
VOITECK
TWO4K
(ALL LIVE DAWG!)
LIVE
TECHNO
ACID
ELECTRONICA
THE LIBERTY SOCIAL
FRIDAY NOV. 8TH
279 FLINDERS LANE
15 DOLLARS
NOT ANOTHER, ACM (LIVE)
BUNKER CREW & FACTORY DJs
DOORS OPEN
9.30 PM
BUNKER