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Ambient Music & Improvisation:
An exploration of a catalytic union through composition and analysis

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A thesis submitted to the University of Huddersfield
in partial fulfilment of the requirements for the
degree of MA by Research (Music)

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Toby, for supervisorial advice and tea

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<p style="text-align:center">"The piano ain't got no wrong notes."</p>

<p style="text-align:right">– Thelonious Monk</p>

1) <u>Introduction</u>

Through my own performance, tastes and use of music over the years, I have come to realise that improvisation is a highly effective tool in the creation of ambient music. This project aims to explore this relationship through analysis and practice-based research. Many books and studies have been written and undertaken with the aim of examining the realm of improvisation in music. Equally, ambient music is a well-researched area. This project is by no means attempting to establish any new theory or philosophy of improvisation itself, or ambient music, but rather striving to add new material and some concrete research in the rather more niche and lesser-explored area of how improvisation can create ambient music. However, in order to properly build a picture of the relationship between the two, I will first establish a foundational rationale of improvisation by exploring current philosophies and theories of the practice, then do the same for ambient music. I will then bring the two together in a comparative analysis of how these practices interact when brought together, which provides insight as to why improvisation is such a suitable tool in the creation of ambient music. I will then look at my own portfolio of compositions to examine what my experiments reveal about the ambient/improvisation relationship in question.

Despite a traditionalist, classical training in the piano, improvisation on this instrument in particular has fascinated and inspired me since exposure to jazz and electroacoustic music in my early teens. The first electronic albums I listened to (unbeknown to me at the time) belonged to a series that set the defining standard for ambient music – Brian Eno & Harold Budd's 'The Pearl' and 'Ambient 2: The Plateaux of Mirror'. I was captivated at the use of piano combined with the electronic processing in making calm-invoking music that could simply sit in the background of an environment. As this discovery led me on to explore more similar music, old and new, it became a major influence on my own language of piano playing. In more recent years I acquired a strong appreciation for jazz – more specifically small ensembles and artists of old, especially if they involved piano – Miles Davis, Thelonious Monk, Duke Ellington, Louis Armstrong, among others. In retrospect, this acquisition of appreciation was also largely due to jazz also being so effective in providing 'ambience' to an environment, more specifically in social contexts. It is from this musical exposure and personal development as a musician that this project has arisen.

2) <u>Musical Improvisation: Exploring the Theory and Philosophy</u>

In its most basic form, British guitarist Derek Bailey says of improvisation:

> *'Diversity is its most consistent characteristic. It has no stylistic or idiomatic commitment. It has no prescribed idiomatic sound. The characteristics of freely improvised music are established only by the sonic-musical identity of the person or persons playing it'* (2004, p. 256).

As such, it certainly has no attachment to genre, nor is it a genre in itself, but a tool which can be applied to any genre (although some genres use it as a technique more than others – jazz being the most commonly associated example). It is the most basic, fundamental tool of performance – surely the first music created by a human must have been improvised. Yet, for all its lack of stylistic and idiomatic commitments, its core feature makes for simple identification. This is spontaneity. I complicate on the idea of 'spontaneity' a little later. For now, taking these fundamentals, I define musical improvisation as **'the performed, spontaneous generation of musically intended sound.'** For the purposes of this project, when improvisation is mentioned, this is the meaning intended.

Literatures on the actual processes in improvisation often take one of two approaches – attempting to either apply a theory, or model, through analysis of studies largely focussing on the cognitive process (Biasutti & Frezza, 2009), or to discuss the philosophy of improvisation (Rzewski, 1999), (Peters, 2009). Jeff Pressing proposes one such 'theory of improvised behaviour in music' (1988, p. 129), by surveillance and analysis of research from many disciplines, including physiology and neuropsychology. From this, he devises a reductionist formula, or cognitive model (1988, p. 168) of musical improvisation. He concludes that:

> *'the improvisation process is considered to be the stringing together of a series of 'event clusters' during each of which a continuation is chosen, based upon either the continuing of some existing stream of musical development (called here and event-cluster class) by association of array entries, or the interruption of that stream by the choosing of a new set of array entries that act as constraints in the generation of a new stream (new-event cluster class)'* (1988, p. 168).

