



# **Studio Bench: the DIY Nomad and Noise Selector**

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# Abstract

This thesis asks questions about developing a holistic practice that could be termed 'Studio Bench' from what have been previously seen as three separate activities: DIY electronic instrument making, sound studio practice, and live electronics. These activities also take place in three very specific spaces. Firstly, the workshop with its workbench provides a way of making and exploring sound(-making) objects, and this workbench is considered more transient and expedient in relation to finding sounds, and the term DIY Nomad is used to describe this new practitioner. Secondly, the recording studio provides a way to carefully analyse sound(-making) objects that have been self-built and record music to play back in different contexts. Finally, live practice is used to bridge the gap between the workbench and studio, by offering another place for making and an opportunity to observe and listen to the sound(-making) object in another environment in front of a live audience.

The DIY Nomad's transient nature allows for free movement between these three spaces, finding sounds and making in a holistic fashion. Spaces are subverted. Instruments are built in the studio and recordings made on the workbench. From the nomadity of the musician, sounds are found and made quickly and intuitively, and it is through this recontextualisation that the DIY Nomad embraces appropriation, remixing, hacking and expediency. The DIY Nomad also appropriates cultures and the research is shaped through DJ practice - remixing and record selecting - noise music, and improvisation.

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# DIY Nomad and Noise Selector's Discography

## **Gilora**

- 1] *Kobi Mutter* - 5:01mins (2014)
- 2] *Gilora* – 3:18mins (2015)
- 3] *Predictive Noise* – 3.28 mins (2016)
- 4] *Predictive Noise Remix* – 3.40 mins (2018)

## **Colossus**

- 5] *OKTRTA2* – 1:50 mins (2015)
- 6] *OKTRTA3* – 1:57 mins (2015)

## **Cobra**

- 7] *Cobra i* – 4:10 mins (2016)
- 8] *Cobra ii* – 5.25 mins (2016)
- 9] *Rhythm & Noises* – 6:10 mins (2017)

## **Hardware Mash-up**

- 10] *Goaersing* – 6.02 mins (2018)

The studio works from the DIY Nomad and Noise Selector's discography can be found on the accompanying USB drive.

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# Intro

## Background

My motivations for doing this doctoral research stemmed from my work as a DJ, interests in grass-root DIY live electronics and noise music. Initially, I wanted to frame the research under the title 'Creating Noise in the Asian Underground'. The Asian Underground element referred to club music and culture that had emerged post, for example, Talvin Singh and Nitin Sawhney, in the mid-to-late 1990s. The 'Asian Underground' also was meant to represent a culture I identified with and did not represent the stereotypical Asian artist, an artist associated with Bhangra and Indian classical music. The term 'Asian' in the title became problematic and largely seemed to marginalise the research and music that I was making. As a result, I looked at defining the research I was doing in a different way, by trying to redefine the spaces in which I was working. There was an introduction of a tripartite method that explored working in the three spaces of the workshop/workbench, recording studio and the performance stage for live practice, as well as drawing on different cultures to create a hybrid approach. Although this title was rejected, it is important to note that the general ideas connected to it have remained the same and provided me with the motivation for this research.

## Aims & Objectives

The principal aim of this research is to explore a unified approach to the different spaces of the workbench, studio and live performance space and an emergent musical culture borrowing from DIY electronics, noise music and DJ culture.

The first objective was to explore a 'different type' of noise music. By 'different', I mean a noise music that was rhythmic, looped-based and with deep bass. In order to do this, there was a need to have a direct relationship with the materials.

Therefore, the second objective was to find a new way of working with the sound materials directly, by making self-built handmade sound-making devices or 'objects'. These allowed a personal relationship with the sound world they produced through the process of building, and playing them in three different spaces/contexts. The workbench, studio and performance stage in live practice offered three spaces that could be combined to include a range of creative possibilities.

Thirdly, through the notion of live practice, there was a need to see what type of performance style these sound(-making) objects would offer up, and whether there was a virtuosity that could be developed through considering control and lack of control. The last objective was to bind my DJ background with this type of noise and DIY live electronics. What potential for new approaches could be found by combining these cultures? This too gave rise to a new term, 'Studio Bench', that described this practice.

## **Sound(-making) Objects**

I will hereafter be using the term 'sound(-making) object' when describing the instruments and devices produced throughout this research. I have avoided the use of the term instrument due to its association with traditional acoustic musical instruments. In such cases, there is a presumption that the instrument is mastered by its player, whereas many of the sound(-making) objects in this thesis are generative, make their own sound and are autonomous. I specifically use the term sound(-making) object to differentiate from Pierre Schaeffer's use of sound object, where a captured sound can be treated in isolation, divorced from its origin, as a physical-material thing that is malleable (Kane, 1973, pp. 15-17). The sound(-making) object is the physical artefact, the material of the instruments/devices themselves, that makes sound; for example, appropriated pieces of wood, hard drives, circuits, wires, and electronic components. Nevertheless, there is a connection, conceptually, to Schaeffer's term insofar as I consider the sounds produced by my sound(-making) objects to be intimately

connected to the physical properties and materials of the instruments/devices themselves, while simultaneously having an 'object-ness' of their own and being malleable to the same degree.

## **Contribution to Knowledge: Studio Bench**

This research stems from working in independent and quite different spaces that are associated with a range of contemporary music-making cultures. These independent spaces are defined as the workbench, studio and performance stage. The research considers how these spaces and associated cultures can mix, overlap and intertwine to create a new cultural space for making, for which a new term is proposed: Studio Bench. The Studio Bench also encompasses music-making approaches that have been appropriated from different musical cultures, such as DIY electronics, noise music, DJing and record selecting. The Studio Bench gives rise to the ability to move between spaces freely and work on the periphery of cultures, for which a further new term is proposed: the DIY Nomad. The idea of the Studio Bench breaks away from existing established cultures and offers new ones. This contribution to knowledge is further discussed in the Outro section (conclusion) of this thesis (p.94).

## **Context**

The thesis will detail theoretical contexts within the first three chapters: DIY Nomad and the Workbench; the Noise Selector and the Studio; and Live Practice. The thesis is not strictly about DIY electronics, nor is it strictly about hardware hacking. Nicolas Collins has written the text '*Handmade Electronic Music: The Art of Hardware Hacking*' (Collins, 2006). Collins' book contains a detailed guide on the practice of experimenting with hacking live electronics, encompassing his own and others' experiences within the field. Another author, Reed Ghazala, encourages practice by a way of learning through mistakes such as trial and error procedures in the form of circuit bending. No prior knowledge nor formal training

of electronics, circuit theory or design is required in Ghazala's text '*Circuit-bending: Build your own alien instruments*' (Ghazala, 2005). This is shared by Simon Monk, who also takes an anti-theory approach to working with electronics in '*Hacking Electronics: An illustrated DIY guide for makers and hobbyists*' (Monk, 2013). Whilst the two texts by Collins and Ghazala are in many ways historical, there has been few publications since covering the field of DIY electronics and music in greater detail. An argument could be made that many DIY artists do not wish to write down their ideas, and there is a strong argument that the whole DIY electronics scene is built on the premise of doing it yourself, rather than by acquiring skills through reading a book. In the world of the Internet, many artists share knowledge through using social media, forums, websites and video portals such as YouTube. This is something I discuss further with regards to the Digital Nomad (p.18) and DIY Nomad in the DIY Nomad and the Workbench chapter, (p.9). Since 2005, *Make Magazine* has developed a culture around maker spaces and DIY electronics, which have resulted in books such as by Mark Frauenfelder '*Made by Hand: Searching for Meaning in a Throwaway World*' (2010), and '*Make: Analog Synthesizers: Make Electronic Sounds the Synth-DIY Way*' (Wilson, 2013).

There are a few artists in particular that have resonated with my practice in terms of DIY electronics, including Martin Howse, John Richards (Dirty Electronics), and Gijs Gieskes. All three artists make their own instruments and sound(-making) objects within the realm of noise and live electronics, and some of these artists are discussed further in upcoming chapters. Musician and historical figure in noise music, Merzbow, has helped me establish a preference for harsh noises and brutal sound textures, something which I now regard as 'vintage noise'. With regards to noise music in general, Paul Hegarty has provided a detailed history of the landscape of noise in his text '*Noise Music: A History*' (Hegarty, 2007). Caleb Kelly's '*Cracked Media the Sound of Malfunction*' (Kelly, 2010) has offered some context with regards to using altered, manipulated, cracked and broken media as a practice to create a sound, as well as drawing on glitch music. Glitch is further defined in Cascone's article '*The Aesthetics of Failure: "Post-Digital"*'

*Tendencies in Contemporary Computer Music*' (Cascone, 2001). The literature review has also had to take into account DJ culture and texts by Bill Brewster and Frank Broughton's *'Last night a DJ saved my life'* (2000) and *'How to DJ (properly): the art and science of playing records'* (2006). Both of these texts have been invaluable sources in describing the cultural identity and the historical movement of DJing. The latter also provides a detailed self-help guide for the novice on how to become a DJ. DJs Grandmaster Flash as well as hybrid hip-hop and dub sound system DJs such as Kool Herc, King Tubby, and Lee 'Scratch' Perry have inspired the research, and David Toop's *'Rap attack 3: African rap to global Hip hop'* (2000) covers this period around the growth of sound system culture and hip-hop in his text. The remix and mash-up culture also overlaps with the central practice of the DJ, and is of equally high importance with regards to appropriating different music cultures and traditions as described, for example, in David Gunkel's *'Of Remixology: Ethics and Aesthetics After Remix'* (2016) and Eduardo Navas *'Remix theory: The aesthetics of sampling'* (2012). There clearly is a crossover between these musical cultures and traditions that include a mixture of DIY music making, and DJ and dance music culture. More detail of this is developed within the separate chapters.

There are other texts with regards to a holistic approach to making that are not cited extensively in this thesis. John Bowers (2003) and Simon Waters (2007) have discussed performance ecosystems, especially concerning boundaries and embodiment as a performer, and the environment and agency/interaction with an instrument. Bowers describes this as an assemblage of 'artefacts and practices', that make it viable for him to participate in 'collective music making' (Bowers, 2003, p. 74). Owen Green offers up a different paradigm in relation to Bowers and Waters such as 'agility' and 'playfulness' (Green, 2011, p. 142) as immersive indicators of negotiating live practice in music within a performance ecosystem. Tom Davis also states that the performance ecosystem scrutinises 'music as practice', and making music in such a way gives the listener an active role in the process of music creation due to the social exchanging of ideas through performance and collective making. (Davis, 2011, p. 124). While these are

important texts in related areas, I have solely been interested in music making, and the relationships between the three separate spaces and activity within these spaces as outlined above, and how all three environments should not be viewed as stand-alone performance ecosystems.

## **Methodology**

There is an emphasis, in this research, on practice, making and exploring new sound(-making) objects through the building process. Exploration of 'the instrument' is an important part of the method that also includes an iterative process of building, practicing/rehearsing, recording, selecting materials and, lastly, listening. Fundamentally, the making, hacking, recording and playing of these sound(-making) objects are happening in what are seen as three different spaces that have traditions and roles associated with them. Within my practice, there is movement between these spaces to the point where they are not really seen as discrete spaces but more representative of a cyclical process. A relationship between the workbench, studio and live practice is viewed holistically, and making as a process is central to the research that is demonstrated in the Long Player (portfolio) chapter (p.59). The main overview of the method is discussed within each project as an investigation of a sound(-making) object that is studied holistically through capturing and extracting sounds and ideas from its circuitry. Each piece presented in the portfolio does not follow the order of the workbench, studio and live practice. The cyclic process does not always start in the same place and the tripartite method moves around, for example, workbench – live – studio – live – workbench. Fundamentally, outcomes are never finished as the building and making continues iteratively using the tripartite method and the studio works act as a fixed reference of the practice.

## Summary

The thesis is split into six parts and is set out to resemble a DJ mixtape. Firstly, there is an Intro that is followed by the next three parts that are like an Extended Play (EP). The second chapter introduces the DIY Nomad term as a DIY electronics/noise practitioner, someone who does not own any tools per se and has a casual relationship with the tools for building sound circuits. The DIY Nomad is constantly on the move and works in a transient way out of expediency and doing things quickly. In the third chapter, the Noise Selector - a hybrid term borrowing from the tradition of record selecting - and authenticity of the DIY sound(-making) object are considered, as well as how sound material is scrutinised through performance in and out of the studio. Noise selecting implies that sound materials are treated like a remix, thus further drawing on DJ culture. It is through this culture that pieces are composed. Sounds are recorded, edited, versioned, and mashed-up like a DJ mixtape. Lastly, the fourth chapter rounds up the EP through a discussion of live practice, as a bridge between the DIY Nomad and Noise Selector. Live practice is viewed through the tradition of live electronics and improvisation. However, the performance stage is also seen as a space for making in public. Chapter Five, the Long Player (LP), is the portfolio section where the method as a process is discussed. The resulting studio works are listed in the DIY Nomad and Noise Selector's Discography. The Long Player (LP) chapter also illustrates how all three spaces are brought together through practice, and highlights the method in detail within each investigation as a study. The portfolio also offers an approach to how each sound(-making) object was the focus of the work and related to the tripartite methodology of the workbench, studio and live practice, and how these approaches make up a holistic practice. In the final chapter, the Outro offers a conclusion that arrives at the term 'Studio Bench' to describe the holistic approach between all three spaces of the workbench, studio and the performance stage for live practice, and there is a focus on the 'making' that occurs within these spaces.

During the discussion of the spaces, terms such as the DIY Nomad and Noise Selector are offered up and explored in relation to the practice. It is not just theory that informs the thesis: it is through practice that I have been able to offer up new terms and new ways of thinking. For example, the idea of Studio Bench has been arrived through hard-core practice and 'just doing it'. In some studies, or projects, I make no distinction between the instrument and the composition because I believe they are one and the same thing; hence the same name is often used for both instrument and title of a work. For clarity, however, in an instance when I am referring to the instrument only, then the title/name is not italicised. When I refer specifically to the piece or studio works then italics are used. The supporting video documentation adopts the same method for naming. Videos are of work in situ and there is no applied post-production, overdubbed music or sounds. The videos and documentation are very similar to the instrumental or musical aesthetic detailed in the thesis, in that there is an attempt to be as authentic as possible in their representation.



# DIY Nomad and the Workbench

## DIY Nomad

A workspace does not need to be a fixed permanent location with specialised tools, or to be unique to its user. This differs from the theory of the typical workspace, as described by David Pye (Pye, 1995). Pye describes the craftsperson as typically building up a long term and deep relationship with the tools and workspace, often to the extent of their tools being meticulously ordered in the workshop. However, the DIY Nomad is a term that could be used to describe a new '*non-craft*' practitioner that uses a transient workspace. What sets the DIY Nomad apart from other DIY practitioners is that they do not have a fixed workbench. The DIY Nomad is not a traditional DIY electronics user or musician and therefore is not necessarily affiliated with their tools. DIY Nomads find solace and retreat in many disparate spaces, and it is still important to them to be open and remain social even when working on projects in isolation. They may not have a special place to work in or have a workspace at home, for example, a shed at the bottom of the garden. For the DIY Nomad, the physical workspace and workbench are not so important as they do not have a typical craftsperson's workbench. This allows flexibility and fluidity in the working method. It is like 'hot desking' in an office of a corporate environment: "staff have no fixed personal workspace and use any available desk as needed" (Felstead et al., 2003, p. 16). Things are constantly moving and evolving. A DIY Nomad may not have access to tools or own them. Components, tools, and equipment may remain in situ and used in an ad-hoc manner; therefore, these things may also be borrowed or acquired when needed. This casual and temporary relationship with the tools and workbench is discussed further in this chapter.

## Temporary Workbench and Dirty Electronics

A DIY Nomad can share experiences without having any connections or membership with a maker or hacker space, or being part of a maker movement or Hobbyist club. For someone who works with objects, things and electronic materials and as part of the wider DIY electronics scene, the hackspace could be seen and considered as an access to a workbench. It is important to highlight and discuss the reasons why, as a DIY Nomad, this has been rejected and there is 'loosely' no involvement in any hackspace or maker communities. Hackspaces and maker spaces are viewed as a trend or are fashionable amongst computer, technology, and electronic engineers. However, "like any other elite pursuit, scientific and technological research can be a closed circle which is difficult for citizens to access, understand and participate in" (Davies, 2017, p. 26). As such, to the DIY Nomad, the hackspace could be problematic in terms of having access to a workbench that exists within, what could be considered, as a closed private-members club.

However, the transient nature of the DIY Nomad provides opportunities to participate in wider DIY electronic workshops. Such (usually) one-off workshops allow for a temporary relationship with the workbench and tools. These are used through partaking and sharing. The remit is deliberately limited: you collaborate, working in a shared environment amongst other novices or experts within the field and collectively build and work on DIY sound(-making) objects. Arguably, a hackspace or maker community that is rejected by the DIY Nomad could provide this shared working environment on a permanent basis; however, the transitory nature of the DIY Nomad encourages a loose approach that allows temporary experiences to happen. A workshop's length is often dependent on the participants' knowledge of electronics and skills, and also the nature of what the workshop is about: for example, is it to build a synth or is it just a collective making exercise? The freer approach and mobile nature of the DIY Nomad allows for frequent travel whether it is local, national or international and there is wider scope to learn skills on a temporary workbench, wherever the occasion arises.

During this research, I have traveled to many places for performances and workshops such as Edinburgh, Nottingham, Birmingham, Newcastle, London, Stockholm and Gothenburg (Sweden), Copenhagen (Denmark), Prague (Czech Republic) and Athens (Greece). I took part, for example, in a circuit bending workshop in Athens, as part of the Electric Nights 2016 festival at BOOZE that was run by Andreas Monopolis (Monopolis, 2018). This was my first foray into a circuit bending workshop because I normally build circuits from scratch. The DIY Nomad may take part in workshops where objects have not been built or completed. The experience is just as important and valuable as taking home a finished product. To illustrate my point, artist Toni Quiroga did a presentation and workshop as part of Sounding DIY festival, about how to turn parts of electronic waste and trash into functional sound devices that are temporary and in situ (Gracia, 2017). This was compelling as it gave a different foundation and perspective on DIY electronics and an alternative line of enquiry that sound(-making) objects do not necessarily have to be ‘finished’ or made to be permanent. Another example was facilitating and participating in *The Construct has no Purpose* (2017) in Denmark, a collaboration with Max Wainwright and John Richards from Dirty Electronics, that also set out to be deliberately experiential. It was all about taking part and contributing in a creative making activity rather than taking home a finished ‘maker’ product.

During the last fourteen years, most of my workshop experiences and the idea of the temporary workbench have been in conjunction with Dirty Electronics. Recently I took part in a Dirty Electronics workshop also as part of Sounding DIY (Gracia, 2017) at Café Oto in London. The workshop involved building the Violations Synth that incorporates “a feedback system [that] is designed where audio of a sequenced pattern is used to re-program itself” (Richards, 2017a). The Dirty Electronics workshop is an extended event commencing with a building session, which then intertwines and turns into a performance later on in the day or evening. The making often involves constructing a specially commissioned artwork printed circuit board and sound(-making) object. Workshops typically lead

to rehearsals and large-group performances. Richards states: “The ‘performance’ begins on the workbench devising instruments and is extended onto the stage through playing and exploring these instruments” (Richards, 2019). Part of my practice as a DIY Nomad has evolved working closely with Dirty Electronics. In such workshop contexts, many techniques can be taught and learned informally.

More specifically, workshops can be attended to gain experience in DIY electronics in the context of music making. For example, when you attend a workshop, it is interesting to see the social interactions of the different people you meet from diverse backgrounds. These participants help to influence the way you approach and perceive music within the realm of live electronics. Having failed electronics at school, I never thought that later in life as a DIY Nomad that DIY electronics would be very influential in the way that I create and perform music! A DIY Nomad may have a dual education, learning in temporary workshop situations as well as having a fully-fledged formal education in Music Technology, which could be argued is marginalised by musical traditionalists (Born and Devine, 2015, p. 158). DIY electronics is still seen as a vocational subject and seems to exist on the periphery of music. A DIY Nomad may not necessarily have an academic background nor have any formal education. However, in my experience in academia, it is hard to find a space where, according to Pye (1995), everything is all set out and where you can work permanently on DIY electronic projects in a workshop or lab. The nature of these types of spaces is not very personal. This is why a DIY Nomad may set-up a temporary ‘pop-up’ workbench with a handful of tools whether working in or outside of academia.

## **Casual relationship with a Messy Workbench**

A lack of knowledge of electronics does not necessarily imply that musicians cannot use electronics creatively. For example, Reed Ghazala advocates an anti-theory approach to circuit bending and DIY electronics, which I will discuss in more detail later in this chapter (Ghazala, 2005). The DIY Nomad encourages a casual relationship with the workbench. They often borrow equipment and components and make stuff in peculiar places, often in messy environments that do not necessarily have a workbench or appropriate resources. However, the messy space can be quite symbolic of the way the DIY Nomad works and operates.

The same view can be applied to those working in the fine arts, wherein a messy space is often indicative of a creative space. One particular artist who exemplifies this messy space is Francis Bacon, whose Reece Mews Studio became part of his narrative to work within a messy environment: “this mess is rather like my mind; it may be a good image of what goes on inside me” (Edemariam, 2008). The messy space model underlines the idea that the studio creates the art or perhaps the art creates the studio. Bacon was reportedly known not to empty his rubbish bins and drop everything on the floor. The debris, such as books, hundreds of torn pages, photographs, and press cuttings provided sources of inspiration for Bacon. Michael Peppiatt discusses Bacon’s studio floor and compares it to a ‘compost’ (Peppiatt, 2008). The floor, wall and others surfaces were used to mix paint rather than using a palette (Edemariam, 2008). Bacon is a fine example of what can be achieved when working in a messy and disorganised context. On his cluttered studio, Bacon said: “I feel at home here in this chaos because chaos suggests images to me” (Hugh Lane Gallery, 2001). Recent research by the University of Minnesota states “Disorderly environments seem to inspire breaking free of tradition, which can produce fresh insights” (Vohs, 2013).