Ed Sarath's (1996) 'new look at improvisation' draws similar conclusions. He focuses particularly on challenging the 'common notion that improvisation is an instantaneous or accelerated version of the composition process' (Sarath, 1996, p. 1), primarily by demonstrating fundamental differences in the 'directionality of temporal conception,' using this idea as 'the criteria by which differentiations between large classes of improvising and composing activity may be made.' (1996, p. 2). On the other hand, Larson concludes that, by his definitions, improvisation and composition are not 'mutually exclusive' (2005, p. 272).

Considering the range of thought on this matter, the key difference between improvisation and composition lies in the temporality of their processes. This is important to think about as the music recorded for this project is improvised rather than 'extemporaneous composition,' as Sarath puts it (1996, p. 6). The key to this ensuring the distinction is kept lies in attempting to remove all possible conscious or sub-conscious pre-planning of structure, form or other typical building blocks of composition. Some features, particularly tonal ones, are to an extent pre-determined purely by cultural, experiential and educational factors that shape unique, individual musical language to a point where the tonality of my improvising is informed and indeed limited by these factors, thereby leaving a pre-determined tonality. However, I can still make a conscious choice *not* to try and choose or plan a specific tonality prior to playing, even if the 'spontaneously' created tonality will inevitably remain within the constraints of my sub-conscious musical language. On balance, it is difficult to see how there can be total spontaneity as everything has an element of planning, even decisions not to play certain tonal patterns. It is impossible to completely remove any anticipatory, sub-conscious planning in full. However, where possible I attempt to limit these factors.

Pressing's aforementioned formula and the rise of computer composition raises the rather more philosophical challenges about improvisation that are important to consider for my own work, as ambient music invariably uses computers in the process of its creation or generation. My own conclusions about this relationship between improvisation and computers inevitably informs my own processes and practices.

Pressing's model of improvisation is robust enough to allow 'improvising' computer programs to be built. In 1988 this perhaps may have been trickier, but thirty years later, technology and computers have advanced to the point where improvisers use computers to various ends in in their own experimentations. Algorithmic composition using technology has since been pioneered and used particularly in minimalist circles with varying success. Lejaren Hiller is 'widely recognized as the first composer to have applied computer programs to algorithmic composition' (Edwards, 2011, p. 61) and many more have followed in his footsteps as technology has evolved. Computers of today are more than capable of being programmed to emulate improvisations. This begs the question: can programming a jazz improvisation model/emulation into a computer ever sound 'the same' as a live musician, and if so, is this still improvisation? Following programming brings in a lot of pre-planning, and is thereby at odds with the crucial spontaneity. Yet, the answer also seems to hang on the philosophical conundrum of whether a computer programme could achieve human creativity and novelty. It is here we find the origin of human expression, expertise and creativity in question, something Pressing also acknowledges as 'philosophical quandaries...which trouble psychologists and artificial intelligence workers today...as much as they did Plato and Socrates' (1988, p. 129). It is useful to consider Bourdieu's concept of 'habitus' here (Bourdieu, 1996), and its central influence on individual creativity. A computer does not have all this emotional and experiential 'baggage' to draw on as an informer of its musical choices in the improvisation, unlike a human. After all, when generating musical ideas, the 'selection of a source is contextual' (Hargreaves, 2012, p. 354). So, in this project, it is these emotional histories and musical tastes of a musician, and how they impact the moments of improvisation, that are the points of interest, which eliminates using computers as generators of an improvisation.