Returning to the practice of DIY electronics, DIY musical instrument builder Gijs Gieskes refers to his workbench as the 'soldiering station' (Gieskes, 2014). It is deliberately messy, with bags of Printed Circuit Boards (PCBs), components and wires scattered on his table. This style is suited to him and it is where he builds and finishes his own circuits. The DIY Nomad often finds their working situations in many messy environments such as gig venues, nightclubs, performance studios, theatres and old warehouses. These are non-workshop environments, therefore what could be considered incorrect environments for such 'making' practices. A state of flux is important as a means to keep ideas fresh, and it is essential not to have a sterile working environment. 'Organised chaos' is valuable for the work of a DIY Nomad as it suits expediency in working processes—getting things done quickly—and further highlights the DIY Nomad's temporary relationship to tools in a transient and varied way.

By being mobile and adaptive, the workbench can exist in many different settings. To reiterate, there have been moments where the workbench has presented itself in the most unorthodox places, such as the floor of a venue or the desk within a hotel room and even in the recording studio. The temporary workbench environments are not conducive to working with the materials of electronics. It is important for the DIY Nomad to adapt to the situation when making. This is especially important when working in alternative spaces that are not traditional workbench environments. For example, things need fixing just before a gig, and quite often loose wires or a battery clip may dislodge or a specific component may blow or stop working.

## Relationship with Tools and Electronics – *Non-Craft*.

The DIY Nomad is not a kind of person to be affiliated with his or her tools. This is not about the space or their tools, or even their instruments – as it is more concerned with people making things with DIY electronics and sharing ideas together. You do not need a huge range of tools to build circuits. The DIY Nomad does not have a deep relationship with the workbench or tools associated with DIY electronics. The relationship is more driven by the sounds from the materials and drawn to practice; the tools are secondary: “DIY activities will inevitably be tied to the materials and practices that they involve, as well as to the desire to take back control or to be on-trend. Such activities involve pleasure, as well as resistance to consumption, thriftiness or simply being fashionable” (Davies, 2017, p. 25). The DIY Nomad may not view themselves as someone that works strictly in crafts or relates to being a craftsperson. They could shun the fundamental idea of craft and craftsmanship altogether and deliberately be *non-craft*. In order to discuss what the DIY Nomad practitioner identifies as *non-craft*; we need to look at the term craft. Harrod (1995) defines craft as “made and designed by the same person”. A DIY Nomad has creative license: there is a sense of personal control on how you work with DIY electronics or instrument building; you use your own limited skills and judgments to define how it will develop, evolve and be made. This is something that Campbell states:

... the craft producer is someone who exercises personal control over all the processes involved in the manufacture of the good in question. Hence, the craft worker is someone who chooses the design for the product, selects the materials needed and generally personally makes the object in question [for their own use] (Campbell, 2005, p. 27).

This is defined as ‘Craft Consumption’ (Campbell, 2005). Typically, the DIY Nomad will create a sound(-making) object intended for their own consumption. These things are personalised, tailored and adapted to the DIY Nomad’s needs. Campbell argues there is an effort of “skill, knowledge, judgement and passion while being motivated by a desire for self-expression” (ibid, p. 23). However, it is mentioned earlier that the DIY Nomad may lack certain knowledge of electronics

in relation to sound making. This is not necessarily going to impair their involvement in making things or playing a sound(-making) object. Through sheer motivation and passion, the DIY Nomad can find purpose on the temporary workbench in trying to achieve building or making things with faults and inaccuracies along the way. The DIY Nomad is not alone in this. Some practitioners, as discussed earlier, advocate an anti-theory approach to exploring electronic circuits. Reed Ghazala encourages practice by a way of learning through mistakes such as trial and error procedures, as stated in Ghazala's text '*Circuit-bending: Build your own alien instruments*' (Ghazala, 2005). This method can involve dismantling and appropriating stand-alone battery-powered devices - such as radios, children toys and everyday household appliances and by adding components such as wires, switches, potentiometers and audio jack sockets to alter how the circuitry may behave. In addition to exploring the way the circuit behaves through the alterations, you solely focus on the sonic results, and listen to the way the sound material alters and changes.

Crafting implies the skilled or semi-skilled making of an object. For the DIY Nomad, this could be a sound(-making) object or DIY electronics instrument for music making. The *non-craft* element is the desire for the DIY Nomad to use the temporary workbench with limited methods or expertise without the traditional archetypal craft skills to make stuff. The DIY Nomad aspires to build objects which have individual characteristics that are unique; and, most of all, have their own characteristics and quirks, whether the device is a sound(-making) object or synth.

The physical aesthetic of the sound(-making) objects is based on portability. The size and mass of the sound(-making) object is important in that they have to be small, portable and super light. During the making, there is no design as such, pre-determined graphic drawings or schematics. Through expediency, quickness and immediacy, the look and the feel of the sound(-making) object develops in the act of construction, and the visual look of the sound(-making) objects is messy, unrefined, naïve, and arguably ugly. The instruments do not resemble



traditional synthesisers and are not ergonomic, although it is possible to hold them in your hands and play them on your lap, on a table or on the floor.

I deliberately set out to adopt a *non-craft* approach, the shunning of craftsmanship altogether, with the instruments having the appearance of being crudely made with limitations. There are minimal parts and components. For example, Gilora (p.60) initially existed as a collection of unfinished sound circuits that were left abandoned, required a continuous fix and adaptation by hacking different circuits together that were investigated on the workbench. The circuitry is fixed by four screws on top of a piece of wood cut to size of a tablet or large iPad, and drawing pins are used as touch points. In comparison, Cobra (p.81) has more primitive construction methods such as a beer mat stuck onto a piece of scrap wood with the circuitry fixed on top. To give a permanent 'temporary' appearance, the circuitry is hot glued to the beer mat.

Despite having limited technical skills and knowledge, this *non-craft* approach has enabled me to make things with faults and inaccuracies that heighten individual characteristics of the sound(-making) objects: for example, on both instruments, there are no ergonomic knobs on the pot shafts. If these sound(-making) objects were made with machine-driven precision, perhaps the materials and sounds from them would not be as raw and noisy.

## Nomadity

Another important idea contributing to that of the DIY Nomad is the broader cultural idea of the Digital Nomad. A text by Makimoto and Manners (1997) explained that the future endeavours with technology will follow this idea of living, working and existing on the move. Being a Digital Nomad offers freedom from the constraints of time and location; it is connected to mobile technology, with an emphasis on traveling and working remotely. Makimoto says “There are three essentials to support the comfortable nomadic lifestyle, namely, an intelligent mobile terminal, a high-speed communication network, and cloud computing” (Makimoto, 2013, p. 40-41). Here, mobile technology such as laptops, smartphones and tablet devices are used as tools to work remotely, sparingly and independently, using public and co-working shared spaces such as holiday retreats, libraries and coffee shops. There are strong links with the idea of hot desking. This kind of nomadity as a musician also allows greater freedom, and the nomadity embeds itself into the sound world.

As a DIY Nomad, I am not working exclusively in the digital domain, but have been culturally influenced by being online. The DIY Nomad’s transient nature allows free movement between these online and physical spaces of the workbench, studio and performance stage for live practice. The nomadity provides independence for working in situ and alone, as well as tapping into group-led work on a temporary basis when the need arises. The temporary workbench has enabled the DIY Nomad to be more transient and expedient in relation to making things and discovering sounds. The practice is mirroring contemporary culture in relation to the heavy use of smartphones and tablets in corporate work and the creative arts sector: these small devices work as a portable personal computer. This is one of the reasons as a DIY Nomad I wanted to work with analogue electronics whilst having the sense of ‘connectivity’ with the virtual world using social media as a tool to promote or showcase my work in another arena. In the future, as people become addicted to their screens, there will be an adaptive awareness of having less screen time and to be away from

smart phones and tablets, albeit it will be fashionable to be away from all digital commodities (Peper and Harvey, 2018). There will be an emphasis on retreating from connectivity online through electronic means such as computers, smartphones and tablet devices with a focus on well-being and mental health. This is what is referred to as 'Digital Detox' on which Tanya Goodin has written extensively in '*Off: Your Digital Detox for a Better Life*' and '*Stop Staring at Screens: A Digital Detox for the Whole Family*' (Goodin, 2017/ 2018). It is also important to note that there are similarities with the DIY Nomad and a practice defined by Barbara Ballard as the "Carry Principle" whereby a mobile device is multi-purpose, communicative, always on your person, small, battery operated, and always on (Ballard, 2007, p. 231). This idea has also been fostered by Steve Jones in relation to creating performance systems from mobile media (Jones, 2015). With the DIY Nomad, the sound(-making) objects are small, always carried, battery operated and can be switched on instantly using a nine-volt battery. The DIY Nomad is always 'on', but only connected when it is appropriate.

## **Social Media and Shared Practice**

This research is mainly about sound and appropriating cultures such as noise and DIY electronics, but social media has been a big influence on the development of ideas as well as influencing methods and practice. As a DIY Nomad, it has been important for me to look at the development of platforms that have enabled everyone to become broadcast 'experts' and share live practice instantaneously in the moment, especially with platforms like Twitter, Instagram, Facebook, Snapchat and YouTube. Artists and musicians specifically have danced with using social media networks because it can allow direct communication and interaction with an audience, which is another space online. Hinton and Hjorth state that artists are: "performing within social media as a platform for delivering art and reflecting on the medium in which it is delivered" (2013, p. 86). As artists, many people are permanently connected online through smartphones and can share their own creative content at the push of a button. This could also be considered as an extension of the DIY Nomad's temporary

social relationships, as argued by Lindgren: “As mobile phones become more and more embedded and entangled in our lives, they change the dynamics of social situations” (Lindgren, 2017, p. 201). Using social media suits the DIY Nomad’s expediency, as most of these platforms are free and anyone with a smart mobile phone or tablet device can engage with them. Fundamentally, social media has enhanced the idea of shared practice, which has allowed me as a DIY Nomad to share live performances as well as document the practice via my artist page ‘Dushume’ on Instagram (Patel, 2019a).

As a DIY Nomad, I have taken inspiration from platforms like Boiler Room, that has its roots in connecting club culture through online live streaming of DJs and performances. It is like a mash-up between a radio show and club night with the artists as the focus (Bellville, 2019). Alongside, Dommune in Tokyo is a media platform and the first live streaming channel in Japan that broadcasts music, performances and other forms of arts and culture (Naohiro, 2019). Live streaming performances give the artist/musician another platform for making, whilst giving access to a larger global audience to engage with. There could be implications with sharing content online in terms of ownership, privacy and surveillance as highlighted by Fuchs (2017) in *Social Media a critical introduction*: “Capital accumulation on corporate social media is based on user data commodification, the unpaid labour of Internet users, targeted advertising and economic surveillance” (Fuchs, 2017, p. 342). Therefore, you could ask who owns the processes and the way in which the DIY Nomad operate?

# The Noise Selector and the Studio

## Noise Selector

Despite being a DIY Nomad, the sound studio is a significant part of my working method for electronic music making. This chapter aims to give context and background to the process of noise selecting, and the concept of the Noise Selector in relation to working in the studio. The studio provides a way to carefully analyse what I have built, to record music to play back later, whether in my car or a different context. The sound(-making) objects that have been built can be tested on a temporary workbench in the studio, especially when a wire dislodges or a component such as a switch or pot needs altering or changing after some vigorous playing. In this regard, the sound studio is divided into two halves: a space to experiment with self-made objects; and another to work with the recorded materials from these devices. The time spent in the studio allows for the development of a working method where sound(-making) objects can be played and reflected on and instruments pushed to their limits. The material from the sound(-making) object is closely scrutinised, performed live and elements of the performances are chosen as materials for the studio works.

When choosing the materials, it is as if a hypothetical DJ set is planned. The process can be referred to as 'noise selecting'; I refer to myself as a Noise Selector. The Noise Selector redefines the studio, treating the sound material as a remix. In the recordings, there are noise and glitch music influences and the uses of malfunction and feedback from the instruments that end up as part of the finished studio works. During the recording process, DJ craft is used for producing studio works. There is further discussion on the influence of DJ and dub culture in the sections 'Selector' (p.38) and 'DJ and Remix Practice' (p.43). The Noise Selector brings together mixing skills and DJ approaches alongside other influences from electronic dance music. This allows for a completely different sound or recording studio methodology compared to those commonly found in

popular music production, in that the material of the recordings is edited, consolidated, and put together like a mixtape.

Within DIY electronic music, the studio is often used sparingly as a way to record and document sound(-making) objects or instruments. Some of these recordings are often more like a demonstration or study rather than what may be considered as formal studio composition. For example, Martin Howse, a DIY electronics artist, has presented pieces, such as the *Towers Open Fire* playlist on Soundcloud, which gives an example of what the 'Dark Interpreter – Towers Open Fire edition' synth sounds like, with additional commentary about there being no effects or processing (Howse, 2015a). Another example, is DIY instrument builder Gijs Gieskes, who has videos, such as *motormagnetspringpiezo* on YouTube, giving creative insights into the way he works as a sound artist (Gieskes, 2018). However, in both these cases, the recordings are left quite raw and organic, providing an authentic account of the instruments, this is due to the lack of sound processing and treatment, such as filtering and the addition of reverbs and delays that are often found in studio recordings. There are also no extended studio techniques applied to the recordings including looping and cut and paste. The overriding aesthetic appears to place an emphasis on capturing the authenticity of the sound(-making) objects and instruments, and presenting them in a true light as if they are recorded live. I also take this approach in my own work where live performance and the DIY authenticity of the object are taken into consideration. Fundamentally, there is a close relationship between the sound(-making) object and live practice, which is one of the main points of discussion of this thesis and will be discussed in more detail in the Outro (p.94).

## Noise

From here on I will be describing myself as a Noise Selector, but to fully appreciate what the term means in the context of the studio and where the term comes from, the Noise Selector needs to be discussed in more detail, drawing on some historical references for context. The term Noise Selector can be discussed in two parts. The 'noise' in the term refers to sound that is carefully chosen and defined as texture- and noise-based. There are parallels with noise and glitch music.

According to Luigi Russolo "Ancient life was all silence. In the 19<sup>th</sup> Century, with the invention of machines, Noise was born" (Russolo, 2004, p. 10). Noise could be described as being associated with excessively loud sounds that are undesirable to those exposed to them (Taylor, 1975, p. 22). Kahn describes noise as "... figurative, loud, disruptive, confusing, inconsistent, turbulent, chaotic, unwanted, nauseous, injurious" (Kahn, 1999, p. 20) all of which play a role in the way the Noise Selector cultivates material from sound(-making) objects. Noise can be seen as a way to challenge much conventional electronic dance music. If anything, "the noise is the important part: it is a rejection of the primacy of transmission of acceptable signal, it is something that seeks to not be recognised as valid" (Hegarty, 2008, p. 13). Within the remit of a Noise Selector, I do not want to be known as a popular run-of-the-mill dance music artist, whose music is churned out and streamed as MP3 files on websites such as Beatport, Juno Download, and Traxsource. This also applies to streaming websites such as Spotify, Apple Music and Tidal.

Noise can be threatening to those who do not or cannot engage with it, Attali states: "in its biological reality, noise is a source of pain" (Attali, 1985, p. 27). This negativity breeds creative insights as the Noise Selector does not necessarily have traditional musical training or knowledge. I did not want to pander to society's conventions by engaging in traditional music: I previously saw that as

a barrier, coming from a DJ or electronic music background with no traditional 'musical' baggage.

Fundamentally, I am interested in the noisier sounds, and as a Noise Selector the materials are not necessarily seen as uncomfortable or unwanted sounds. These sentiments are also shared by Japanese noise musician Masami Akita, also known as Merzbow: "There is no difference between noise and music in my work. I have no idea what you term 'music' and 'noise'. It's different depending on each person. If noise means uncomfortable sound, then pop music is noise to me" (Keenan, 2000, p. 26). Attali equally argues that noise itself also has a purpose and this, in particular, aligns with the Noise Selector: "For despite the death it contains, noise carries order within itself... The presence of noise makes sense, makes meaning" (Attali, 1985, p. 33).

For a Noise Selector, working with these dramatic unwanted sounds is far more compelling than working with pitched and traditional musical materials, and such sounds can be unpacked in the studio. For the Noise Selector, as described by Priest, "sound becomes more musical than it was and less noisy than it becomes" (Priest, 2013, p. 132). It is also political for the Noise Selector to be working with noise itself, as the argument still exists whether it can be classed as music or not. As stated above, the Noise Selector does not necessarily have any musical baggage meaning that "Noise has been seen as something more natural than music ... the notion that noise is more natural, or alternatively more profoundly musical, than 'restricted' music" (Hegarty, 2001, p. 193).



## Noise Types and Treatments

In my own work, there are a number of different noise types and treatments used in the studio works. I attempt to discuss these types and treatments in more detail below. As a means to reflect and analyse these types, I have loosely drawn on existing models. Dennis Smalley has defined and developed a structure for analysing and describing sound types that are used in electroacoustic music that is known as “Spectromorphology” (Smalley, 1986, p. 61). I have considered and borrowed from Smalley’s model to help establish a definition and classification of noise types found in my work. It could be argued that terms from Spectromorphology could be used to describe some of the sound types in my work. For example, Smalley’s use of the term “nodal spectrum,” which resists pitch identification (ibid, p. 67), could be applied to the harsh noisy materials that the Noise Selector works with. However, I have avoided using a formalised method to describe the noise types in the studio works.

The DIY Nomad may produce an array of sounds consisting of distortion, feedback, static, hiss and hum. There is an emphasis as a Noise Selector to push the boundaries of the sound material derived from the object, and the object is put through its paces, nurtured, abused and hacked and almost destroyed in the studio. The studio allows a deeper relationship to be formed between the Noise Selector and the sound(-making) object, as there is no other external sources or hardware. There already is a physical connection with the sound(-making) object – as it has been hand-made by the DIY Nomad. It is imperative as a Noise Selector that the sound(-making) object is played and analysed and zoomed in under a hypothetical lens – as Kelly (2018) puts it, “not through an imagined materiality of sound itself, but rather a close investigation of the materials that cause the sound”.

Most instruments and sound(-making) objects explored by a Noise Selector carry a strong digital glitch aesthetic, despite some of the sound circuits being analogue.

Kim Cascone argues:

... more specifically, it is from the “failure” of digital technology that this new work has emerged: glitches, bugs, application errors, system crashes, clipping, aliasing, distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music (Cascone, 2000, p. 13).

Glitch is a term that rose to prominence in the 1990s (ibid, p. 15). Most of my studio work combines glitch with electronic dance music and dub influences. Aesthetics of failure as coined by Cascone (2000) are also embraced. Cascone remarks that crafting these types of sounds can happen in the most unorthodox fashion: “techniques are often discovered by accident or by the failure of an intended technique or experiment” (ibid, p. 13). Thompson argues that Cascone’s concept of post-digital could refer “to work which inhabits the cracks in the digital dream, seizing on usually marginalised digital detritus and forging a new aesthetic from technological error” (Thompson, 2004, p. 214). In my work, sounds are forged from glitch materials produced by sound(-making) objects, and these sounds that incorporate error and failures, in the words of Zareei “feed off of unwanted sonic byproducts of the technological world that occur in the physical realm (rather than in the digital)” (Zareei et al, 2015, p. 63). It is the inbuilt characteristics and materiality of the sound(-making) object that is trying to be captured in my studio works as a Noise Selector.

The Noise Selector approaches each studio session without being inspired by previous recording sessions. It is important to maintain a naïve attitude, as expressed by Richards, by a “means to create a tabula rasa. Not only does the instrument need to be explored through play, but also the music [has to be] discovered” (Richards, 2013, p. 278). Bates also argues “glitch composition is a metadiscursive practice: inspired by the technological conditions and limitations

in which those recordings emerged” (Bates, 2004, p. 289). Stuart (2003) also gives an example of failures such as skipping CDs, in his paper “Damaged sound: Glitching and skipping compact discs in the audio of Yasunao Tone, Nicolas Collins and Oval”. I will now discuss some of the sound types in general found in the studio works, and they will be referred in more detail in the Long Player (Portfolio) Chapter (p. 59).

## **Hum**

The Noise Selector’s hands-on approach to using feedback circuitry in electronic music can offer an alternative strategy to traditional methods of composition. The sound(-making) object’s circuitry and electronics can be investigated through improvisation to seek sounds from within the object itself, and often secondary glitched, ‘unwanted’ sounds are also found from the instruments. David Tudor, who also experimented with small electronic devices coined the term “composing inside electronics” (Collins, 2004). In other words, the idea of finding sounds within the electronics. Due to the way, the sound(-making) object is built, different sounds present themselves in the studio, such as low-frequency hums, which are most welcome to the Noise Selector. These could be present if the circuitry has not been grounded properly to earth. It could also be because the connections between the component and stripboards are not soldered properly. In the environment of a recording studio, these sound(-making) objects can often pick up interference from the speakers and other electronic equipment, further enhancing hum sounds, and other sounds can be present such as buzzes, clicks, and hisses. The spectrum of the pitches can vary such as low-frequency hums to extreme excruciating high tones. The hum in this instance is celebrated and used in the general genetic make-up of the pieces and is not hidden nor masked in any way. In fact, in the recording studio, this particular hum is exaggerated to the point where some listeners could consider the altered hum unpleasant. By the uses of subtle or drastic enhancements using volume and equalisation, as a result of this, some of the characteristics of the sound could be a low-frequency rumble. Through these hums, the sound(-making) objects offer up a variety of pitched

materials that could be categorised into traditional musical constructions such as chords, although producing such traditional constructions is serendipitous, and certainly not the goal of the Noise Selector.