I will briefly expand on this. The computer's origin of choice is in pre-programmed, complex algorithms that include emulations of many elements of choice that a human would also draw upon in musical improvisation. Sarath (1996, p. 7) cites Berliner (1994, p. 202) who describes all these choices as a 'reservoir,' not only including quantifiable musical learning, experience and tendencies, but also 'a distillation of one's experiences with life' – one's habitus. This description of a reservoir is particularly helpful when assessing how my own experience and musical preferences may impact the improvisation process. So, the computer can emulate some of these variables or constraints in the 'reservoir' – which notes the instrument in question can play, typical patterns of the genre in which it is programmed to emulate improvisation, for example – anything that can be quantified and taught to a human. What it cannot do, is make a choice of what idea in the reservoir to deploy based upon an emotion, memory of sensation/emotion, or upon the innumerable set of unquantifiable cognitive variables – unique to every individual – that make up personality, or the very essence of being 'human'. Collectively, these emotional/unquantifiable but intrinsically human variables I call **musical intent** (as encountered in my earlier definition of improvisation), because in the context of musical improvisation, they provide the intention/motivation behind the selection of what musical experience and learning to draw upon in order to generate original ideas. This experience and learning is what Goldman (2013, p. 210) terms 'prior knowledge' in his study questioning what

characterises this knowledge in improvisers. Indeed, Bailey acknowledges some of the 'earliest guitar music (he) ever heard occasionally surfaces' in his solo playing, even though he has had 'no connection' with it since childhood (1980, p. 108).

In my own case, therefore specifically in this project, elements of my unique reservoir and musical intent can be broken down into the following:

i) **Memories and emotions**. This includes memories of emotions or of a certain time, person or place, sensory memory (taste, smell, imagery) and any other past experiences.

ii) **Style of piano performance as influenced by my instrumental education**. This has a huge impact on factors such as my typical use of harmony, tonality, and rhythm. As this education is fundamentally grounded in classical, musical theatre, pop, and some jazz, my harmony and tonality is rooted in traditional Western frameworks. The piano itself forces a limitation within equal temperament, unless it is tuned otherwise. With this in mind, I inevitably stay in the same key or mode that the improvisation began in, and if not I modulate to a relative key in keeping with traditional Western practice. The lesser influence of jazz promotes use of modal scales (particularly Aeolian), 6th, 7th and 9th chords in my improvisations, which are useful broadening the range of tonal language. My level of proficiency on the piano is also limiting factor – although reasonably high, it is not that of a concert pianist or professional jazz pianist. This means occasionally, I want to implement an idea, but my skill doesn't allow me to execute it, thereby forcing a quick change in the originally intended direction.

iii) **Listening preferences** (Ambient, neo-classical, pop, film scores). These favoured listening genres have a significant role in informing, firstly, *when* learnt techniques and performance characteristics are employed in order to fulfil requirement of emotive intent – music as an emotive language is learnt heavily through being the listener or recipient. Film scores and neo-classical music are particularly dramatic and emotionally prescriptive styles, as is pop. Drama, then, certainly impacts my improvisations, but its strength of impact is muted by the equally strong influence of the emotionally ambiguous, intentionally unobtrusive and undramatic ambient style. The result is my improvisations often walk a fine line between drama and ambience. Secondly, these genres expand my pool of musical ideas to draw upon that may be sub-consciously triggered by a certain phrase of melody, timbre or harmony. For example, if, during an improvisation, I play a phrase of melody similar to the chorus from 'A Head Full of Dreams' by Coldplay, it may trigger a recollection of the song even sub-consciously, thereby enabling that song to have an influence on the following music in any number of ways.

In the case of musical improvisation, from personal experience and the testimony of musicians the world over, I propose emotion as the most significant of these influences that informs musical intent. Malcom Budd in his book '*Music and the Emotions: The Philosophical Theories*' refers to Derycke Cook's take on the 'expression-transmission' (1985, p. 122) theory. In short, it proposes music as a transmitter of emotions – a language with specific syntax and vocabulary. A tool of expression that composers use to transmit their emotions to the receiving listener. Yet, as Budd also goes on to explain, this has flaws. Particularly, language has words that denote a meaning, that are

not subject to interpretation – a syntax and concrete semantics. In music, even though music might have an intended denotation from the composer, the music itself has no denotation, because its interpretation is entirely subjective to the listener, therefore leading to inevitable mistranslation and may not 'arouse in the listener the experience the composer wishes him to feel' (Budd, 1985, p. 123). As McPherson (2014) puts it, having conducted a study on the role of emotion in improvisation: 'Unlike language…the emotional content of music is transient and non-discrete' (p. 6). This is much like Derrida's concept of the signified and the signifier (Derrida, 1982), particularly when applied to post-structuralism, as summarised by Guillemette and Cosette (2006) – the music has a sign (e.g. happiness) that the performer (signifier) *intends* to be the signified, but there is really an indefinite number of signified interpretations available.