## **Static, Hiss and Noise Bursts**

High-frequency material is used in contrast to low-frequency hums ranging from hiss to high-pitched tones. The Cobra (p.81) and Colossus (p.75) feature a programmable chip to sequence analogue noise and feedback. The crude digital to analogue convertor (DAC) based on a simple first order resistor capacitor filter results in high-frequency sound artefacts: very high pitched ringing can be heard. These types of unwanted material or sounds are seen as musical to me as the Noise Selector, and fundamentally form a part of the glitch aesthetic. The noise bursts in the material are attack-like and gestural, and can add momentum in places within the studio work. It is again important to state that these are emitted from the instruments and have not necessarily been explicitly engineered or 'composed' by the Noise Selector.

Hiss generated from amplification and gain of the analogue amps in the circuitry and sound(-making) objects provides a rich source of sound materials. This material is used in a variety of ways in the studio works from short triggered to longer sounds (the use of this material is discussed in detail in the Long Player (portfolio) chapter (p.59)). There is also broadband/coloured static noise that is quieter but durational, stable and continuous: it does not stop, it is always in the background. For example, static in this instance from the sound(-making) object is, as described by Van Nort, like:

The crackle of vinyl, radio static, tape hiss, etc., brought noise... That is, in listening to recording or transmission as the primary musical event, the random fluctuations and interference patterns of the medium become an essential part of the work (Van Nort, 2006, p. 174-175).

Hiss and static are an artistic choice, and it is important that these sounds remain heard and the imperfections from the circuitry are brought to the forefront. Fundamentally, the sound(-making) objects are low-tech and provide what could be considered a “rough and ragged sound quality, often failing to mask hum, static, tape hiss, and other noises” (Grajeda, 2002, p. 357).

## **Clicks and Pulses**

Clicks and pulses are single events that are generated by the sound(-making) objects, and I enjoy working with this material in the studio. As Bosma describes: “The short clicks, crackles, high-pitched peeps and various noises constitute a signature sound ... these sounds do not function as failures, but become stylistic markers” (Bosma, 2016, p. 104). Furthermore, these clicks and pops work as ‘initiation’ events, starting the processes that can be the catalysts for rhythmic pulses that the Noise Selector draws on. This type of rhythmic use is summarised by Prior who states: “as a series of micro incidents - bleeps, cuts, clicks and pulses – rendered by digital techniques and tools” (Prior, 2008, p. 306) implying that they are also part of the fabric of textures.

## **Distortion**

The distortion in this context enriches the overall sound, adding harmonics and ‘warmth’ due to the analogue circuitry in the sound(-making) objects. Distortion in the studio works has not necessarily been engineered by the Noise Selector: the sounds are already clipped waveforms from the sound(-making) objects, as such squared waveforms. The waveform is maxed out. The Bed of Nails, for example, is based on a high-gain amplifier feedback circuit that can also act as a distortion for input signals: the high gain produces a clipped waveform, and therefore the distortion is not an unwanted artefact. The distortion in the sound materials helps to enrich textures and these textures sit equally next to hiss, static and hums sounds.

## Cuts n' BuZZES

As well as clicks and pulses generated by the sound(-making) objects, as a Noise Selector I also create clicks from editing. Here I offer the term Cuts n' BuZZES, with the capitalisation of 'ZZES' to emphasis the onomatopoeic nature of the word. Clicks are produced by not cutting/ editing waveforms at zero amplitude cross points: sounds are cut *across/into* the waveforms. This results in clicks and thumps. The works also adopt an approach to sampling where the sound material is, as put by Strachan, "stripped back down to its rhythmic core and gradually built up through a series of embellishments" (Strachan, 2017, p. 100). Having extracted sounds that are found by accident through an act of listening to the recorded improvisations in the studio, sounds are finely cut and granular buzzes are created, which are timbrally complex. Cuts n' BuZZES are used to move the music along into differing sections as well as add an element of disruption and malfunction to the flow of the studio works, this is discussed in further detail in the Long Player (portfolio) chapter (p.59).

Cuts are deliberately crude in the way they have been cut and pasted together; they are irregular in length, and differing sizes are bundled together in an improvised way. The sonic outcome is dependent on the length of the Cuts n' BuZZES; shorter clips are stuttered/staccato-like, whereas cut segments often overlap and are layered and pasted together to create long buzzing sounds. This technique is done aurally without looking at the editing screen or waveform of the sounds. Technically, it is 'bad' editing. Things are discovered momentarily by chance and trial and error is used. This style of editing creates complex rhythms and timings in the music. Using finely cut and pasted techniques from the view of a DJ allows the Noise Selector to re-edit and review recordings to conjure up loops and rhythms.

## Irregular Loops, Repetitions and Layers

Looping and repetition are important in my work. For example, noisier and glitchier textures from the sound(-making) objects are sought through improvising, listening and scrutinising the instrument in the studio. Elements are then discovered, found, and used to create loops. As Kelly states:

It is through the sampling, looping, and layering that the beauty effect is achieved. The unknown of the accident is layered into the known of the pop format, the choruses and verses underpinned with the accidental sounds of stressed digital audio. Through repetition we begin to understand the mistake and aestheticize it (Kelly, 2010, p. 261).

The locked groove from DJ culture is also important in my work: a repeating hypnotic rhythm based on momentum. This relates to the idea of groove and rhythmic nuances. As Roholt suggests: “The feel of the groove is a central element of the body’s motor-intentional engagement with rhythmic elements of music” (Roholt, 2014, p. 105). The impetus of repetition in my studio works stems from an interest in early forms of electronic dance music such as disco, techno and house music. Techno music has its founding heritage in Detroit, from the mid-eighties. Derrick May, Kevin Saunderson and Juan Atkins are often cited as the early pioneers of this period by techno aficionados (Sicko, 2010). In May 1988 for the ‘Seventh City Techno’ article in Face magazine with Stuart Cosgrove, Juan Atkins stated:

The Detroit underground has been experimenting with technology... stretching it rather than simply using it. As the price of sequencers and synthesisers has dropped, so the experimentation has become more intense. Basically, we’re tired of hearing about being in love or falling out, tired of the R&B system, so a new progressive sound has emerged. We call it Techno (Cosgrove, 1988, pp. 86-88)!

Derrick May has described and categorised techno as a mash-up of, “George Clinton and Kraftwerk stuck in an elevator” (Sicko, 2010, p. 11), citing the influence of soul and funk music alongside European new wave rock and synth-pop. Techno has a machine-driven sound and there is a comparable machine

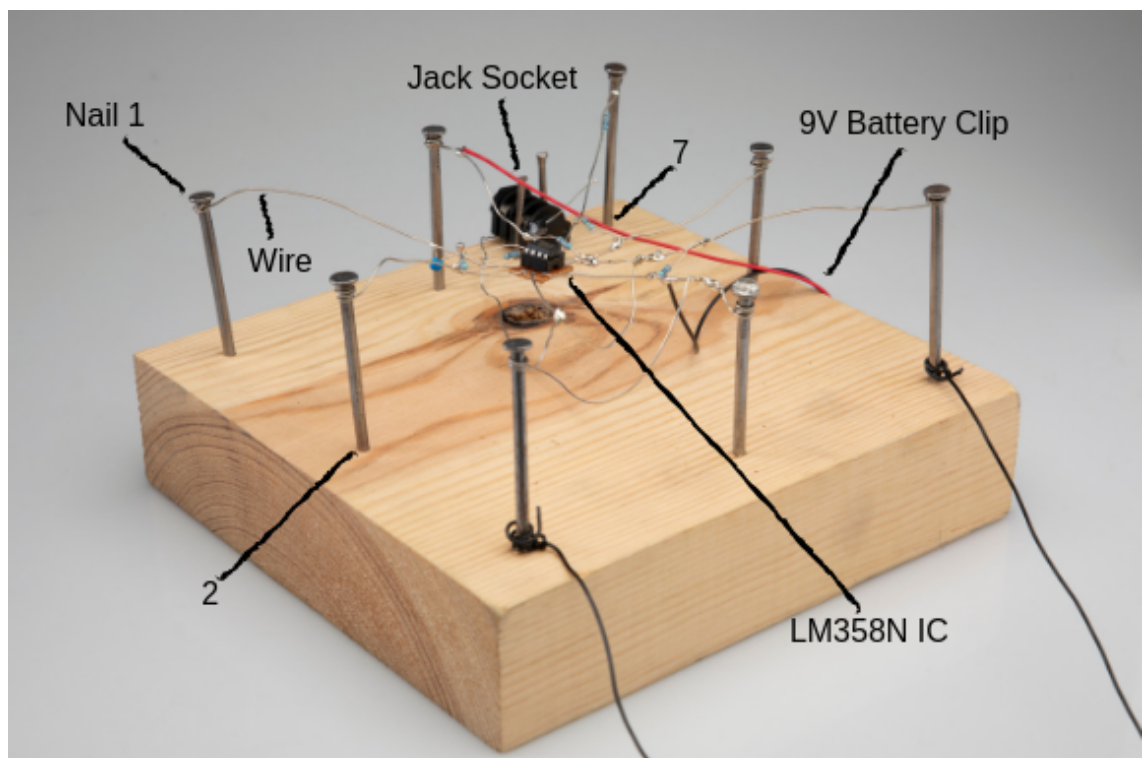
aesthetic associated with some of the sound(-making) objects used in my work, such as those that have programmable chips as part of their circuitry, for example, Colossus (p.75) that can be live coded to sequence loops/patterns and control feedback.

Unlike Techno as described above, the loops featured in some of my studio works are deliberately 'wonky' – irregular and out-of-time – as this brings a different kind of momentum to a piece and almost gives it a 'live' feel. Some loops in question have been conjured up by the sound(-making) objects themselves, such as Cobra (p.81) and Colossus (p.75), whereas in other sound(-making) objects, loops have been synthetically created by reviewing and selecting sections of recordings. The studio works presented in this thesis similarly retain an emphasis on rhythmic repetition.



## Bed of Nails

Most instruments that have been built throughout the course of this research contain feedback networks based on the Dirty Electronics Bed of Nails instrument (see Figure 1). The Bed of Nails could be considered as a sculptural art object in itself, using a variety of mixed materials such as wood, nails, wires and electronic components. The main body of the instrument uses freeform construction methods, and a piece of scrap wood is used as a base for eight nails. Wires are then wrapped around the nails, linking to the Integrated Circuit (IC). Early electronic engineers used this method of wire-wrapping around the nails on a breadboard (wood) using a solderless technique to construct prototypes (Richards, 2019).



**Figure 1: Bed of Nails – Source: Author**

The Bed of Nails is based on a feedback network built around a dual op amp, in this case, the LM358N Integrated Circuit, and it is played by touching two or more of the nails (nail touch controls), using the conductivity of the body to complete

and vary the circuit. More details of the instrument, schematics, etc. are available from the Dirty Electronics website (Richards, 2019). As shown in the image, there are eight nails with wires wrapped around each one. These are soldered to a tiny stripboard which houses a DIL (dual-in-line) socket and LM358N op amp. The pins of the IC are numbered anti-clockwise one to eight; therefore, nail one is on the top left corner of the image. In order for the feedback circuit to generate sound, nails two and seven need to be touched together. A short video clip demonstrating how differing sounds, timbres and pitches can be produced with a mini version of the Bed of Nails is available on my Dushume Instagram page (Patel, 2014). Different combinations of touched nails create various pitches, and timbres. Depending on the pressure and sensitivity of touch, different instrumental behaviours occur. For example, the greater the pressure applied on the nails, the lower the pitch. The Bed of Nails instrument is even more responsive when the fingers are moist.

As a way of investigation, several versions of the 'Bed of Nails' have been made in the past on a temporary 'pop-up' workbench at various Dirty Electronics' workshops. Two particular versions of the instruments have been adapted and presented in this thesis. The earlier-mentioned Cobra in the DIY Nomad and the Workbench chapter (p.17). Cobra is a light, durable sound(-making) object housed on the back of a beer mat, and Gilora (p.60) is a hybrid mash-up of the Turtlebox synth (see Appendix A) and the Faraday Dirty Kinetic Synth. Both sound(-making) objects will be discussed further in the Long Player chapter (p.59). Both synths contain a version of the Bed of Nails that have been adapted.

## Behaviours and Feedback Networks

What are often loosely described as noise circuits feature heavily amongst DIY makers. These circuits cover a diverse range of sound generation. Noise is best considered here as a sound that is timbre or texture orientated, as opposed to focused on frequency-related pitch. Many of these circuits are designed around amplifier feedback (Richards, 2017b, p. 247).

The delicate intricacies of the sound(-making) objects allow for a certain repertoire of performance practice to develop in the studio. Time in the studio can be spent becoming acquainted with these sound(-making) objects, and through playing the instrument, different behaviours will occur. All of the circuits that have been built have required close scrutiny, prototyping on a breadboard using the original schematic from the Bed of Nails (Richards, 2019). This trial and error procedure has helped achieve a wider understanding of the materials of the object as well as what goes on under the bonnet when required to fix things on the fly as a DIY Nomad. It has also resulted in hybrid situations: new circuits have been formed on the breadboard before commitment on the stripboard, creating a new type of sound material that has been tested in the recording studio.

By and large, the Noise Selector embodies the instrument: your body becomes an integrated part of the circuit. This embodiment allows a physical connection to be had with the sound materials. You are not only playing the sound(-making) objects but *it* also plays *you*. This aspect of the design is exciting, as each individual sound(-making) object has its own characteristics and personality, due to the *non-craft* element of how the sound(-making) objects have been built. Consequently, touch and gesture play an important role in the way each sound(-making) objects responds. It is these behaviours that present themselves in the studio that help me carve out interesting relationships with the sound materials of the sound(-making) object, which in turn appear within the recordings of the studio works.

It is important to mention that there is a tradition whereby feedback networks have been embraced in instruments. One example is Michel Waisvisz's Crackle Box.

The Crackle Box (Waisvisz, 2004) is a portable self-powered alternative analogue audio synthesiser with an inbuilt loudspeaker, developed in the 1970s. Like the Bed of Nails, the Crackle Box produces an array of sounds - hums, hisses, bleeps and subtle crackles – which give the instrument its name. The Crackle Box derived from early experimentation with printed circuit boards and with a view that electronics could be touched in creating and shaping the sound.

I started playing by placing my fingers on the print board of a damaged electronic organ. By patching the different parts of the circuit through my - conductive - fingers and hands I became the thinking [wet] part of a electronic circuit and I started seeing my skin as a patchable cable, potentiometer and [condenser] (Waisvisz, 2004).

Waisvisz argued that by touching the inside of the circuits, one could play the instrument without the need for schematics or advanced knowledge of electronics, and that the instrument could be learned by playing as you would a traditional instrument. This is also a feature of the works by Ghazala (2005) mentioned earlier. Waisvisz also stated:

Human touch can shape electronic sound in a particular way. The act of applying physical effort through touch is empirically 'known' to all human beings. The listener can feel the performer's touch and recognize the effort. The handling of physical effort is part of a universal language (Waisvisz, 2004).

Physical gestures in performance help articulate the music and communicate ideas to the audience. In more recent times, inspired by Waisvisz's Cracklebox, Faith Blaxcell from Rakit has developed the 'Disintegrated Cracklebox'. Like the original, it has used an integrated operational amplifier. Blaxcell highlights: "The original [Crackle Box] used the LM709, an old (and obsolete) chip by today's standards. So, in our kit we have effectively taken the integrated circuit of the operational amplifier and dis-integrated it, allowing it to live on forever in kit form" (Blaxcell, 2018). Like the Cracklebox, Rakit's Disintegrated Cracklebox version has multiple touchpads, which require the player to interact with it using their fingers to generate sounds.

Another family of instruments which utilise pinpoints as touch interfaces are the early portable postcard Weevil devices of Tom Bugs. He describes them as "... a micro-sized electronic sound maker with a variety of circuit bends for chaotic sonics. Like the larger Weevil devices, it features two lo-fi square wave oscillators that are ring-modulated together." (Bugs, 2006). Over the years, the Weevil has gradually evolved in various forms with the key features of oscillators being ring modulated together and body contact points. The resulting sound could be considered chaotic and indeterminate.

## Selector

The selector part of the term Noise Selector derives from sound system and DJ culture that is related to dub and reggae music. Some historical context will be given to show how it relates to my work within the studio. A Noise Selector differs greatly to a traditional composer. It is fundamentally about the way sound materials are chosen, scrutinised and edited. During the 1960s in Jamaica, large stacks of speakers and amplifiers would be set up in dancehalls or played outside (Davis and Simon, 1992). These sound systems were huge and “often homemade assemblages of turntables, amplifiers, speakers and miles of cable” (Katz, 2010, p. 26). In the dancehall or outdoor parties, there would be competitions or sound ‘clashes’ between sound systems with alternating DJ sessions, where the crowd would determine which sound system would win (ibid, p. 26). This would be based on the sound quality (bass and loudness) of the system and also the records that were chosen by the selector. ‘Selectors’ historically would decide and choose records for the DJ to play to the crowd. Selectors would be knowledgeable of the dub and reggae records and also responsible for the way the crowd would react to the record that was played. “The selector picks out and plays the bass-heavy records, manipulating the volume and tone controls or adding special sound effects such as echo and reverb to add drama to the music” (Brewster and Broughton, 2000 p. 121).

In the seventies, selectors were also prominent in outdoor street, school parties and clubs in the Bronx, New York, where hip-hop music originated. Breaks from soul, jazz and funk records would be played. These outdoor street parties were ad-hoc and self-sufficient. In the words of David Toop, “A party in the park would entail wiring the sound system to a lamp post or going to the house nearest the park, paying the owner and running a cable to their electricity” (Toop, 2000, p. 60). In addition to developing hip-hop and turntablist techniques, DJ Kool Herc was instrumental in adopting the Jamaican model of ‘toasting’ and selecting.

It was the 'monstrous' sound system of Kool DJ Herc which dominated hip hop in its formative days, Herc came from Kingston, Jamaica in 1967, when the toasting or DJ style of his own country was still fairly new. Giant speaker boxes were essential in the competitive world of Jamaican sound systems (sound system battles were and still are central to the reggae scene (Toop, 2000, p. 19).

In Jamaican music culture, the 'riddim' in patois, meaning rhythm in English, is an instrumental reggae and dancehall music track, which is an accompaniment for artists to rap or sing over. David Katz states:

...the rise of 'versioning' would ultimately pave the way for the experimental contours of dub, in which previously recorded vocal songs would be remixed to emphasise drum and bass, making greater space for deejays to appear on record. (Katz, 2014)

The riddim is often used by a variety of singers and vocalists to create different musical outputs. This practice began in the late fifties and developed significantly in the early sixties with the rise of the DJ as an artist:

From the early sound-system days, the DJ might shout at various points into the mic while playing a song, encouraging dancers and 'bigging up' himself and the system; in the 1960s, as these interjections - especially as rendered over instrumental recordings - became stylised and valued in themselves, the art of the DJ, and the practice of voicing over riddims, became established (Manuel and Marshall, 2006, p. 449).

The riddim is what the selector 'selects' and these records/tracks are fundamental to record selecting and sound system culture. In my own work as a Noise Selector, riddim is extended to 'riddim-in-works': a hybrid mash-up of riddim and studio works.

## Deconstructed Dub

In the field of dub and reggae, artists/ DJs could be considered as engineers who radically alter a riddim by remixing original recordings with a mixing desk. As Veal says: “using the mixing-board as an instrument [for] spontaneous composition and improvisation” (Veal, 2007, p. 78). They would also add reverb and delay to create space in the remixes. Reggae and dub artists also create ‘versions’ where vocals from a track are removed, providing an alternative edit. These versions often feature on the B side of single records and be used by selectors to toast over whilst performing on their sound systems. Daynes describes it “became both a tradition and a necessity for sound systems” (Daynes, 2016, p. 33).

Versioning defines what dub does to the reggae vocal track. It essentially remixes the original song, using an array of effects, usually morphing the song into a series of ghosted vocal traces haunting the rhythm track that has been stripped down to a functional minimum of bass, drum, and effects (Goodman, 2010, p.161).

Returning to my work as a Noise Selector, versions are produced by creating music from existing miniature recordings of improvisations. “The dub plate can be considered the first step in this process of “versioning”, a method of serially recycling recorded material developed by producers desiring to ensure the longest commercial life for a given piece of recorded music” (Veal, 2007, P. 55). Unlike reggae or dub, there are no vocals in the Noise Selector's work. But as Brewster and Broughton remark, there are plenty of other sounds in my recordings that can be utilised and considered for future alternative riddims-in-works and remixes (2000 p. 128). In the sound studio, like the reggae or DJ selector, the Noise Selector chooses materials from the recordings that have been made by analysing parts through listening and engaging with the raw sound materials. In the studio, sound recordings from the objects are treated as materials by the Noise Selector, and the studio becomes a hypothetical DJ console. The sound(-making) object, in turn, is like a physical dubplate – the audio recordings are a works-in-progress of the sound materials from the instrument that are then morphed into riddims or formed as studio works.



It is important to reiterate that it is the approaches and methods used by dub artists and sound systems that have been embraced by the Noise Selector in my studio work. These approaches are applied to the sound(-making) objects that the Noise Selector makes and mashes up, and this is connected to the idea of deconstructed dub. Recordings are dissected and manipulated with effects such as delays, echoes, and reverb that are dynamically added onto the noisier materials to give space to the sounds:

The sonic manipulations central to the process of dub versioning deploy electronic effects such as echo, delay, and reverb as means to sonic seduction. All can, in the production of these virtualities, generate effects that simulate the physics of sound within a certain acoustic space (Goodman, 2010, p. 159).

Historically, the aesthetics of noise and dub would not meet, but both genres may be embraced by the Noise Selector for the contrasting musical characteristics each provides. Many elements from dub and reggae music inform the practice of the Noise Selector in the studio. For example, there are similarities in dub and noise described by Hitchins as “an approach that is driven by intuitiveness and spontaneity rather than by concepts of perfection in regard to performance or sound” (Hitchins, 2016, p. 20). It is important to note that Jamaican music is highly influential in the development of many underground UK dance music scenes.

The basic etymology of dubstep comes from a combination of Jamaican dub and British 2-step garage. From dub, there is the stylistic emphasis on digital signal processing effects such as delay and echo, whereas 2-step offers a primarily rhythmic influence ... (D’Errico, 2015, p. 4).

Dubstep like dub has created a 'bass culture': "... it is the high volume, low frequencies - rather than mid or top - and distinctive rhythmic patterning that make Reggae's auditory vibrations memorable, quickly becoming culturally laden" (Henriques, 2011, p. 13). Dubstep has taken the bass spectrum from dub music and combined it with a form of British electronic dance music. Dubstep music has gone beyond the United Kingdom and this scene has been inspiring to me as a Noise Selector. Comparisons can be drawn to the materials of dub and dubstep alike, and especially the idea of occupying bass materials, or 'bass materialism' within noise music as coined by Goodman: "Bass materialism ... is enacted as the microrhythmic production and occupation of space-times by collectively engineered vibration" (Goodman, 2010, p. 172). The dubstep sound emerged during the early 2000s and it had something physical and raw in the aesthetics of the material, incorporating traditions from dub. The music was like dub built for physical spaces with large sound systems and this is where my interest in dubstep spawned from. However, over the last decade as a Noise Selector, I have distanced myself from dubstep as "stylistic elements of the genre were easily copied, replicated and adapted across a variety of international locations by producers unconnected with the physical spaces of the scene through which the genre had emerged" (Strachan, 2017, p. 143). The music, although bass-heavy, was not challenging or experimental enough, and it did not provide the noisier textures I was exploring in my work as a DIY Nomad, although the early years of the development of dubstep music and the wider scene will always be influential in the way I work in the studio.

To refer back to dub music, the recording studio is often pushed to its limits by listening and analysing recorded dubs, versions or stems. The mixing desk would be used as an instrument to navigate the different stems, providing an array of sonic possibilities. The huge dub sound systems also empowered DJs to perform and practice as well as make their own exclusive music. This influence is one of the reasons why I wanted to record the sound(-making) objects in the studio to provide a way of creating an exclusive source. The Sound(-making) object is celebrated like a dubplate, a one-off white label or acetate record that no one else

has. The DIY Nomad also has no affiliation with any PR or record company. I have discussed this idea of the one-off white label in more detail in my paper “DIY Instruments and White Label Releases” (Patel, 2016) where parallels are drawn and highlighted between DIY sound(-making) objects and white label records.

## **DJ and Remix Practice**

Remix techniques are rooted in dub and reggae tradition, as discussed earlier, with ‘versioning’ (p.40). DJs associated with sound systems rebuilt riddims to suit their audiences and sound. As a Noise Selector using my DJ background, sound(-making) objects are sampled and recorded from the perspective of the ear of the DJ. The approaches of dub allow you to, as David Toop states:

... replicate, reinvent, make one of many versions. There is no such thing as an original mix, since music stored ... is just a collection of bits. The composition has been decomposed, already, by the technology. Dubbing, at its very, best takes each bit and imbues it with new life, turning a rational order of musical sequences into an ocean of sensation (Toop, 2004, p. 355).

To return to the discussion of hip-hop, Gunkel stated that DJ Kool Herc and Grandmaster Flash extended the idea of the remix and looping live in their DJ performances by: “cutting”, alternating between duplicate copies of the same record, and “scratching,” manually moving vinyl records back and forth beneath the stylus of the turntable” (Gunkel, 2016, p. 16). As stated earlier, specific sections of the records, such as percussive elements, would be isolated, and cut and looped to play again. It has already been said that the practice of the remix is firmly rooted in Jamaica but this was further developed in the United States during the mid to late seventies by producers in the disco scene such as Larry Levan, Tom Moulton, and Shep Pettibone who “used tape edits and looping to rework and extend popular songs for use in dance clubs” (ibid, p. 16). These records were extended dance remixes that were released as extended versions on B sides of the original recordings. Navas describes these versions as “a longer version of the original composition containing long instrumental sections to make

it more mixable for the club DJ” (Navas, 2012, pp. 65-66). The idea of the extended version or remix is adapted by the Noise Selector, by extending sounds from the recorded materials and sound(-making) objects. This involves the techniques of cut and paste, looping sounds and repeating sections that have been improvised live. Here cuts n’ BuZZES are equally important as discussed earlier in this chapter (p. 30).

To clarify, a remix is an alternative version of an existing piece of music and could be adapted for alternative audiences. A remix also allows different elements to be brought forward or deleted from original recordings: for example, percussion sounds could be made more prominent in the mix or the brass section emphasised in Jazz or funk records. Some remixes also only keep elements of the original recording and have their own parts added. This process blurs the boundaries of what is considered creating new music.

These ideas can be difficult to apply for the Noise Selector, as the sound material is solely provided by the sound(-making) object. My work could be aligned to John Oswald’s *Plunderphonics* (Cutler, 2004, p. 139) by taking a recording of the sound(-making) object and altering the recording to form a new studio work. For example, in 1989 John Oswald chopped up Michael Jackson’s *Bad* and re-arranged it under the new name of *Dab*. Oswald worked only with sample material from *Bad* and did not add any other material to his work. I apply a similar approach to my work by limiting the choice of possibilities. It is an important part of the aesthetic that there are not many different sound sources in the studio works. Essentially, it is me as a Noise Selector, scrutinising a sound(-making) object, which in turn creates a pool of sound materials.

It is not just hip-hop DJs and dub artists that have influenced the studio works, but also other experimental DJs who have informed my practice as a Noise Selector, such as Otomo Yoshihide. Yoshihide has gone about destroying the vinyl object, using the turntable as an instrument without any records; furthermore, the sound materials are louder and noisier due to extending, modifying and manipulating the turntables in an uninhibited, unnatural and unintended way (Kelly, 2010, p. 183). For Otomo Yoshihide, the turntable becomes an instrument not for playing records but creating sounds from scratch such as high frequencies, static, hiss, feedback, clicks, scratches, rattles, and scrapes. For added impact, things are heightened with extreme amplification. An example of this is a solo performance by Otomo Yoshihide for the Tokyo Experimental Performance Archive (Japan Performance/ Art Institute, 2014), where he places a cymbal on the turntable platter and deliberately places the tone arm on the cymbal and grinds a stylus/needle that has been prepared with a coil spring around it. The result of this is a visceral textured racket of extreme feedback. Otomo Yoshihide has, as Kelly puts it, turned the turntable “into a noisemaker, a physical platform from which sounds are generated” (Kelly, 2010, p. 186). Here there are subtle links to the Noise Selector where the sound materials are loud, obnoxious and heightened to levels to the point where, in this instance, the sound(-making) objects could become damaged, or stop working. This is where the DIY Nomad would have to take stock and fix things on the temporary ‘pop-up’ workbench.

Another experimental improviser, Akiyama Tetsuji is also known as Tetuzi Akiyama, uses the turntable as a noise generator with no use of vinyl records as a sound source. Akiyama Tetsuji plays the turntable as an object, and he strategically attaches contact microphones to, as Kelly states, “the housing, the deck, and the rotating platter” to produce sound” (ibid, p. 194). The turntable is extended by attaching other objects which in turn generate more abstract and noisy textures by manipulating the mechanical systems of the turntable, whilst preparing and extending it. Arguably, Akiyama Tetsuji is remixing and mashing-up the turntable device and extending its possibilities by amplifying the

mechanics. He, like the Noise Selector, is scrutinising and magnifying the object to the extreme, and the aural result of this creates large thuds, 'suds', pulses, clicks and rasps (ibid, p. 197). It is no surprise that Otomo Yoshihide and Akiyama Tetsuji often improvise together, and this approach of just using the hardware and mechanics of the turntable as the exclusive source is similar to the reductionist approach of the Noise Selector, as the sound(-making) object is the only source that is sampled.

As a Noise Selector, I make a conscious effort to use sampling from the viewpoint of a DJ. This includes cut and paste techniques and it is not strictly about using vinyl records as a DJ; however, aesthetics from hip-hop and experimental turntablism have been incorporated in the studio works.

## Live Practice

In the world of DIY electronic music, there is an emphasis on live practice. This emphasis is also prevalent in DJ culture and the wider club and mixtape scene, especially in the selecting or picking out of records for sets in bars/nightclubs. Some of this is already discussed in the Noise Selector and the Studio chapter. However, in my own work, live practice is used to bridge the gap between the DIY Nomad and Noise Selector. The performance space or live practice offers another opportunity to scrutinise the sound(-making) object, as well as adopting noise selecting techniques in another environment in public, in front of a live audience. My live practice is also born out of the tradition of live electronics and improvisation and the importance of this historical context of live electronic performance is discussed further in this chapter.

## Live Electronics Tradition

In the early 1960s live electronic music was a term used by musicians who wanted to present electronics in their music and concerts. David Tudor, through his collaborations and association with John Cage and Merce Cunningham, “had become preoccupied with the use of electronic equipment in live performance” (Manning, 2013, p. 75). This was described as Tudor having a table-top filled with his homemade electronic devices where the sounds ‘were’ in the circuitry. Alvin Lucier stated: “David made his own orchestra out of these [homemade electronic devices], each one plugged into the other in a complex web” (Lucier, 2012, p. 61). Some of these instruments would employ feedback circuits, *Toneburst* (1975) and *Pulsers* (1976) being prime examples (Holmes, 2016, p. 235). Michael Nyman has suggested that “using live electronic systems the composer and/or performer is given an even more direct contact with sound” (Nyman, 1999, p. 90) meaning that there is a direct relationship with the sound(-making) object and the sound that it emits. Furthermore, “Tudor’s approach was largely one of letting

nature be itself and creating closed systems – his schematic equipment setups – that provided for a measure of disorder and randomness” (Holmes, 2016, p. 397).

David Tudor encouraged and inspired many people to make their own circuits – for example, the earlier mentioned Nicolas Collins who studied with Alvin Lucier of Sonic Arts Union. Collins was subsequently heavily influenced by the work of David Tudor and saw him as being an inspiration, as Tudor was “behind a whole kind of movement in America, of composers who looked inside of technology to generate a piece of music” (Collins, 1997). Whilst working with Tudor, Collins developed a two-tier method of working with electronics: the first was to subvert an existing piece of technology and find a piece within the circuitry; the second was to develop and design a circuit from scratch (Kelly, 2010, p. 246). This implies that the circuit is an important part of the composition and live performance and the practitioner’s task is to use the technology itself to draw out the music. Collins stated:

... designing a circuit was like composing a piece, the piece and the circuit were the same thing. The circuit was the score, the circuit was maybe your performer. The circuit had a complex role, and there were some really amazing pieces to come out of that tradition (Collins, 1997).

Another group of musicians inspired by David Tudor and John Cage, who extended what they had initially started in live performance using tape and electronics, was the influential group Sonic Arts Union. Between 1966 and 1976 the group consisted of Robert Ashley, David Behrman, Alvin Lucier, and Gordon Mumma. Lucier stated that “Gordon and David were inspired enough to learn electronic circuitry by themselves” (Lucier, 2012, p. 70). As a quartet, they toured America and Europe and all shared common interests that they played and performed by sharing equipment in each other’s individual compositions. Mumma extended Cage’s use of tape and amplification of small sounds in real-time rather than fixed media. He undertook electronic processing of sounds using acoustic and electronic sources such as in the composition of *Hornpipe* (1967) where there is a modified French horn intertwined with electronics, circuitry, and a



console that he had designed and built himself, known as the cybersonic console. Mumma enjoyed working with electronics especially in live situations.

He always chose the most extreme sounds to put in, and made no attempt to make them beautiful. The climax of the work occurs when the system becomes saturated and unstable and the electronic sounds kick in. The composer/ performer doesn't determine when this happens, the circuitry does (Lucier, 2012, p. 75).

Alongside David Tudor, Gordon Mumma was also responsible for creating the performance culture of a tabletop full of black boxes and wires, of interconnected components that could be mixed, modulated and played (Holmes, 2016, p. 443). David Behrman also built his own homemade electronic devices for performances in the Sonic Arts Union, employing features of the electronic instruments found in commercial synthesizers of that period. Alvin Lucier argued that Behrman's equipment "... sounds better than store-bought synthesizers. It has the mark of a master craftsman" (Lucier, 2012, p. 78). This sets a precedent for a strong relationship between DIY electronics and live performance and it creates a model or establishes a tradition for future creative work in this area.

## **Liveness**

During the 1960s, many experimental musicians used synthesizers, circuits and electronics, as well as effect boxes that included feedback and distortion, as a major part of their instrumentation, and these electronics became a significant part of live practice. Musicians would often improvise rather than perform predetermined pieces or compositions; indeed, and it could be said that: "Improvisation is part of the experimental spirit that makes up the soul of electronic music" (Holmes, 2016, p. 448). Indeterminacy was an important part of John Cage's aesthetics and Pritchett suggests that it allowed "the ability of a piece to be performed in substantially different ways" (Pritchett, 1996, p. 108). Furthermore, Cage stated: "A performance of a composition which is indeterminate of its performance is necessarily unique. It cannot be repeated.

When performed for a second time, the outcome is other than it was” (Cage, 1961, p. 39).

Live electronic music is fundamentally linked to the nature of the sound(-making) objects or devices and the way they respond or behave. Furthermore, returning to an idea discussed in the Noise Selector and the Studio chapter (p.23), these sound(-making) objects and the resulting music are not necessarily concerned with melodies or harmonies but with noisier textures. Within DIY electronics, the sound material from the sound(-making) objects can sometimes take its own form. Michael Nyman states that “Cage accepts into the performance any unplanned, unavoidable by-products of the electronic system like feedback or loudspeaker hum – all sounds” (Nyman, 1999, p. 91) are considered music even if they are conventionally considered undesirable. Some of these devices were set up and played on tabletops and a tradition of tabletop live electronics emerged.

During the 1960s in the United Kingdom, there was a growing appetite for live electronic music. Musicians were becoming more flexible and adaptive partly because the technology was becoming more affordable and portable “by the steady miniaturization of circuits”. (Emmerson, 2007, p. 115). Hugh Davies stated:

... it had become possible to build simple circuits from magazines without any detailed knowledge of electronics, and thus some musicians who lacked such expertise found themselves able unassisted to adapt existing circuits and devise other simple ones for use in personal electronic music studios and especially in live electronic music (Davies, 2001, p. 53).

Ensembles such as Gentle Fire are another example, founded by Hugh Davies and Richard Orton in 1968, who performed with live electronics partly due to Davies’ “... gifts for designing unusual transducers out of materials such as scraps of metal and wood, rubber bands, and coils of wire attached to suitable electrical pickups such as contact microphones, provided them with a wealth of cheap and versatile performance aids” (Manning, 2013, p. 162). Gentle Fire was

influenced by Stockhausen's detailed compositional approach to live electronics and Davies stated it was "counterbalanced by that of John Cage and David Tudor, who featured greater freedoms and more diverse combinations of sound sources and often of independent loudspeaker channels" (Davies, 2001, p. 54). Following on from Gentle Fire, Intermodulation, a live electronics group founded by Tim Souster and Roger Smalley in 1968 whilst they were researchers at Cambridge University, also worked with live electronics and instruments in their performances (Emmerson, 1991, p. 181).

There are some large-scale organisations where electronic music was restrained within the recording studio such as Groupe de Recherches Musicales (GRM) or Studio for Electronic Music (WDR). However, in 1969 the Studio for Electro-Instrumental Music (STEIM) was founded as an independent organisation based in Amsterdam, Netherlands. STEIM's main focus was on live electronics and instrumental practice in a variety of spaces and drawing on many traditions. (Steim, 2018). Michel Waisvisz, who was a former director of STEIM, championed the use of live electronic instruments in performances and also invented instruments for this purpose such as the 'Crackle Box' as mentioned earlier in the Noise Selector and the Studio chapter (p.36). Overall, STEIM encouraged the idea of making and developing highly personalised instruments and developed a culture of live electronics.

## **Liveness in relation to the DIY Nomad and Noise Selector**

For me as a DIY Nomad, the live practice offers up another space for making. Live practice suits the transient nature of the DIY Nomad, especially when attending gigs. The setting where live practice takes place is also usually non-permanent, and increasingly I am finding myself performing in non-traditional, temporary performance spaces. An example of this is when I played in a converted suburban 1930s butchers shop in Harrow, London that is now known as Usurp art gallery and studio run by Poulomi Desai (Desai and Underwood, 2018), which is not a permanent music venue.

The live practice is also about the sense of touch and the feel for the material nature of all the wires and stuff of electronics on stage and in the performance space. Fundamentally, live practice allows you to take the sound(-making) object into a different context, away from the segregated DIY Nomad's environment of a temporary workbench and, as a Noise Selector, away from the closed and intimate recording studio. It also allows for a Noise Selector to improvise and play outside of the studio in public. This gives the audience an insight into the way some of the musical ideas are formed and extracted from the sound(-making) objects that have been crafted and built. There is an element of liveness in the making and an element of liveness in the studio practice. In the studio, the Noise Selector is improvising but in the live context, the DIY Nomad and the Noise Selector can be considered to be 'making' on stage, through a tripartite approach of the workbench, studio and live practice. This will be discussed in more detail in the Long Player (Portfolio) chapter (p. 59).

## Tinkering on Stage and Building the Sound

Both as a DIY Nomad and Noise Selector, the live practice draws on the traditions of improvisation. A heightened level of scrutiny of the sound(-making) object in front of an audience happens whilst dissecting the sound(-making) object live with no rehearsals; for this I offer up the terms ‘tinkering on stage’ and ‘building the sound’. Fundamentally, this could also be deemed as a live exploration of the sound(-making) object through performance, to see if the instrument is robust, and to establish what kind of sounds the sound(-making) object produces. By making on stage, you are learning and developing a coherent relationship with the sound(-making) object, reinforcing a live practice by maintaining control of certain sounds and hearing brand new ones especially when tampering with the circuitry. For example, the Colossus (p.75) instrument is fragile by nature due to its non-permanent state with components placed on a breadboard. You are not only listening to the sound materials emitted by the sound(-making) object, but you are maintaining the building on stage, ensuring that wires and components do not become loose from the proto-typing breadboard. This blurs the distinction between the workbench and live practice. In the same way, due to the transient nature of the DIY Nomad, performances with Cobra (p.81) are also an act of discovery and extracting sound materials through ‘building the sound’ as well as ‘tinkering on stage’.

For example, at an event that took place at Chaos Magic<sup>1</sup>, a top-floor space in Backlit Gallery, Nottingham, the Cobra sound(-making) object required attention prior to my performance. This was only discovered in situ at the venue – an occurrence that is not uncommon for the DIY Nomad due to the fragility of the instruments and the ad hoc nature of the practice. The potentiometer knobs had come apart from the surface of the beer mat and needed repairing. A hot glue gun had to be sought and two potentiometer knobs required re-gluing on the beer mat. Therefore, ‘building the sound’ and ‘tinkering on stage’ is important when

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<sup>1</sup> This event was on Saturday 25<sup>th</sup> May 2019 with Dirty Electronics as part of the Radical Chip party tour with Max Wainwright.

the tripartite system is disrupted. This is particularly the case if the sound(-making) objects have been lying dormant and not played for a significant time. The build and playability of the sound(-making) objects have to be checked and scrutinised to see if they are in working order, and whether there is a need to go back and set up a temporary 'pop-up' workbench for any repairs or refurbishment.

## **Live Practice Reconnaissance**

The transient nature of a DIY Nomad has allowed me to develop and take part in what I term 'live practice reconnaissance'. Live practice reconnaissance allows for preparation towards a gig or performance. It is like being on a mission and being nomadic. As a DIY Nomad, I go out gathering my tools for live electronics performance whilst being strategic, working towards the end goal which is the final performance or set, some of which is discussed towards the end of this chapter. Live practice reconnaissance is more involved than a normal gig, where I would just turn up and improvise with a sound(-making) object. It requires working towards a brief. Some examples where I have used this idea of 'live practice reconnaissance' could be at LLEAPP (Laboratory for Live Electronic Audio Performance Practice) where I took part in a three-day intensive workshop between 16-19<sup>th</sup> April 2013 at the University of Edinburgh, working in a large ensemble consisting of fourteen people. It required stringent rehearsals with other participants and allowed for practice on my own newly built sound(-making) objects. The workshop's main agenda on the second day was enlisting a musical director Jan Hendrickse who would help us to work and gel together, utilising new performance strategies. This, in turn, culminated in a live public performance on the third day and, following that, a critical feedback discussion on how it went and how it could move forward and be improved. It was one of my first forays into the role of the DIY Nomad and cemented my practice as a Noise Selector.

Another example of live practice reconnaissance was in joint collaboration with Newcastle Culture Lab and De Montfort University's Music Technology and Innovation Research Centre in December 2015, which developed into a co-authored paper: "*One Knob To Rule Them All: Reductionist Interfaces for Expansionist Research*" which was published in the Proceedings of NIME (New Interfaces for Musical Expression) (Bowers, Richards et al, 2016). Through curated research with eleven participants, the project brief consisted of the idea of a single knob interface or a reductionist approach to 'instrumental control' such as limitations of one single knob, one button or no knob at all (Richards, 2015). Many participants utilised the idea of alternative interfaces and others looked at the implications of live coding with the uses of one single knob controller.

My work primarily focuses on performing and improvising with sound(-making) objects; therefore I flipped the brief's script and offered up an alternative strategy through observations and studio works. Normally coding is not part of my practice. However, Colossus (p.75) can be programmed and live coded; the code is read and continuously in flux, being re-written by using one tactile button and one knob. By interacting with the limitations of the instrument by the random gestures of using the button and knob, the resulting music can consist of an array of different loops and patterns. The characteristics of the music are generative and noisy (Bowers, Richards et al, 2016, p. 435). One Knob to Rule and Colossus particularly takes coding into a different realm. This is where the term 'coding' feels wrong. The one knob in many ways is liberating, as it changes the way in which coding is approached. As a DIY Nomad, and using live practice reconnaissance, it gave me artistic freedom away from text-based coding of microprocessors towards creating sequenced patterns of sound in a physical way. This also enabled me to approach the project from an aural and improvisatory tradition as discussed in this chapter. There was an emphasis on moving away from the command line, towards the primacy of the ear. My main positioning within the group was working with the object as 'composition' as well as performing through the object.