Still, for composers and improvisors, this 'flaw' of music as a language can be a benefit. I am always intrigued to hear what listeners interpret from my own music, and whether whatever I was expressing through its composition was actually transmitted in the end. Another reason this 'flaw' may not matter is, of course, people often experience music simply to appreciate the music itself, not simply interpret emotion from it. People 'value the experience of the music itself' (1985, p.124). This is a criticism of some of the artists I take influence from – Budd, Frahm, Richter – that their music is too intentional and forceful in its denotation of sounding 'pretty,' leaving little room for interpretation. However, this premise again almost assumes music can have a universal language and interpretation, with definitive semantics. Harold Budd also rather shrugs this off:

> *'Being immediately pretty is the most important component so important that it overrides all other concerns of structure, environment and so on. Now, whether or not it's profound and deep are legitimate questions, but not ones that I choose to deal with because it seems pointless. If you've already made your point by being even superficially pretty, or by making highly-polished, well-finished little gems of something, that seems adequate to me'* (Smith & Walker, 1994, pp. 64-65).

Still, the fact remains that composers and improvisers will often write/play to convey or express what they are feeling in the moment, or about a previous experience – their improviser language being the conduit of this expression. This is perhaps a generalisation, as some genres and disciplines would indeed often create music simply for the experience of the music. But in improvisation, there is no denying that musicians express their own unique musicality through their playing. When a choice is made as they think it would 'sound good', 'sounding good' is simply music invoking a reaction of 'feeling good' in the listener. Therefore performers they are making a choice based on desire to play what will transmit positive emotions.