Lastly, a collaboration with experimental Chinese musician Yan Jun was a response to a text that he had written: '*The Laundromat (laundrette) by the Sea*' (Jun, 2014). The text was used as a brief to develop my own views that noise is *not* music, because it goes beyond musical boundaries be it traditional musical notation or musical instruments; and as live practice reconnaissance in terms of preparing material for a gig. It also resulted in the studio work '*Predictive Noise*' (p.69) and a text score (see Appendix B) used in two live performances.

The research has also been influenced by a number of other musicians that embrace the general aesthetic of live electronics and continue the tradition of improvisation using electronics as part of their performances. Takuro Mizuta Lippit aka DJ Sniff, who I first met when he was an artistic director of STEIM in 2008, has championed an alternative experimental form of turntablism with improvisation at the heart of his practice. His 'instrument' consists of one industry standard Technics 1210 record deck and a DJ Mixer that is extended by custom-designed software and hardware tools, to "encourage new performance methods and aesthetics" (Lippit, 2006, p. 72). Another artist whose work falls within the remit of experimental noise music with live electronics is Poulomi Desai. Desai performs solo and also collaborates and improvises with different performers in the field of DIY electronics and free improvisation, using extended techniques on her bespoke prepared sitar and other found objects. An interest in experimental arts has led Desai to open her own space "Usurp" in London (as mentioned earlier in this chapter) curating and programming artist exhibitions and events (Desai, 2018). Lastly, my connection with John Richards' Dirty Electronics Ensemble, which has continued and extended the tradition of Cage and Tudor – the practice of developing and working with electronics. Many of my performance skills have progressed and developed through collaborating and working closely with Dirty Electronics. Dirty Electronics is not centred around studio-based work but more around live electronics and music performance. Dirty Electronics allows the practice of exploring and making things that blur the boundaries between composition, performance and instrument making. It could be said that Dirty Electronics is a modern version of AMM and Sonic Arts Union, a mash-up of the



two, as well as fostering Tudor's approach of 'composing inside electronics' (Collins, 2004). Firstly, pieces are devised or pre-composed for large group performances in workshops and secondly in performance using the sound(-making) objects that have been made. Richards states that "the rationale for making is often to create a tabula rasa for composition or performance" (Richards, 2017, p. 245). The work of Dirty Electronics is about discovering and exploring these objects in live performance using DIY electronics.

For my own practice, live practice is born out of the traditions that have been discussed above. The live practice influences the way the DIY Nomad builds sound(-making) objects. These objects are not necessarily engineered. They can be ad-hoc through finding materials that are at hand and improvised, as discussed in the DIY Nomad and the Workbench chapter (p.15–17). It is also about being expedient. Sometimes the DIY Nomad turns up to a performance with minimal equipment, such as a single sound(-making) object, two jack cables that were left lying around and cheap batteries from a supermarket. For the DIY Nomad, it is quite common in some cases for instruments to be repaired or altered, and certain situations happen where the instruments may partly stop working or need fixing; therefore, live practice allows the DIY Nomad to also scrutinise the sound(-making) object without the baggage of having an engineering or instrumental design background. Just as the workbench takes the musician to a different place, the live practice also takes the 'engineer' to another place and offers a way in which the DIY Nomad can facilitate differing solutions relating to the sound(-making) object. By being forced to do things live you cannot be an electronic engineer in the traditional sense. In this context, the idea of the 'maker' breaks down because you have to be practical and work within the realms of what the sound(-making) object has to offer and this liveness changes your perception of the sound(-making) object. For example, when I performed using the Cobra sound(-making) object at Chaos Magic, as mentioned above, I had to fix the sound(-making) object on a temporary 'pop-up' workbench. As a result of this, the sound(-making) object was noisier, creating harsher textures and high ringing, and the behaviour was more erratic.

In live practice, the sound(-making) object gets scrutinised publicly rather than in the private confines of the Noise Selector's studio, and without commonly used post-production techniques such as looping, dubbing, echoes, delays and reverbs. There is not an attempt to replicate the studio works live. The Noise Selector is providing an alternative version by playing live: it is not about playing tracks or DJing other people's records or materials. The level of detail in the timbre and texture of the recordings found in the sound studio are not present in live practice: the textures are noisier, and what could be considered 'honest'. For example, looping is not considered in the same way as in the studio. In live practice, my loops and repetitions are not synthetically engineered with effects pedals or machines. As already stated, looping is an important part of my background as a Noise Selector, but by playing these sound(-making) objects live there is a different approach adopted for looping; repetition is made through other means. Quite often the sound(-making) objects that I use, such as the Cobra (p.81), have sequencers built into them which loop. The looping aspect, in performance, is complementary and generated from the objects themselves, and therein lies the distinction between the studio and a live situation in performance. The sound textures in performance are not multi-layered like in the studio. Often in live practice, the sounds used are monophonic. Performance is approached through the idea of a single authentic sound(-making) object because of the DIY Nomad's whole idea of the reductionism relating to expedience. Having access to only one instrument adds another characteristic to the music which I will talk about later in the thesis (p.61), including how this has influenced the studio work. To conclude, locating and finding sounds for the Noise Selector is critical, as well as extracting as much material as possible from the sound(-making) objects, musically and conceptually.

## The Long Player (Portfolio)

Making can take place in three different spaces. Firstly, the workbench in its workshop provides a way to make and explore the sound(-making) objects discussed in this thesis. The recording studio provides a way to carefully analyse what has been self-built and the sound(-making) objects are captured in recordings so that they can be heard again in different contexts. Finally, live practice is used to bridge the gap between the workbench and studio by offering an alternative place for making, and an opportunity to observe and listen to the sound(-making) object in another environment, in public, in front of an audience. These three spaces have traditions associated with them which I deviate from, and this has been important in the way my practice and research has been shaped.

In this chapter, there will be a discussion of how the workbench, studio and live practice are brought together through my work as a DIY Nomad. I will refer to explorations of the sound(-making) objects as an investigation of a project and the studio works will be discussed. Each studio work can be considered as a result of the study, from the beginning of building the sound(-making) object and also how the essence of the circuitry can be extracted and captured in the recording studio and also in live practice. Fundamentally, the portfolio offers and allows the reader to understand the unique characteristics of each sound(-making) object and how each was approached in terms of making as a DIY Nomad. The works will be discussed with a focus on their relationship to the holistic approach that encompasses the idea of the 'Studio Bench'. They are not case studies, set to empirically test the research questions, but artworks that substantiate the main aims and objectives of the thesis.

## Gilora

The Gilora (see Figure 2, p.65) sound(-making) object started as another circuit, the Faraday Dirty Kinetic Synth (Richards, 2019). The original design of the Faraday Dirty Kinetic Synth (see Appendix C) is based on the Dirty Carter Experimental Sound Generating Instrument that uses simple digital logic chips (ICs). In the original, unpublished documentation for the Dirty Carter Experimental Sound Generating Instrument, Richards states:

The Dirty Carter Experimental Sound Generating Instrument uses a dual 4-stage shift register [4015]. Each register is controlled independently. Two oscillators [produced by the 4093 nand gate] are used per register: one as a clock, the other as input data that is cascaded through the four stages. The outputs from the stages are mixed together [using a passive resistor network]. A fast clock rate produces a crude form of wavetable synthesis, whilst a slow clock rate creates audible pulses and clicks. The clock speed and the data input's frequency are controlled by touch electrodes/pads. By tilting the instrument, sound from both the 4-stage shift registers can be mixed together. Glitchy noise, deep drones and percussive peeps! (Richards, 2010, p.1)

The sound(-making) object produces an array of glitch sounds as described in Noise Types and Treatments in the Noise Selector and the Studio Chapter (p.25). The Faraday Dirty Kinetic Synth was partly built on a temporary workbench at Dartington International Summer School.<sup>2</sup> A minor alteration from the Dirty Carter Sound Generating Instrument was that the oscillators were created using another digital logic chip, the 40106 Schmitt-Trigger.

As a DIY Nomad, I wanted to investigate this object further. This was the first step I had taken to solely concentrate on developing a method for working with electronics and music that allowed me to make conscious decisions to look at alternative and simpler methods for live music making. It is important to note that the sound(-making) object ended up being used for multiple pieces *Kobi Mutter*, which was the partly working Dirty Kinetic Faraday Synth, *Gilora* after the mash-

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<sup>2</sup> Dirty Electronics Course at the Dartington International Summer School (Week 2, 3-10th August 2013).

up with the Turtlebox including *Predictive Noise*, a recording of an improvisation, and *Predictive Noise Remix* as well as performances *Predictive Noise* (performance with texter), and lastly a collaboration with Poulomi Desai using the Gilora sound(-making) object, which is discussed later in this chapter. However, the catalyst for developing the sound(-making) object was the opportunity to take part in a live event, Electric Nights in Athens, Greece.<sup>3</sup> The Electric Nights festival forced me to question my live set-up and ask further questions about my relationship to the workbench, studio and live practice.

One key consideration of Gilora was the idea of 'one instrument and one performer', something that connected to the idea of the DIY Nomad. I also feel this focus on the singular sound source ensures that the agency of the performer/instrument is clear. When I interact as a performer with the sound(-making) object, turn a knob or touch controls, I am interested in the potential of direct cause and effect in relation to the sound. Because of the simplification of the controls and the use of a singular sound(-making) object, the cause and effect is made clearer. However, these sound(-making) objects also have a capacity to 'play themselves' and I am interested in the tension this creates between performer and sound(-making) object.

The 'one instrument and one performer' approach also had two other important implications, which were travelling light and the sound(-making) object being small and durable, and this is where the idea of the DIY Nomad began to manifest. Gilora initially existed as a collection of unfinished sound circuits that were left abandoned on the workbench. These circuits just happened to be there and ready to be fixed and used for live performance in Athens. I wanted the characteristics and authenticity of the circuitry to come through in the performance, and I wanted to use the instrument raw by not masking the sounds with added sound effects, such as delays, reverbs or echoes, which arguably undermine the agency of the performer. It was important to highlight the chaos, unpredictability, and uncooperative nature of the instrument in its truest form as

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<sup>3</sup> Electric Nights took place in 3-4<sup>th</sup> April 2015 at Booze Cooperativa in Athens, Greece.

well as highlighting the indeterminate and improvised performance with the sound(-making) object. This also meant excluding sampling the object live with loop pedals.

The performance at Electric Nights illustrated how the workshop could exist temporarily in a way of a 'pop-up' workbench. For example, during the performance, the battery clip dislocated from the circuitry and required mending. There were no tools at hand and an improvised solution needed to be sought. Repairing the instruments on stage was a result of logistical need, but ultimately became part of my performance aesthetic. Electric Nights highlighted how it was possible to blur the spaces of the stage and workshop, along with the associated activities of live performance and repairing circuits that traditionally happen in separate spaces.

On my return from the festival, I took the sound(-making) object into the recording studio to capture elements of things that I had tried out live, for example, trying to capture the authenticity of the sound(-making) object and not over-processing the sound, as well as improvising in the studio. The resulting piece ended up being called '*Gilora*'. The event in Athens led me to the realisation of my particular approach and the idea of a holistic practice that embraces these contrasting spaces.

### ***Kobi Mutter* 5:01mins (2014)**

Prior to *Gilora* being produced, the broken circuit was known as the Faraday Dirty Kinetic Synth and this was taken into the studio to form the recorded piece *Kobi Mutter*. The piece particularly illustrates the glitch and noise aesthetic, as previously discussed (p.25), which runs through all of my work. From the workbench, it was clear that the sound(-making) object had its own quirks, and playful nature. *Kobi Mutter* features subtle machine and mechanical sounds (2'58) that were 'zoomed in' and discovered on the workbench when repairing loose wiring and connections with components on the stripboard.

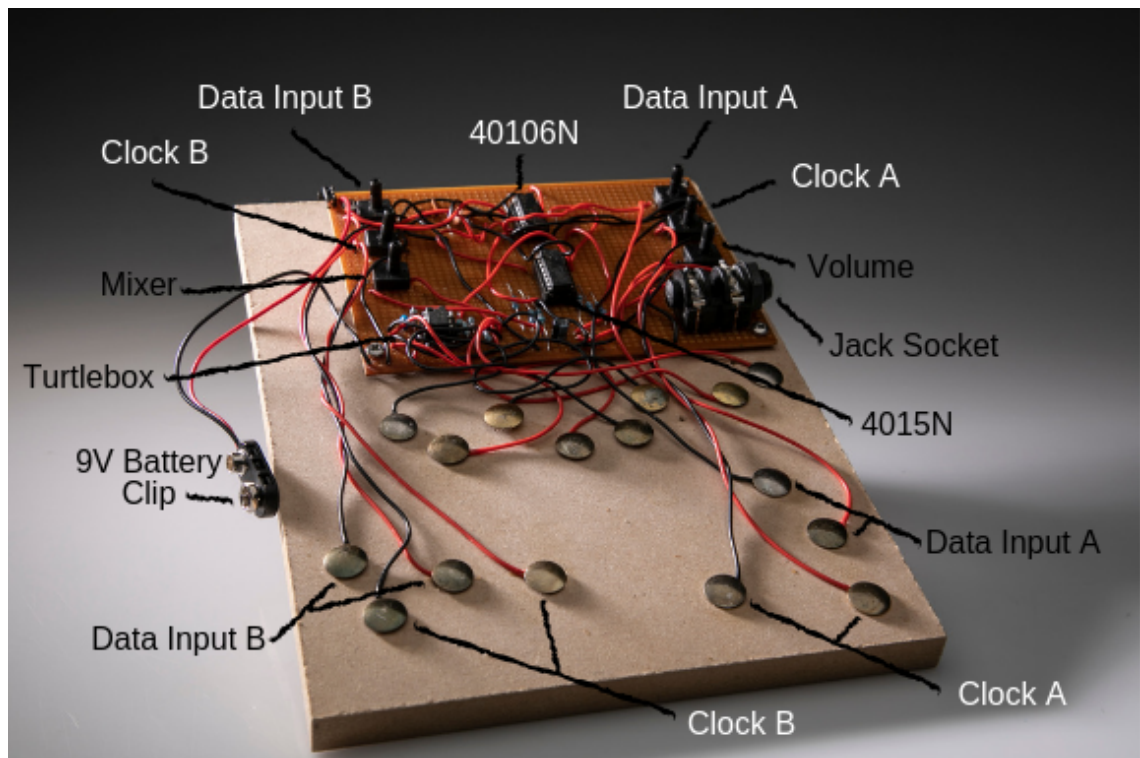
Due to the nature of the handmade object and the way it was made, the wiring of the circuit added interference to the sound that created additional background hum and hisses with intimate low-in-volume clicks and pulses, and this can be heard from the beginning up until (0'32). The hum remains throughout the whole piece, embedded in the background. In this studio work, as well as glitch and noise, there are bass and low frequencies in the music that are produced by the circuit (2'57). A section of this is then re-looped and, as it develops, edited using Cuts n' BuZZES technique: the rigid loops become 'wonky'. Here irregular loops are significant in that they provide momentum. Layered on top of the looped bass sounds are high-pitched tones and hum with mid-range frequency distortion that are enhanced using equalisation. Deconstructed dub techniques are employed such as reverb and subtle delays, which are placed on the overall mix of the studio work. Bass in the sound materials draws direct inspiration from dub and dubstep (e.g. at 3'45). *Kobi Mutter* highlights two stages that exemplify my practice: firstly, being built on a temporary workbench in a workshop environment; and secondly, the DIY Nomad's pop-up workbench where a repair took place and experimental, noisier sounds began to emerge. These two stages led to a final recording of this new 'improved' sound(-making) object in the studio.

Even though creating and making the work is done in stages from the temporary 'pop-up' workbench to the Noise Selector's studio, I feel there is a link between the workbench, studio and live practice. This is also more apparent when one stage is missing. In this instance, during the creative process, there was no live performance with the Faraday Dirty Kinetic Synth and, therefore, a part of the process I outline here (live practice) was missing. Arguably, the live practice offers up another space to scrutinise the sound(-making) object. In the case of the Faraday Dirty Kinetic Synth, it had not been tested at a gig to see if there was a need to go back to the workbench for refinement. For example, when a sound(-making) object is played in front of an audience, this public arena creates a focused environment. As a performer, you are exposed to this intense setting that reveals different things and where the sound(-making) object offers up new ideas

that happen spontaneously. Sometimes these improvised moments cannot be replicated in the confines of a studio.

Largely, the social aspect and transient nature of the DIY Nomad is also missing in the studio, as there is no opportunity to meet other people within the field and share experiences and ideas. The live practice allows for an alternative version where the DIY Nomad is liberated from the studio. In performance, there are no studio techniques or effects involved to enhance the sounds. At the beginning of building this sound(-making) object, the device was a means to an end in terms of completing the circuit; however, by the end of working on the Faraday Dirty Kinetic Synth and the *Kobi Mutter* studio work I realised that I needed to think carefully about how I could make the three stages work more seamlessly. How do the three stages relate to my work? In hindsight, a performance with this Faraday Dirty Kinetic Synth in its current state would have been beneficial to test the tripartite method and this method is further developed in the next piece, *Gilora*, where the sound(-making) object is mashed-up with another instrument and mounted onto a piece of wood with additional touch points.





**Figure 2: Gilora – Source: Author**

***Gilora*** – 3:18mins (2015)

Gilora sound(-making) object is a hack that combines two instruments, the Faraday Dirty Kinetic Synth (as described above) and the Turtlebox (see Appendix A). The Turtlebox is based on a feedback network built around an op amp like the Bed of Nails (Richards, 2019), as discussed in the Noise Selector and the Studio chapter (p.33). Drawing pins instead of nails are used for the Turtlebox. Different combinations of touched pins create various feedback loops and consequently, different pitches and timbres.

When I had finished repairing the Faraday Dirty Kinetic Synth, I began playing the instrument on the workbench by placing my fingers on the back of the stripboard, creating my own short circuits and hacks whilst rehearsing. To begin with, these short circuits were accidental but led to an idea that I could solder extra wires to these points to create additional touch points to manipulate sound, and eight wires were connected to eight drawing pins that I had found lying about

in the workshop (see Figure 2, p.65). There are four pots that control the digital logic chips: two that control the oscillator's pitch (data inputs); and two that control the speed of the shift register (clock A/clock B). In terms of the sound, when either pot is rotated fully to the left-hand side, there are harsh high-pitched noises and hisses; when rotated to the right there are mid-to-low hums and distortion that allow you to create pitched material, pulses, and noise bursts (see Figure 2, p.65). There is one pot that works as a volume/mixer for the Turtlebox circuit to blend with the Faraday Dirty Kinetic Synth; and there is an additional pot for overall volume of the instrument. The eight drawing pins towards the bottom of the board (left and right) work in a coordinated fashion as a touch surface in relation to interfacing the four pots, as shown on the image (See Figure 2, p.65).

The combined mash-up Gilora circuit has sixteen drawing pins in total. There are a further eight added to the Turtlebox circuit. The greater the pressure and sensitivity of touch, and the greater the pressure applied to the controls, the lower the pitch. Using ideas from Reed Ghazala (2005), I had 'circuit bent' my own instrument by a way of studying and altering its circuitry. Consequently, different sound behaviours occurred and they were more harsh and brutal than the original Faraday Dirty Kinetic Synth. Hum, static, hiss and noise bursts produced by the object dramatically enhanced the glitch/noise character of the output. Because of the combined wires from the two circuits of Gilora, additional interference and static were produced, making the sound world of the object more noisy. I wanted to expand on the possibilities of the synth and experiment with it further, especially in a live setting. It is played through manipulating the pots and the multiple touch points. All of the controls are 'under the hands' yet hard to control. The indeterminate nature of the object is described in more detail below.

Ultimately, Gilora is awkward to play and it almost impossible to nurture an official playing style; but its unpredictability is what makes it exciting to play. I have found that the circuit is rather hard to play in an improvisation context: *it 'plays' you*. As mentioned, it is difficult to control, which also results in fragmented phrases. Having played with many instruments that produce feedback through touch, using

touch drawing pins as a touch surface allows a varied approach to playing the instrument rather than using more traditional control interfaces such as potentiometers.

The marriage of these two instruments is what I refer to as a hardware mash-up. In this case, I created a new hybrid instrument Gilora. DJ culture and its practice have been influential in mixing and merging these two separate instruments together. I initially discussed this idea of investigating hacking circuits and different sound(-making) objects together in the article “DIY Instruments and White Label Releases” (Patel, 2016). The combination of these two instruments led me to the idea of the hardware mash-up or the hardware remix. The hardware mash-up utilises the DJ or remix analogy that connects my electronic dance music background with DIY electronic music. By combining and adapting existing sound(-making) objects together, a new way of working and experimenting emerges. By merging different circuits together, you are creating new potentials and possibilities to draw and find new sound materials to scrutinise and extract as a Noise Selector. All the elements from the Faraday Dirty Kinetic Synth were kept and combined with the circuitry of the Turtlebox. Like the DJs cut and paste techniques, this process helps the DIY Nomad to re-edit, review circuitry and blur the boundaries of what is considered something new or old.

Having mashed-up the hardware, the sound(-making) object went back into the studio for another session of pushing the instrument to its utmost limits. This was achieved largely by improvising with the sound(-making) object using different playing techniques that involved combinations of rotating the four potentiometers vigorously to change the multiple waveforms. The pins were also touched, creating short circuits and altering the sound texture of the object. Yet again the studio work itself derives from an improvisational process using only source material from the Gilora.

This work amply demonstrates the studio and playing techniques explored throughout this research. Firstly, the studio became a rehearsal space, through playing the sound(-making) objects and recording long improvisations in one

take. These materials were then listened to with a view to analysing and scrutinising the audio parts from the Gilora sound(-making) object. *Gilora* ultimately consists of improvised recordings that have been layered and edited together. Through intricate cuts, splices and subtle editing, the piece has six audio parts that have been cut and pasted together to form one studio work.

I will now discuss some of the noise types and treatments featured in *Gilora*. Cuts n' BuZZES as a treatment has been used to dissect, morph and blend the recorded parts together; some of these cuts are abrupt, (e.g 0'13). There is subtle layering (0'56), where the cut and paste of a segment has been overlapped slightly. Silence is used to bridge two different sections together by creating expectation (1'13). At the same time, there is also the use of deconstructed dub techniques (e.g 1'13) in this piece and there is an emphasis on using delays and reverb on the overall mix. In addition, delay has been added to short layers of high-pitched hums with noise bursts (0'32). Layering and repetition are used to strengthen the distorted and deep hum sounds (e.g. from 1'45). There are subtle noise bursts, pulses, and flurries that interject over the bass sections towards the end of the piece. There are not many finitely cut loops nor irregular loops apart from subtle teasers where harsh noise is looped three times (1'06). Extensive cuts and editing give prominence to the low hums, clicks, pulses and noise bursts that are made to conclude the piece (2'56), giving the poetic idea that the Gilora sound(-making) object is potentially malfunctioning. Having completed the studio work, it was important to see if some of these sounds could be repeated in the live context.

As a DIY Nomad, I wanted to test the holistic approach of the workbench, studio and live practice. I wanted to see how the instrument would fare when playing with other musicians and also give the opportunity to 'make' on stage in front of an audience. In 2015, I invited experimental musician Poulomi Desai to De Montfort University where she did a seminar on her work and later in the evening

we performed together.<sup>4</sup> The performance was informed by indeterminacy, trial and error procedures, chance elements and improvisation. However, it was clear that the Gilora sound(-making) object would be better suited to solo performances and further investigations in the studio.

***Predictive Noise*** – 3.28 mins (2016)

*Predictive Noise* was a response to the text ‘*The Laundromat (laundrette) by the Sea*’ written by Yan Jun (Jun, 2014). The performance of the piece gave rise to utilise ‘live practice reconnaissance’ as discussed earlier in the Live Practice chapter (p.54). To recap, live practice reconnaissance allows for the preparation of a gig: it is like being on a mission. As a DIY Nomad, I go out there gathering my tools for live electronics performances whilst being strategic working towards the end goal, the final performance. However, live practice reconnaissance is more involved than that of a normal gig, where I would just turn up and improvise with a sound(-making) object. It is more informed by working towards an objective, doing some intensive studies and research or working towards a brief. In this instance, it was responding to Yan Jun’s text.

Having read the text, I wanted to play on themes that were presented there, particularly the idea of noise not being music. This is where the text score for *Predictive Noise* started to develop, as part of a discussion I had with John Richards. I wanted to present the work in some form of a performance and it was decided early on that the piece would use a mobile phone for someone who is slow at texting, and it would be somebody else writing the text with me playing the sound(-making) object. The screen of the mobile phone would be projected onto a larger screen so that the audience could see the additional performer deliberately or accidentally in disarray, highlighting the messy and chaotic nature of predictive text. This would also bring a humorous element to the performance.

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<sup>4</sup> The performance took place on the 2<sup>nd</sup> December 2015 at De Montfort University and also featured artist Anat Ben-David with Dirty Electronics.

The predictive text feature of mobile phones, in general, can be complex and messages/ predictive text can come out in all sorts of irregular and stupid ways, and the performance aims to play on this. The intention was also for the sound(-making) object performer (in this case myself) to interact with the texting performer to emphasise the absurd results of predictive text: the more random and obscure the texting mistakes, the harsher and more brutal the sound palette. However, the texter could also become 'virtuosic' and play on the pace of the typing, adding characters, deleting characters and also could potentially bring the performance to an abrupt end, as the instructions on the *Predictive Noise* score state that when 'Noise is not Music' (see Appendix B) is typed out four times it concludes the end of the performance. Ultimately, predictive text can be unpredictable, much like the behaviours of the sound(-making) object. The piece *Predictive Noise* (see Appendix B) was performed live in Leicester<sup>5</sup> and Birmingham<sup>6</sup> (see Video in Predictive Noise Folder).

After reading Yan Jun's text and giving a performance of the piece, I realised I had sympathy with his anti-music stance. In many ways, I wanted to play on some of these ideas by deliberately setting out to do something 'unmusical'. For this reason, I set out to make a studio recording that would appear just as absurd as Jun's text and the *Predictive Noise* performance. This resulted in the studio work of the same title. In this work, I decided not to use any additional post-production studio techniques and noise treatments to mask the 'natural' sound of the Gilora sound(-making) object. I wanted to capture the unique 'voice' of the circuitry. This helped reinforce the authenticity of the instrument, through malfunction and feedback characterised by strong glitch sounds that screech and squelch. This sound world is prominent throughout the whole duration of the studio work. Overall, the piece has a rough sketchy feel, and this is a deliberate attempt to highlight the messy, unpredictable nature of the sound(-making) object that 'plays' you, and the sound(-making) object is difficult to control and its behavior

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<sup>5</sup> Yan Jun Provocation performed 6<sup>th</sup> December 2016 at Phoenix Cinema Leicester's Independent Cinema, Art Centre and Café Bar.

<sup>6</sup> Yan Jun Provocation feat. Dirty Electronics performed 8<sup>th</sup> December 2016 at Centrala, Birmingham.

is unpredictable most of the time, especially when you place your hands on the touchpoint drawing pins.

There are deliberate gaps of silence at (1'30) and (1'47), created during editing through random deletion of sections of the sound file. There was no intricate fine editing through close analysis of the waveform, no cut and paste and no Cuts n' BuZZES treatment employed. The editing was entirely random. It is important to note that silence from these gaps is used to create tension – attempting to make the listener readjust their ears. There is an element of surprise when the sound comes back (2'01), where the sound types are louder: these included noises, clicks, buzzes, distortion, and hums. Fundamentally, the studio work *Predictive Noise* was largely put together through improvisation, therefore there are no additional noise selecting techniques used such as delay, echoes, and reverb effects using deconstructed dub techniques. There was also no use of equalisation to enhance bass in the studio work. In addition, repetition through cut and paste editing, a technique used in most of my studio works, was avoided.

### ***Predictive Noise Remix*** – 3.40 mins (2018)

As a DIY Nomad, I wanted to cement some of the ideas of remixing and noise selecting. *Predictive Noise* was revisited as a remix that used studio techniques such as versioning, and adding delays, echoes and reverbs. All the sound materials were made solely by improvising and playing the Gilora sound(-making) object. This reinforces the approach of the ‘one instrument and one performer’.

I approached the studio session by using pre-recorded parts from the original version. This suited the DIY Nomad’s borrowing and appropriating of materials in relation to expediency. I wanted to work on developing a remix utilising noise selecting techniques that I have discussed in the Noise Selector and the Studio chapter (pp. 25, 40 & 43). As a Noise Selector, I put these pre-recorded parts in different places in the mix like a DJ would assemble their records for a DJ set or mixtape. Fundamentally, the piece was put together from the ears of a DJ rather than from the point of a ‘composer’ – i.e. from the view of the DJ, this way of ‘composing’ is quick where the sound materials are reflected upon and listened to and the audio parts are reorganised and deleted; this is often done intuitively. There is a conscious effort of borrowing from DJ aesthetics with roots in soul, hip-hop and electronic dance music.

Fundamentally *Predictive Noise Remix* explores the sound material in finer detail. Already the sound textures are harsh with static, hisses, high-pitched frequency hums and distortion, and it was important to bring some noise selecting techniques to this studio work by splicing and dissecting the sound materials using irregular loops. There is a move away from the ears of the performer – because as a performer you are often caught up in the act of performance – towards those of the remixer or Noise Selector, where a more objective approach is taken. It is up to the Noise Selector to work out what sound material is chosen. This allows the Noise Selector to focus on what they have at their disposal rather than recreating new sounds from scratch.



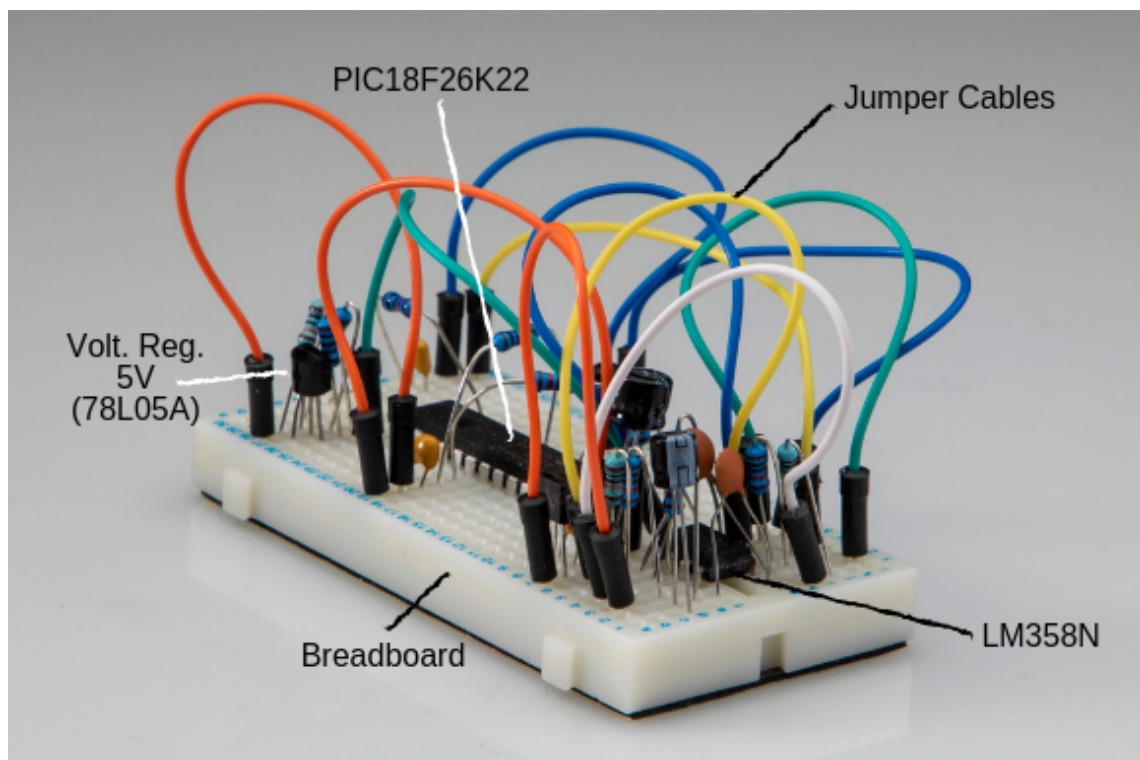
The noisier and glitchier textures from the original *Predictive Noise* are sought and used to create loops to provide momentum. The piece switches into differing sections seamlessly almost without the listener realising (e.g. 0'10-0'51). Within that section, there are four different loops, and this is due to the delicate nature of the style of cut and paste editing. For example, miniature sections are re-looped, sometimes within another loop, and the piece draws on the ideas of subtle out-of-time, wonky and irregular loops. Here Cuts n' BuZZES treatment is employed on the studio work. through the act of listening to the various sound materials, sometimes without even looking at the waveforms. I will provide examples where Cuts n' BuZZES and irregular Loops are more prominent in the work. Clicks and pulses are cut across and into the various waveforms. This results in various loops; quite often each audio part is looped four times or more. Some of this material is finely cut even further to create granular buzzes, such as at (1'03-1'06), where these loops are also at various lengths. This helps to shift to different sections of the work abruptly, by creating micro-crescendos, and sense of interruption. Another example of this is at (2'00-2'15), where various harsh noise bursts and pulses have various repetitions and irregular loops. This is due to the clipped waveform and distortion that the sound(-making) object portrays; in many ways, this has been enhanced by the Noise Selector in this remix. More Cuts n' BuZZES are employed within other loops (3'20) where segments have been cut and layered to overlap; this, in turn, creates complex rhythms. To clarify, these rhythms and loops are of different lengths – some are in time and others are deliberately not – and this is designed to keep the listener engaged. The resulting sounds from (2'46) are not quantised as these are not beats per se: I do not like working within a traditional grid format. This approach allows the music to be freer and sound live, possibly due to the fact that when I approach looping and repetition it is as much about the sound(-making) objects that are looping rather than using additional effects pedals or computer software to produce these repetitions. I consider this an issue of authenticity and limited intervention, which is consistent with the aesthetic of the DIY Nomad. It is important that the studio work therefore also illustrates this in an uninhibited way.

Towards the latter end of the studio work from (2'46-3'21), the music evolves into a cacophony of locked grooves, reminiscent of early techno.

In *Predictive Noise Remix*, it was clear that the studio became another space for the Noise Selector as a remixer. This piece illustrates and demonstrates some of the bigger themes of the thesis, like borrowing sounds, recontextualising, expediency, remixing and mash-up. *Predictive Noise Remix* demonstrates the fundamental idea that borrowing can exist on multiple levels, not only in terms of thinking about how I have applied the method of sampling, but also how I approach and work with hardware. This borrowing could be reapplied into different contexts such as in DIY electronic music where parts can be borrowed from different circuits. This further blurs the workbench, studio and live practice and accentuates the idea of a holistic approach that could be defined as the 'Studio Bench', which I discuss further in the Outro (conclusion) (p.94).

## Colossus

Colossus (Figure 3) is a circuit designed by John Richards of Dirty Electronics that was used as a study for the tripartite method outlined in this thesis. The circuit was built and hacked in a workshop on what could be considered a temporary 'pop-up' workbench, used in live performance and taken into the studio to create two short recordings.



**Figure 3: Colossus – Source: Author**

The workshop took place at BEAST (Birmingham ElectroAcoustic Sound Theatre)<sup>7</sup> in one of their large recording studios that composers use for multi-channel electroacoustic or acousmatic music works. The recording studio became occupied by foldable desks set out to form a temporary 'pop-up'

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<sup>7</sup> BEAST is the concert sound system of the University of Birmingham's Electroacoustic Music Studios.

workbench.<sup>8</sup> The base of Colossus is a tiny breadboard: a solderless prototyping environment for testing circuits with short jumper cables, linking to the various components and ICs. As a recap, the Colossus is played largely by improvising with a single button and potentiometer knob. These controls are soldered onto a separate bit of stripboard (not illustrated in Figure 3, p. 75), and then connected with jumper cables to the breadboard. An example of this configuration is seen in a video on my ‘Dushume’ Instagram page (Patel, 2015). By interacting with the limitations of the instrument different gestures result in many patterns and loops.

There were fifteen performers who were assigned to speakers of their own in the BEASTdome, and the Colossus instruments were all placed on the floor. The music was being diffused live by the performers depending on when they interacted with their instruments. This was DIY live electronics sound diffusion in the truest sense and very different to the way I normally perform as a DIY Nomad. When approaching a performance as a DIY Nomad, it is usually solo, front-facing towards the audience in a dark space with two big stacks of speakers. Such a format is reminiscent of early rave sound systems, which in turn is also deeply rooted in dub sound system traditions with large sub woofers.

**OKTRTA2** – 1:50 mins (2015)

**OKTRTA3** – 1:57 mins (2015)

These studio works were made with the Colossus as part of a collaborative research project, One Knob to Rule Them All, with Newcastle University.<sup>9</sup> This collaboration was fundamental in influencing the way the studio works were handled. The Colossus (see Figure 3, p.75) is a one-knob/one button sequencer and it is a hybrid digital/analogue device: a miniature ‘computer’, microprocessor

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<sup>8</sup> Dirty Electronics Workshop: Colossus took place on the 10<sup>th</sup> December 2015 as part of the BEASTdome Pantry Sessions: Hand-Made Music event at the Bramall Music Building, Birmingham.

<sup>9</sup> One Knob to Rule Them All was a collaboration with the Culture Lab, Newcastle University and the Music, Technology and Innovation Research Centre, De Montfort University that took place between the 14<sup>th</sup> – 16<sup>th</sup> December 2015. It had many themes on a single control with related themes from interface design to gender to a reductionist approach.

control system using the PIC18F26K22 that can be programmed and live coded by touching parts of the circuit board, essentially a sequencer; and feedback circuit using the LM358N op amp. The Colossus, as a prototype circuit, was a precursor to the Dirty Electronics' 'Violations' as previously discussed in the DIY Nomad and the Workbench chapter (p.11), and further schematics in relation to the Colossus/Violations can be found on the Dirty Electronics website. (Richards, 2019).

The collaborative research project involved working collectively in multiple spaces. For example, during the lab sessions, groups worked in a basement and the space became messy, as the making in the space evolved like a workshop similar to the DIY Nomad's temporary 'pop-up' workbench. Some participants were working together on laptops and mobile media, and others were using the space to make DIY electronics. In hindsight, many were fixated on code and hardware assemblages. As a DIY Nomad and Noise Selector, I found space outside of these occupied spaces and focused on performing and improvising with the Colossus sound(-making) object in the studio and I wanted to flip the brief with regards to coding and make observations with the sound(-making) object and record the results.

Having built and played with the Colossus at BEAST a few days prior, I wanted to experiment with it more. As a DIY Nomad using live practice reconnaissance (p.54), Colossus gave me artistic freedom by allowing me to code sequenced patterns of sound in a tangible way rather than through text-based coding. This also enabled me to approach the project from an aural and improvisatory perspective, as discussed in the Live Practice chapter (pp.57-58). During the One Knob lab sessions, I took the Colossus device into the studio and spent half a day listening and improvising with Colossus, again using the studio as a combined rehearsal and making space. A table in the studio became my temporary workbench, away from the rest of the artists/researchers; moreover, this suited the nomadity of the way I work: being on the periphery. The studio

session allowed me to offer up an alternative strategy to the One Knob project, and helped me prepare for a performance that happened the following day.

The Colossus object was studied by looking at the way it functions and its physical constraints in terms of 'instrument' design. A question that concerned me was: 'How can I interact with it?' As stated previously, many instruments I have built in the past have had an unpredictable character: you can control them and then you cannot. Colossus is a more generative sound device and I enjoyed wrestling and improvising with the one knob and button that was an integral part of the prototype instrument's circuit design. It could be argued that virtuosity in playing the circuit could exist in the creation of live coded rhythms, phrases, sequences and loops, by a press of the button and the rotating of the potentiometer knob.

I was interested in recording the sound(-making) object and exploring its potential in the studio. From studio improvisations I then recorded mini-performances. In terms of a methodology relating to these works, sketches and recordings were created very quickly with a spontaneous intent by interacting and playing with the sound(-making) object. Both studio works are related miniature sketches. The sounds could be considered dirty, yet overall the spread of frequencies is balanced and clearly audible. There are mainly high frequency artefacts in *OKTRTA2* from high-pitched tones to static and hisses such as from the beginning to (0'20) where the high frequency artefacts are more prominent, and this is due to the programmable chip that gives out a high-pitched ringing as mentioned before in the Noise Selector and the Studio chapter (p.28). Whereas in contrast, *OKTRTA3* features harsher textures, clicks and pulses with flurries of noise bursts (e.g. from 0'08-0'23).

The Colossus can be programmed to behave in a very precise way. For example, rhythmically the loops are extremely accurate, such as with *OKTRTA2* at (1'30-1'44), and in *OKTRTA3*, you can hear loops from (0'31-0'46). Both of these loops

have been extended by the noise selector to highlight and accentuate the nature of the organic loops emitted by the Colossus.

Both studio works required minimal noise selecting techniques due to the generative nature of the sound(-making) objects. In these works, there were subtleties in the way the materials were shaped: recorded parts were un-effected and only extended in places where there were interesting wonky and irregular loops that could be reviewed and repeated. In *OKTRTA3* (1'30) the sound texture is more gestural, and there are crescendos and intricate Cuts n' BuZZES added from (1'39-1'51) to draw the studio work to an end. Overall, the Colossus sound(-making) object is mono; therefore, to create a stereo-mix, delays and intricate panning were added by the Noise Selector. Deconstructed dub techniques were also used to create more space in the music.

The work of Colossus demonstrates the nomadic practice of the DIY Nomad. It started on the workbench in a workshop at BEAST. It then moved to the performance space, allowing me to test and build the sound on stage in a concert hall. Usually after building a sound(-making) object, I would take it into the studio to rehearse and play with it vigorously to see how it would function in a live performance. However, in this instance at BEAST, working with Colossus shifted directly from the workbench to the concert hall, and this allowed me to explore the instrument in a different way, through live practice, by building and making the sound on stage without any rehearsals.

I have already mentioned that the instrument design of Colossus is non-fixed, being built on breadboard. This makes the sound(-making) object interesting to play because of its fragility. It requires you to be attentive as a musician not only by listening but also by watching to ensure that the sound(-making) object is still working. It is important to maintain the attitude of building on stage by 'building the sound' and 'tinkering on stage' (p.53), blurring the distinctions between the workbench and live practice. Here as a DIY Nomad, I am not just a Noise Selector, but also a maker. Having built the sound(-making) object myself in a

workshop, I was able to fix the Colossus when things became loose whilst performing on stage. By making on stage, you are learning and developing a coherent relationship with the sound(-making) object, reinforcing a live practice by maintaining control of certain sounds and hearing brand new ones especially when tampering with the circuitry. In general, there can be some pitfalls in working in this expedient way, as there is a risk that the sound(-making) object could completely malfunction and stop working during a performance; however, this is a consequence of being a DIY Nomad. Nevertheless, the expediency also creates an approach that leads to music with particular characteristics. Some of these characteristics include noisy textures that would not present themselves if the sound(-making) objects were 'finished'. Having limited technical knowledge allows this non-craft approach to making; if the sound(-making) objects were made meticulously, the resulting sound materials would not be as edgy, raw and noisy.

From the BEAST concert hall, the Colossus object was explored from the perspective of the Noise Selector in the studio as part of the One Knob project as discussed above. From the studio, it then moved back again into the performance space, as part of a group performance for the One Knob to Rule Them All. This shows another example of the cyclic process arising from the DIY Nomad's holistic approach in relation to the workbench, studio and live practice. With this project, the idea of 'tinkering on stage' and 'building the sound' (p.53) through the sound(-making) object were particularly important.



## Cobra

At the One Knob to Rule Them All seminar that was held in Newcastle,<sup>10</sup> I directly addressed the One Knob to Rule Them All brief by considering the idea of reductionism and limitations with regards to ‘instrumental control’ (Richards, 2015). My vision was to develop an instrument that was tiny and mounted on the back of a beer mat. Aside from exemplifying the simplicity and compact size of the instrument for live practice, I wanted to incorporate circuitry that I had already become familiar with such as feedback networks, and I decided that the instrument should feature tactile touch control surfaces, buttons, and at least one potentiometer to control volume.

During the beginning of February 2016, there was an opportunity to collaborate with The Royal College of Music in Stockholm<sup>11</sup> on a large-group performance realising a graphic score, *Stress Call of the Stinging Nettle*, by Christine Ödlund (Ödlund, 2010). The piece was performed at the Dome of Visions, which is a temporary arts space with a modular structure that can be rebuilt in many different locations. Following on from this idea of the reductionist approach explored in One Knob to Rule Them All, I decided to build something that I could play and contribute to the performance. A couple of beer mats from my bag provided a starting point.

On a table in a recording studio, the DIY Nomad’s approach to working on a temporary ‘pop-up’ workbench began. I started building a tiny Bed of Nails circuit on the back of a small bit of stripboard, and attached to this stripboard short wires from the LM358N integrated circuit (IC) that were used as temporary touch points. Finally, a battery clip for power and a jack socket were added and a potentiometer to control volume. The wires of the circuit were short and partly insulated,

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<sup>10</sup> Culture Lab, Newcastle University hosted a “One Knob to Rule Them All” seminar to allow participants to discuss ideas and proposals for the collaboration this took place on the 9th Dec 2015.

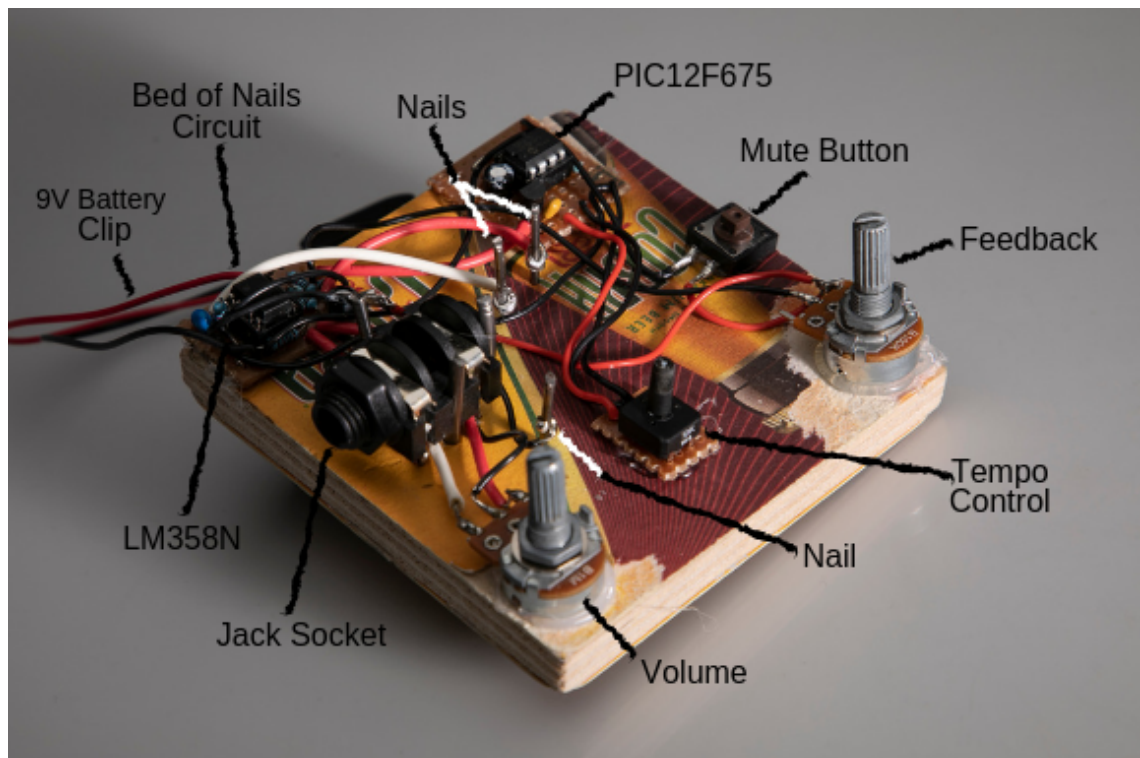
<sup>11</sup> Kungl. Musikhögskolan (KMH) The Royal College of Music in Stockholm.

resulting in the overall sound being less noisy compared to the traditional Bed of Nails where the wiring is longer and fully exposed. The stripboard, jack socket and volume knob were fixed onto the back of a beer mat temporarily, using a bit of Blu Tack that I found lying around on the workbench. There was an emphasis on getting things done quickly so that I could start to explore sounds and rehearse for the performance. The performance involved making very delicate high-pitched sounds as part of the interpretation of the graphic score (Ödlund, 2010).

On reflection, subsequent to the performance in Stockholm, I decided that I wanted the instrument to generate loops and sequences and retain the touch controls, as well as the sound(-making) object being able to loop itself live without any additional added effects. There was another focus on keeping the noisier high-pitched tones and deep bass frequencies that were found in the sound materials. Therefore, on my return to Leicester, the instrument was completed by adding a programmable microprocessor (PIC12F675) that was programmed to randomly sequence and controlled the feedback circuit.<sup>12</sup> Another two potentiometers were added to the instrument: one controlled the tempo of the sequence; and the other controlled the feedback. Three nails were also used as touch controls to interact with the feedback network. Lastly, a mute button was added to complete the Cobra sound(-making) object (see Figure 4, p.83).

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<sup>12</sup> It is based on Dirty Electronic's Earache an 'anti-modular' voltage-controlled acoustic feedback sound(-making) object. The name of the sound(-making) object is partly inspired by the pioneering Earache Records based in Nottingham, England.



**Figure 4: Cobra – Source: Author**

I deliberately set out to adopt a *non-craft* approach, as previously discussed in the DIY Nomad and the Workbench chapter (pp.15-17), the shunning of craftsmanship, with the instrument having the appearance of being crudely made. Eventually, a Cobra beer mat was glued onto a piece of scrap wood cut to the same size and shape and the circuitry was fixed on top. At this point, the circuits, wires, buttons, potentiometers, and jack socket were still held together and fixed onto the beer mat temporarily with Blu Tack. To give a permanent ‘temporary’ appearance, and in keeping with the overall aesthetic of the sound(-making) object, I hot glued all the parts to the beer mat. Such a *non-craft* approach has enabled me to make things in an expedient and unsophisticated manner, and is consistent with the philosophy of the DIY Nomad. However, despite the naïve and ‘primitive’ construction methods used to make the sound(-making) object, it still functioned and was practical to play. As a DIY Nomad, I enjoy making stuff with DIY electronics even with having limited technical skills and knowledge. This approach has enabled me to make things with faults and inaccuracies such as

poorly soldered connections between wires and components that heighten individual characteristics of sound(-making) objects such as Cobra.

The Cobra sound(-making) object is played by manipulating two potentiometer knobs, the small black one in the centre controls the tempo, ranging from slow gestural phrases to fast-paced loops. The knob on the far right controls the level of feedback, but this also changes the frequency and timbre from low to high pitched hums, then to distortion and high frequency artefacts. Therefore, a mixture of rotating both of the knobs in an improvised way results in differing sound textures. When the mute button is pressed, it mutes the sequencer, but due to the sound(-making) object's circuitry, it also gives rise to interruptions, high gain ringing, static and hiss. The three nails allow you to interface with the Bed of Nails feedback and the random patterned sequences from the programmable chip circuit, and by touching these nails the sound(-making) object creates various gestural bleeps, clicks, and pulses.

#### ***Cobra i*** – 4:10 mins (2016)

Cobra had a wide range of sounds, including gritty high-pitched hums and hisses, and deep bass. *Cobra i* is different to other pieces in the folio in that multiple effects and layering techniques were used, for example, four different audio tracks were recorded with the sound(-making) object, and these tracks were layered together to create a piece of music where they fight for attention. As the piece commences, you can hear a loop that is extremely high in frequency (0'00–0'03). All recordings in *Cobra i* are clipped deliberately, as the mic-preamp's gain was turned up high to peak, and as a result, the sound(-making) object has a harsher clipped and distorted feature.

Long phrases from improvisations recorded in the studio are extended and made into finely cut edited loops, and here Cuts n' BuZZES feature throughout the whole duration of the recordings: e.g at (1'30) this is more prominent. One significant difference between the studio works and live performance is that in the

recording studio I allow myself as a Noise Selector to use layering techniques and some multi-tracking, yet there is still an emphasis on retaining the authenticity and character of the sound(-making) object. The layering was used to highlight the different playing styles associated with the instrument. Although it may appear as two sound(-making) objects battling for attention (2'03), it provides a glimpse of the way the Noise Selector works and adds to the deliberate anarchic nature of the piece. This approach also introduces the idea of versioning two improvisation recordings. Due to the way Cobra was recorded, the material consequently has an alarm/dub siren character, but as a focus, it is more audible from (2'55-3'07). Finally, stuttering loops (2'31), from generative patterns and sequences, are not just made from cut and paste editing techniques, but by fundamentally using heavily processed delay and echo effects (3'54). *Cobra i*, specifically, illustrates how I work as a Noise Selector, creating and building material from the sound(-making) object and through live practice that leads to improvisations that are recorded in the studio and the generation of material for noise selecting.

### ***Cobra i*** – Live Practice

After completion of the piece *Cobra i*, I had another opportunity to perform with the object in front of an audience.<sup>13</sup> Crucially, *Cobra* and the resulting pieces follow the approach of the workbench, studio and live practice. It was important again to see what sounds could be developed out of the studio and in live practice, and also to see if there was a need to go back to the workbench for repairs, or to the recording studio to explore some ideas that presented themselves at the gig.

Like the reductionist nature of the *Cobra* sound(-making) object, it was decided in advance that the performance should be short and concise, and that the music be a miniature in some way. This performance gave another perspective to the DIY Nomad. There was an emphasis to shift the focus from what was already

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<sup>13</sup> Electric Nights 2016 took place 2<sup>nd</sup> April 2016 at Booze Cooperativa in Athens, Greece.

done in the studio, to live practice starting afresh. Of course, the studio work influenced following live performances with the sound(-making) object, but there was no intention to replicate what was created in the studio. A study of sorts did take place in the recording studio due to discovering and rehearsing with some of the sound materials, but this is not the same as performing live, which was illustrated by this gig where the sound(-making) object is scrutinised and new sound materials are discovered in public. Therefore, the studio in the tripartite method does not act as an end point. The live practice seemingly offers up an opportunity to create a new 'live' version that deviates from the studio work. It can also give another perspective to the DIY Nomad who can go back into the studio and incorporate some of the findings and ideas that present themselves in performance, which in turn the Noise Selector can investigate back in the studio. Other performances took place, for example, in London,<sup>14</sup> which further showed how live practice influenced developing pieces for the Cobra sound(-making) object (see Video in Cobra Folder).

***Cobra ii*** – 5.25 mins (2016)

Having performed multiple times with the Cobra sound(-making) object, I wanted to go back to the studio and work on the earlier version of *Cobra i*. Using noise selecting techniques, it was important to try some of the ideas that I had developed in the gigs, such as giving more space (0'12) and (1'12-1'24) to the sound materials so that the listener had time to engage with these sounds. As explained earlier, the microprocessor sequencer of the Cobra sound(-making) object allows for the creation of loops and repetitions, something that I wanted to explore further in the studio. Revisiting an earlier work, allows the Noise Selector to sift through previous recordings, which can then be recontextualised.

An important part of the cyclic process discussed in this thesis illustrates how a temporary workbench and live practice inform/re-inform new ideas for studio

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<sup>14</sup> REProduce Listening Room took place on the 25<sup>th</sup> May 2016 at Poulomi Desai's Usurp Art Gallery in Harrow, London.

works. With *Cobra ii*, I revisited the recorded stems and wanted to add space to the different improvisations within the recordings from (0'33). As a Noise Selector, I was editing and applying the cut and paste techniques, especially Cuts' n BuZZES to work with the chaotic sounds and use studio techniques such as equalisation and mixing of the overall sound. There are additional panning, delays, and reverb added to the high frequency noise bursts and textures that feature throughout the piece such as (0'14-0'20). This piece, in particular, is about the Noise Selector and the way I have rearranged the materials by looking at the stems, again by creating more space, emphasising bass frequencies and creating loops and repetitions (2'10-3'37) that are similarly found in disco or techno music.

The Cobra sound(-making) object can generate differing rhythmic loops, for example, there are many different lengths of wonky and irregular loops in this studio work (e.g, 1'28-1'51), These loops are a characteristic of the object that is evident in both live and studio practice, each informing the other. Furthermore, *Cobra ii* and the other works in the portfolio are trying to illustrate that the practice re-continues in a cyclical process of the workbench, studio and live practice, and as I have previously mentioned in this chapter that nothing is ever remotely 'finished', (p.80). These approaches always influence each other and new ideas are constantly recontextualised. As a DIY Nomad, I have to go back to the temporary workbench to make stuff and largely repair and fix sound(-making) objects that have been vigorously played and tested out in the field or rehearsed in the recording studio. This could also be applied to the Noise Selector who is always creating new versions by going back into the studio to listen, reflect, remix, edit, and mash-up noise textures in the studio.

### ***Rhythm & Noises*** – 6:10 mins (2017)

As a DIY Nomad and after various live performances, I wanted to continue to explore the Cobra sound(-making) object in the studio. Also as a Noise Selector and as stated in the pieces *Cobra i* and *Cobra ii*, there was an interest in recording the generative sequences that are produced from the sound(-making) object. *Rhythm & Noises* is built around using the versioning technique of the Noise Selector that was utilised in *Cobra i* as well as exploring the theme of looping. In this studio piece, loops are chosen in an ad-hoc way and are not synchronised, and finding such loops was an act of discovery. *Rhythm & Noises* allowed me to use my DJ background as a way of mixing the fundamental sound characteristics of the Cobra sound(-making) object. The Cobra generative loops were played and recorded as single entireties, without editing. The loop at the start provides grounding for the whole piece. An example of this loop (0'00-0'30) provides a demonstration of the array of noise types such as clicks, pulses, hisses, static, high-ringing and pitched hums. The base of this recorded loop was also used to extract further sound materials. As a Noise Selector, the recording process allowed me to keep a record of sounds that could be played back or referenced at a later date.

*Rhythm & Noises* captures the Cobra object in its true light. Yet again, the sound(-making) object is recorded through capturing a generative loop and this allowed the Noise Selector to apply subtle editing to the sound materials. Previously discussed studio works in this chapter, *Kobi Mutter*, *Gilora*, *Cobra i* & *Cobra ii*, presented in this thesis have been heavily processed with multiple effects using deconstructed dub techniques, whereas in this work there is an emphasis on finding space in the sound materials rather than masking sounds with delays, reverbs and effects.



In this studio work, mixing techniques and equalisation are used. For example, the high ringing frequency sound artefacts (0'23-0'26) are subtly processed ensuring the frequencies are still prominent. Secondary high noise bursts are also introduced (1'34) to offset some of the distortion and hum. In contrast, and to maintain a good sound spread of sound frequencies, low bass frequency hums from another syncopated loop is layered underneath from (0'31) and brought to the forefront to balance the sound materials together. Mixing and versioning in this way as a Noise Selector also allow each frequency spectrum to be balanced, creating space in the materials. With four distinctive versioned tracks fighting for attention in this studio work, it was important to take away sounds and re-introduce them later, such as at (4'04-4'50) where a locked groove is created by using irregular loops and the secondary high noise bursts are taken away to give space to the deeper tones. The piece starts to become fragmented from (5'12), when drawing to a close, with intricate cuts and edits, although the rhythmical nuances of the piece is maintained. Mainly, the overriding aesthetic of *Rhythm & Noises* is letting the sound(-making) object be heard authentically, in its own skin so to speak.

To summarise, through working with the Cobra sound(-making) object, a method emerged in relation to the DIY Nomad. The object was built on the workbench, taken into the studio and then put through its paces in live performances. The process was then repeated in various ways. The Cobra sound(-making) object is my go-to instrument, as it fits the DIY Nomad's transient nature due to its size, portability, and expedient construction methods. It is the one sound(-making) object that I have taken everywhere and is my prized possession. Ultimately, the Cobra sound(-making) object captures the holistic approach outlined in this thesis. The Cobra sound(-making) object epitomises expediency, and non-craft and naïve approaches using what could be considered inappropriate materials and building techniques, such as pots stuck on with hot glue, and re-appropriated components and wires from other circuits. The construction of the object is also deliberately 'poor', in keeping with the DIY Nomad's *non-craft* (p.15) aesthetic.

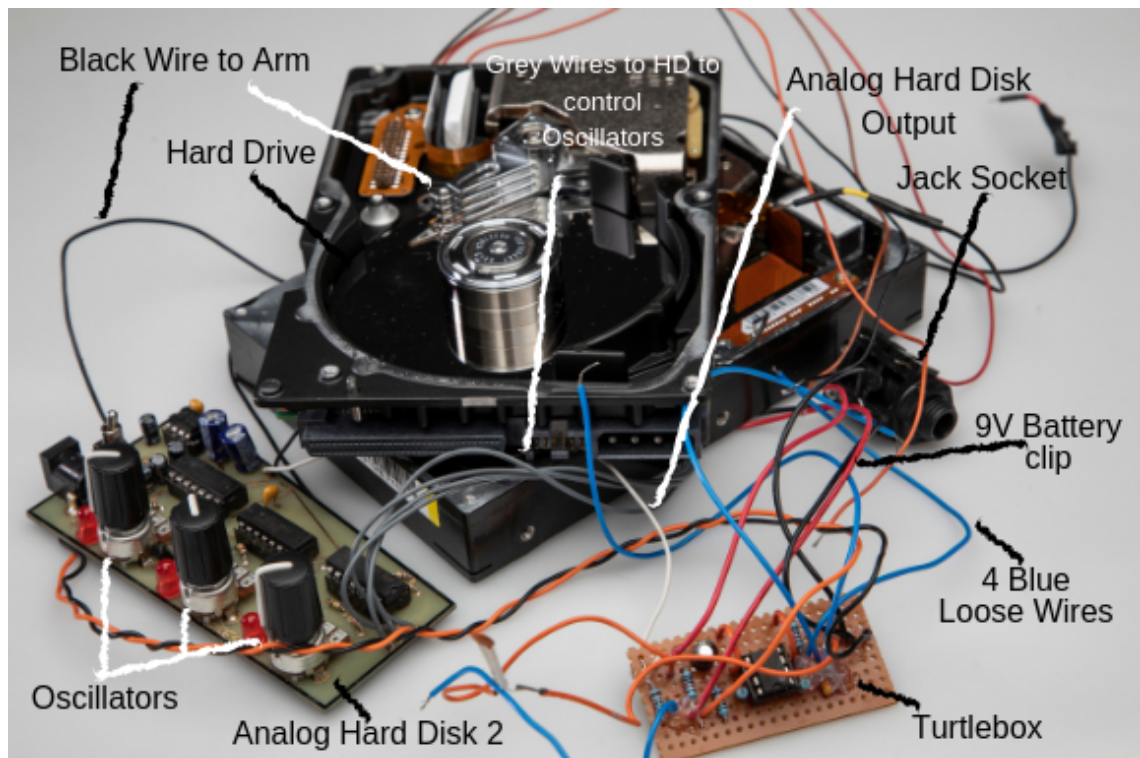
## Hardware Mash-up

I have already discussed the ideas of versioning and remixing (deconstructed dub p.40) associated with my practice as a DIY Nomad and Noise Selector. I also wanted to borrow the idea of recontextualising hardware and DIY electronics as a hardware mash-up. Because, this would further highlight the connections between my DJ background and interests in live electronics and noise music. It was important to move away from Gilora and Cobra sound(-making) objects as I had worked with them extensively.

I was interested in the work of Gijs Gieskes and considered appropriating one of his circuits. The 'Analog Hard Disk 2' (Gieskes, 2012) synth uses a hard drive from a computer to control a network of oscillators: the platter of the CD drive, when rotated, switches between three oscillators. A schematic and further information on this circuit can be found on Gijs Gieskes website (Gieskes, 2012). The arm of the drive also produces acoustic percussive sounds, and also functions as a transducer: a form of loudspeaker. Furthermore, it is also very poetic as the shape of the hard disc drive and its rotation are reminiscent of a turntable platter. The old hard drive platter can also be approached and manipulated from the viewpoint of a turntable scratch DJ, and this is what drew me to the Analog Hard Disk 2 sound(-making) object, which also had potential to be used as a control surface for the hardware mash-up. The Analog Hard Disk 2, a small printed circuit board (bottom left of the image, see Figure 5 p.91) and computer hard drive, was housed in an old jewellery box to make a discrete sound(-making) object. In 2017, I worked extensively with the Analog Hard Disk 2 in its unhacked version during a residency in Prague that involved rehearsal, performance and a live radio broadcast (Rataj, 2017).<sup>15</sup>

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<sup>15</sup> *Making for Radio* was a collaboration between De Montfort University, Dirty Electronics and HAMU the Academy of Performing Arts in Prague.



**Figure 5: Hardware Mash-up – Source: Author**

After this residency, significant time was spent trying to develop the idea of the hardware remix using the Analog Hard Disk 2 instrument with other circuits. Several experiments were tried and tested on the workbench using a proto-typing breadboard with mixed results. There was an attempt to draw on other schematics by Dirty Electronics (Richards, 2019) and the Atari Punk Console also known as a Stepped-Tone Generator using a 555 timer IC (Mimms III, 1984). As a DIY Nomad, and as a means to an end, I decided to use the circuitry of the Turtlebox as in previous work *Gilora* (p.60). I was tempted by the feedback network again as a base for creating noisier textures and deep bass. I ripped the innards from the Turtlebox as shown on the bottom right of the image and discarded its housing (see Appendix A) and attempted a crude hack of combining it with Gieske's circuit, which is shown on the left of the computer hard drive in the image (see Figure 5).

The output of the Analog Hard Disk 2 instrument, that is also used to control the arm of the hard drive, which is also a transducer, is now connected into the Turtlebox as an input. Other results from this hack, was that a nine-volt battery was used to power both circuits. This altered the way the circuitry behaved as it became lower in pitch, and provided richer distortion, hums and deeper pulses, illustrating the subtlety of analogue electronics and how even the power supply can influence the sound and behaviours of the instrument/object. The hack also liberated the instrument, in that it did not need to be plugged into a mains supply, which suited the transient and portable nature of the DIY Nomad. The final main audio output was taken from the Turtlebox that now had the sound of the Gieske's Analog Hard Disk 2 fed through its feedback network, thus creating a hardware mash-up. As a hardware mash-up, it was tested on a temporary workbench and taken into the studio for further study to record and document; so that, as a Noise Selector I could reflect upon and develop the materials, resulting in the studio piece *Goersing*.

***Goersing*** – 6.02 mins (2018)

It is important to note the mash-up circuit was only partially completed and still needed refinement prior to taking it into the studio. Here the 'building the sound' (p.53) happened in the Noise Selector's studio. Due to the ad-hoc and slapdash way the circuits were joined together, I was surprised that it still worked due to its fragile state, and luckily it did not have to go back onto the temporary workbench when experimenting in the studio. As a starting point, the part-finished object was scrutinised, using the Noise Selector techniques and methods previously discussed in the Noise Selector and the Studio chapter (p.25). The hardware mash-up is played by manipulating the hard drive like a scratch DJ, improvising with the three oscillators of the Analog Hard Disk 2, and touch control of the analogue feedback of the Turtlebox. The placing of the hands, now occur on a unified mash-up rather than what could be considered three separate interfaces. The playing embraces trial and error and indeterminacy.

The resulting studio work, *Goersing*, highlights 'circular' sounds of the rotating platter, which is similar to scratching vinyl on a turntable. There are six stems featured in *Goersing*, three of which highlight the broken sounds and mechanical nature of the hard drive (0'12) and performance rotational gestures (2'10-2'29). The rest of the stems are created through drawing on many musical cultures such as dubstep, glitch, and noise traditions with deep hums, clicks, pulses, deep bass and harsh noise (3'39).

Towards the end of the studio work, hidden layers are revealed by taking stems away and this first happens around (3'56) with the removal of deep distortion and hums. Like a DJ selector taking off a record, thinning-out the mix. As a Noise Selector, versioning and remixing the sound, in addition, cut and paste editing is vital to harness hypnotic irregular loops (5'29-5'43), and further miniature loops and repetition from (5'47) bring hidden layers to the forefront, highlighting how different improvisations have been merged together.

# Outro

## Studio Bench

In all three spaces, it is the focus on 'making' that is at the forefront of my practice and the term, 'Studio Bench' could be used to describe this holistic approach. The holistic approach to these three spaces – the workbench, studio and performance space – also gives rise to what may be considered as my contribution to knowledge within the context of this research. In regards to the Studio Bench, the building can happen in the studio through hacking or when things need fixing or repairing, and a recording using a mobile phone may happen on the workbench that in turn could be shared online, or used as a reference to reflect on the sound materials that the sound(-making) object produces as well as being a record of construction. Seemingly, the Studio Bench brings the spaces together, encompassing this idea of a holistic approach as well as borrowing from sampling culture and noise music. The Noise Selector develops music from recorded materials that have been taken and extracted from the sound(-making) objects. This is done very quickly in relation to the DIY Nomads' expedience. It adds to the characteristics of the studio work and also relates to DJ practice in club and mixtape culture, where records are selected immediately with response to the audience. There is no time to agonise and think critically about what record might work at the time, as it is an intuitive and spontaneous response (p.72). In the same way, the DIY Nomad and Noise Selector results have to be imminent when selecting sounds and this is conversely part of the DIY Nomad's anti-craft position (p.15); where everything is expedient, influenced by the constant flux of social media and in the moment.

The idea of the DIY Nomad and Noise Selector could also be applied to and resonate with other people's practice. Furthermore, this approach offers up a chance to explore things and not be restricted to a space or a certain doctrine. There is an ability to move between physical and cultural spaces freely. You do

not have to remain wedded to a tradition, as these things can be merged by creating a new approach and a new tradition. The Studio Bench advocates an open and accessible space: you can make sound on the periphery of traditionally established spaces. The idea of the Studio Bench breaks away from cultures and forms new ones. It is not just about maker spaces, concert halls and nightclubs. The Studio Bench provides a sense of self-sufficiency, a sense of control and ownership that ultimately leads to something that is authentic.

In my own work, the DIY Nomad and Noise Selector follow on from certain traditions, for example, DIY culture, dub, electronic dance, noise and even electroacoustic music. Ultimately, these traditions often remain separate and the music in the portfolio highlights the result of defining a new approach. The approach also gives scope for new ideas and it has led to a new type of music or sound. The sound world is not the same noise music as Merzbow or the same acousmatic music of Trevor Wishart; neither is it dance music, techno or IDM of the likes of Aphex Twin or Autechre. In my own practice, DIY electronics, noise music and DJ culture have separate music traditions and I have tried to bring these traditions together as a holistic practice.

There is a gradual erosion of the distinct uses of all these spaces – the studio and workshop – and the typical maker space, such as a shed or workbench, becomes redundant; ultimately the traditional type of space for music making is eroded. The studio is mobile; the workbench is temporary and you can make music anywhere. There is a certain convergence where the idea of studio and workbench and live practice merge into one. This approach challenges the traditional roles and methods of composition in many ways by being speculative, and this also challenges traditional methods in crafts, engineering and DIY electronics with this naïve and non-expert approach. There is no need to identify as a craftsperson, designer, or engineer.

In terms of performance, the sound(-making) objects are often considered 'uncontrollable' (pp.35, 53), and working with such objects result in a different type of performance style. This is because it is not the same type of control that you would expect from somebody who has studied violin at a conservatoire. The sound(-making) objects present a different type of virtuosity that involves sparring with the object, and in some cases, the object can be controlled with touch and potentiometers - a slight touch can subtly or completely change the behaviour of the sound(-making) object - whilst other objects may seem uncontrollable, like the Gilora sound(-making) object (p.60). Moreover, the sound(-making) object could be viewed as an additional 'performer' battling with and against the DIY Nomad and Noise Selector. Fundamentally, the virtuosity comes from finding, listening, extracting and trying to control sounds as well as the interventions and behaviours from the sound(-making) object itself. The playing style is also informed by improvisation (pp.47, 53), albeit each time you play the instrument new sounds can be discovered that are not always repeatable. The performance style is further influenced by the 'one instrument and one performer' approach that leads to a clear sense of agency when making sound (pp.61, 72). The style is further characterised by a focus on solo performance and reductionism in relation to the sound(-making) objects' minimal control interfaces (p.81).



## Tripartite Method

The idea of the DIY Nomad and noise selecting have allowed the development of a holistic practice where three separate activities - electronic instrument building, studio practice and live electronics are blended. As a DIY Nomad, I have married these spaces, merging them together as one, and not implied segregation or divisiveness of the activities associated with these spaces. Each of these spaces allows me as a DIY Nomad and Noise Selector to discover and make sound, and to investigate materials. For example, during the infancy of building sound(-making) objects, the sonic potential of the instruments begins to emerge and starts to be discovered, and this is where the initial making starts to happen. Of course, sound materials at this stage are not fully formed but the Noise Selector can begin to earmark sounds and the DIY Nomad can investigate these and start to play and rehearse further on the workbench, as well as test self-built sound(-making) objects as described in works such as *Cobra* (p.81). Within my own work, the temporary workbench has presented itself in many peculiar spaces and settings that have allowed for discoveries to happen whilst building and fixing sound(-making) objects. Some of this has not only been centred around a typical workbench but has also happened in the recording studio and performance space. The tools for hardware hacking are taken out into an environment that is traditionally not suited to working with DIY electronics such as a corridor, poorly lit room or nightclub. Even though the recording studio is not usually seen as a place for making DIY instruments, in my case it can *become* a workspace for such making such as with *Colossus* at *BEAST* (p.75). As another example, the studio mixing desk is moved aside and a soldering iron gets plugged in. The recording studio as a space not only allows for sound(-making) objects to be recorded, but also to play, rehearse, and improvise with such sound(-making) objects through making as well as, allowing the DIY Nomad to fix things if needed.

The studio also provides me with an environment to listen to and engage in harsh noisy textures that have been discovered and can be further explored and extended in the performance space. The beauty of being a DIY Nomad is that it enables you to take the sound(-making) object into a different context, away from the segregated environments of a workshop or studio. For example, in live practice, the performance stage has also become another setting for scrutinising the sound(-making) object in front of an audience rather than in solitude (p.47), in the confines of a studio or on a temporary workbench. Toying, wrestling and playing the sound(-making) object in an ad-hoc, indeterminate and improvised way within a focused environment – such as playing in public and tinkering on stage – gives the audience potentially an understanding of the tripartite method.

Live practice suits the transient nature of the DIY Nomad with regards to attending gigs, and this also presents other issues in relation to the sound(-making) objects that may temporarily stop working due to vigorous playing. The DIY Nomad has to again mend things quickly and often under pressure pre- or even post-gig on a temporary 'pop-up' workbench (p.12).

The Noise Selector finds and locates sounds by extracting as much material from the sound(-making) objects for musical consumption. For a DIY Nomad, it is the discovering and making from existing circuitry, allowing for this idea of finding and locating sounds, that is of interest. It is a live exploration. Because of the fragility of these circuits, it is important to maintain both a musical focus through listening and an awareness of the object itself – its wires, connections and components and how the object is behaving. Therefore, the DIY Nomad and Noise Selector blurs the boundaries of playing and making through 'tinkering on stage' and 'building the sound' (p.53) as a maker by responding to the sensibilities of the circuits. The music is also made on stage and further developed, and in the studio sound materials from these circuits are recorded, selected, edited, spliced, looped, mashed-up and versioned to form new studio works.

The DIY Nomad's whole practice is based on expediency, appropriation, hacking, borrowing and remixing in some shape or form; and sharing the experiences online suits the evolving transient and temporary nature of the way the DIY Nomad works. It also allows access to, and establishes making in varied spaces (Patel, 2019a). If someone draws inspiration from what is shared in a temporary workshop or performance, this is just as important if these works are also shared online. Equally though, the internet has "fostered the spread of a new culture of making [and] sharing information" (Aliverti, Maietta and Di Justo, 2015, p. 8), albeit if some of the ideas of the DIY Nomad are appropriated then this would be encouraged even further, as the medium of social media (p.19) is used to share the results of my making such as on my Instagram page 'Dushume' (Patel, 2019a). By being temporarily connected to an online presence, there is more scope for collaborations and interactions with different people globally, which further highlights nomadity.

## To Mash-up for Hack's Sake

The DIY Nomad and Noise Selector have appropriated cultures such as DIY electronics and remixing. In the case of the Noise Selector, most of the appropriation in the studio consists of sampling sound(-making) objects that have been made, played and recorded as a DIY Nomad. Again, referring to Lessig: "It succeeds by leveraging the meaning created by the reference to build something new" (Lessig, 2008, p. 76). Lessig has also implied that: "a remix draws upon the work of others in order to do new work" (ibid, p. 81). However, in my own work as a DIY Nomad and Noise Selector, the resulting studio work is purely self-referential, and it is this idea of appropriating and recontextualising the noisy materials from the sound(-making) object and recordings to create something brand new.

For the DIY Nomad and Noise Selector, there is a close link between the studio and live practice, based on sampling and scrutinising the build, characteristics, and temperament of the sound(-making) object. The 'one instrument and one performer' ethos adds another angle to the completed studio works, that are also concerned with extracting and capturing elements of the performance that are recorded. Here the studio is redefined because the DIY Nomad and Noise Selector have appropriated DJ and remix cultures (p.43), treating the sound materials as a mash-up or remix. As a Noise Selector, mixing skills, and versioning (p.40) are brought together by cut and paste, editing, looping, and through the use of repetitions, and the recordings are compiled and put together like a DJ mixtape to form a studio work.

In terms of making and building sound(-making) objects, the DIY Nomad has appropriated the cultures of hacking and tends to use existing circuitry that is already there and easy to tamper with and hack. This differs in comparison to, for example, the work of John Richards (Dirty Electronics) who often builds sound circuits from scratch. In this way, the DIY Nomad is a contemporary hacker with a small h: appropriating something in a quick and dirty manner. This small-h

hacker idea is also captured by Tim Jordan: “Hardware hackers take the spirit of hacking into material relations” (Jordan, 2008, p. 123) by interfering with wires, components by cutting and re-soldering differing parts together on an existing piece of technology or hardware. During the 1970s, David Tudor and Gordon Mumma also had limited knowledge of electronics and left a lot to discovery, chance or accident and Tudor perhaps as stated by Novak “created a more open-ended improvisational space for experimental music technology” (Novak, 2013, p. 156). As a DIY Nomad, I would not refer to myself as a hacker, but there are similarities with what hacking implies, in that it is done quickly – often with little technical knowledge. Hacking in this way is as a material practice, and a tradition of hardware hacking implies and consists of attacking and altering hardware (Jordan, 2008, p. 122). Hardware hacking also inspires the methods in the studio because the sound materials are found in the sound(-making) objects by being “still hooked on the digitally inspired cut-and-paste aesthetic of scavenging, sampling, and reworking found materials” (Collins, 2006, p. 91). Similarly, “To hack is too differ... there are hackers hacking the new out of the old” (Wark, 2004, pp. 3-4) and furthermore in ‘*A Hacker Manifesto*’, Wark argues: “It is in the interests of hackers to be free to hack for hacking’s sake” (Wark, 2004, p. 78) implying that there is no reason to be sophisticated nor an ‘expert’.

As already stated earlier in the DIY Nomad and the Workbench chapter (p.16), Reed Ghazala fosters an ‘anti-theory’ (Ghazala, 2005) approach to working with electronics by modifying and adapting existing circuitry, what he coined as ‘circuit bending’, and this is also shared by Monk in ‘*Hacking Electronics: An illustrated DIY guide for makers and hobbyists*’ (Monk, 2013). Monk’s text also takes a non-theory approach towards hacking electronics and that there is some solace in making and working with something that is physical and tangible: “hacking means just do it! You don’t need a degree in electronic engineering to create or modify something electronic. The best way to learn is by having a go at it” (ibid, p.1). ‘*Make: Electronics: Learning by Discovery*’ (Platt, 2009) also encourages this idea of making first through learning by discovery and then looking at the theory behind electronics later. More importantly, the DIY Nomad makes sound devices

by appropriating and borrowing from existing circuits or technologies and, as Jordan states with regards to hacking, “the hack involves altering a pre-existing situation to produce something new; to hack is to produce differences” (Jordan, 2008, p. 9). This type of hacking is also suited to the Noise Selector whereby pre-existing recordings are hacked and mashed-up to create brand-new studio works.

As previously stated, the Studio Bench fosters a certain naïvety in the way the DIY Nomad and Noise Selector operates. However, through experience and practice, there is a danger of becoming an expert in these fields and the balance between all these three spaces could be disrupted in some way. It could become common practice to be producing studio works and performing live all the time. Perhaps a balance needs to be maintained, but maybe it is inevitable that the DIY Nomad and Noise Selector become experts in the future. How to maintain this level of exploration is also going to be important in my future research and practice, and one could argue that the complex interaction between all the three spaces and approaches should be rich enough to provide lots of possibilities and enquiries. In the imminent future and in the spirit of nomadity, the Studio Bench will be explored through travel, playing gigs in the realm of noise and underground electronic dance music, and a continuation of investigations into extending the ideas of the hardware mash-up by using multiple Bed of Nails circuits mashed-up with Martin Howse’s ‘Detektor’ circuit (Howse, 2015b), and appropriating and hacking different cultures to form new music.

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# Appendices

## Appendix A] Turtlebox



Turtlebox – Source: Author

## Appendix B] Predictive Noise Score

Score for slow texting:

- Use notes on a mobile/tablet device, no gesture typing allowed.
- Typist should begin with typing 'Predictive Noise' that indicates the start of the piece. Sounds should not start until 'Predictive Noise' has been written in full.
- Improvise slowly, work the rhythm with each character or text.
- Speed of typing should dictate pace of piece and sounds.
- You can be free and improvise with the text and go with what is 'predicted'.
- Sounds can be polite and obnoxious, the more absurd the better!
- Piece ends when 'Noise is not music' has been repeated four times.

Noise is ...

Noise is lovely

Noise is beautiful

Noise is grey

Noise is grey hairs

Noise is clean

Noise is dirty

Noise is noise

Noise is not music

Noise is failure

Noise is wanted

Noise is currently

Noise is past

Noise is contradictory

Noise is shit

Noise is two and a half pints

Noise is Yan Jun

Noise is not music

Noise is malfunction

Noise is quiet

Noise is hiss

Noise is cracked

Noise is ringing

Noise is sweet

Noise is anal

Noise is displaced

Noise is not music

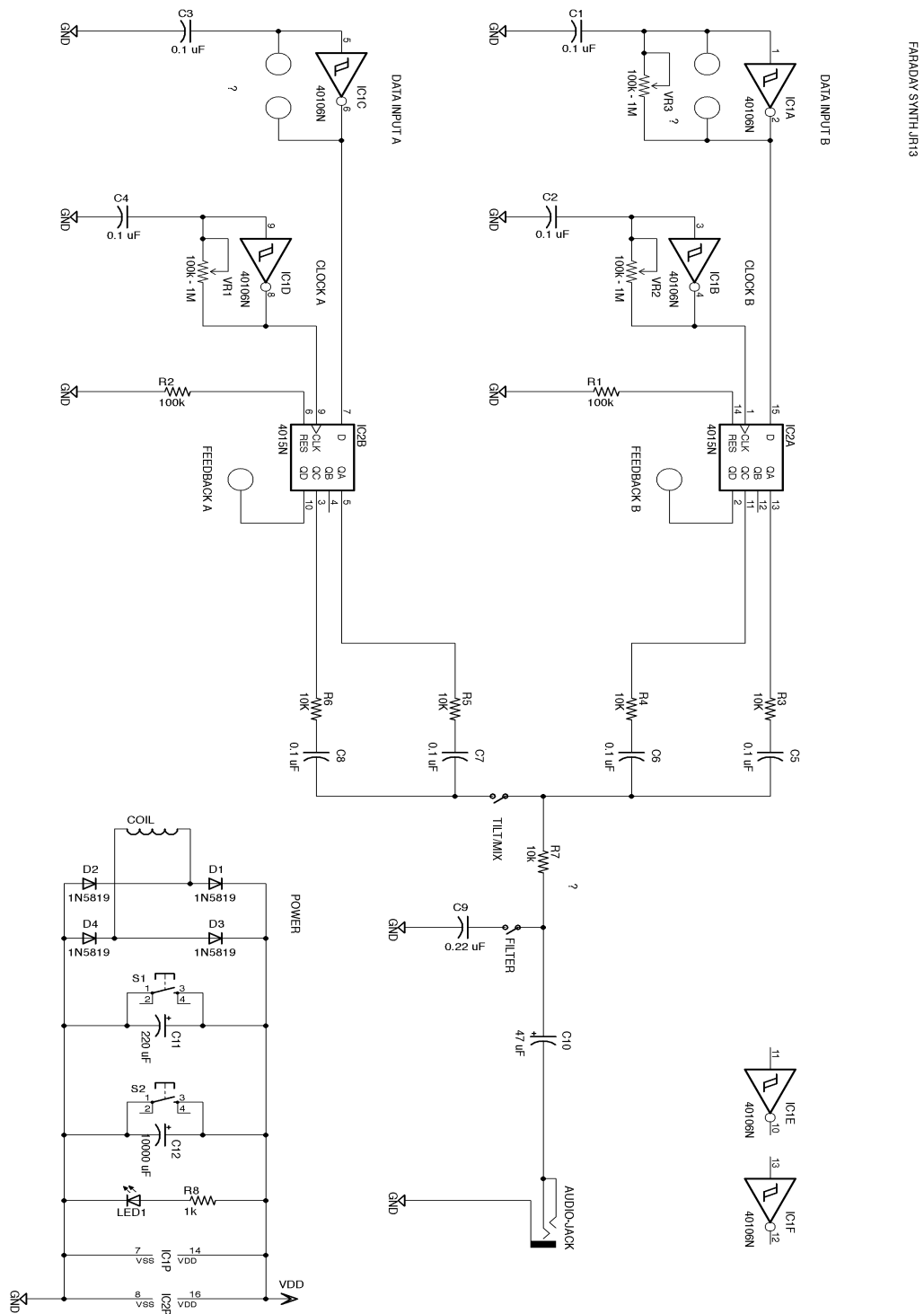


Noise is not affordable (Yan Jun)  
Noise is not organised  
Noise is not  
Noise is contraceptive  
Noise is physical  
Noise is art  
Noise is better  
Noise is worse  
Noise is not music

Noise is unacceptable  
Noise is beastly  
Noise is extreme  
Noise is destructive  
Noise is the material  
Noise is interdisciplinary  
Noise is multinational  
Noise is disjointed  
Noise is not music

Noise is concrete  
Noise is brutal  
Noise is tinnitus  
Noise is abused  
Noise is old  
Noise is broken  
Noise is finished  
Noise is history  
Noise is archived  
Noise is not music  
Noise is not music  
Noise is not music  
Noise is not music

# Appendix C] Faraday Dirty Kinetic Synth Schematic



Source:

Richards, J., 2013. Faraday Synth JR13. *Unpublished*, used with permission.