Taking all this research into consideration, it clear that the focal point of exploration within improvisation as a practice is **'musical intent'** and the unique individual reservoir of education, experiences and emotions that all build **a unique improvisor language**. More specifically, how these variables aid the improvisor in the creation of ambient music. With this focus in mind, Fig. A shows my proposed temporal sequence of events and elements within an improvisation, which I use as variables to either experiment with or build a framework from in my own improvisations.
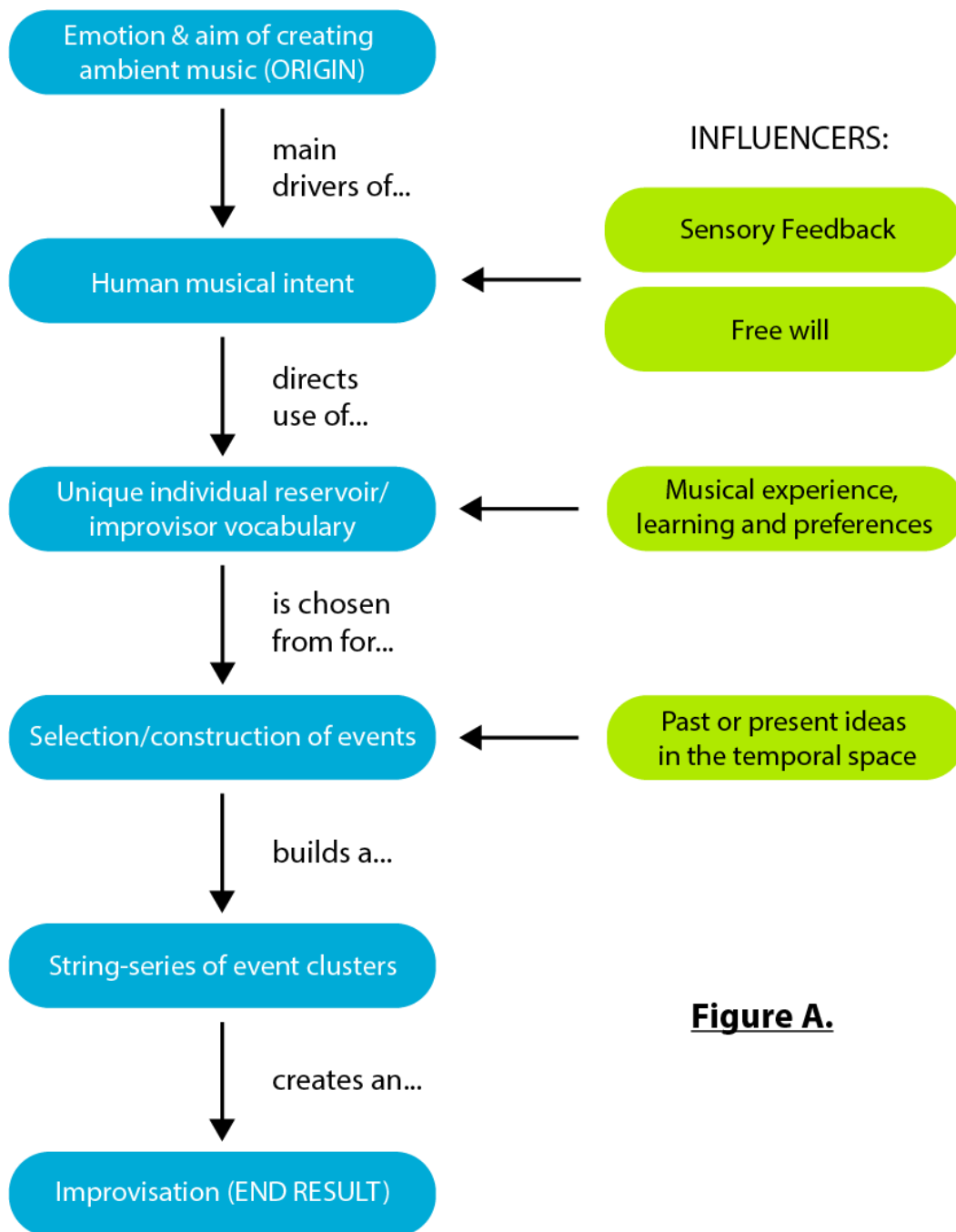
Figure A.

In order to create a variety of scenarios in which the above influencers were differed, I identified and focussed different performances on these four variables:

i) **Technology** – as discussed earlier, technology can be beneficial to an improvisation and is a core element in the production of ambient music. Processing chains such as the delay line can provide a sonic canvas with which the improviser can react and adapt to, allowing it be an informer some of their choices. Application of technology might also be after the initial recording of improvisation. Nicolls (2010) explores piano improvisation with interactive technology through practice based research. Using EMG sensors in

'Suspensions' interestingly draws in the additional factor of sensory feedback. Tremblay's 'Un clou, son marteau et le béton' (2008), from 'La Marée' is also a case study in the paper. In the studied performance, Nicholls uses the Moog PianoBar to output midi from the piano. A combination combined 'audio control signals... (and) direct inputs' controlled by Tremblay was 'highly responsive in performance...akin to performing with other live musicians' (2010, pp. 50-51). Using technology can create unexpected results which aids in removing improviser language constraints.

ii) **Collaboration** – This is mainly in order to help break boundaries of my own improviser language for some tracks. In jazz, it is idiomatic for small quartets, trios, and duos to improvise with each other as part of a performance. Usually this will be an improvised melody over some agreed chord sequence, and each instrument takes in turn to take the 'lead' role – for example, Miles Davis' 'So What' (Kind of Blue, 1959). Instantly the introduction of multiple musicians, each with their own unique musical language and reservoir of choices, has the potential to allow a wider influence of factors and decision making based on interaction and communication (and indeed, miscommunication) rather than the linearity of one's own improvisation. Technology can also bring new innovation to collaborative improvisation, such as virtual communication and enabling multiple musicians to work on the same 'instrument' (software environment) in laptop ensembles, as demonstrated in a recent study by Freeman and Troyer (2011).

iii) **Environments** – The place in which the performance is given can have a huge impact on personal mood, emotion, and even triggered memories, thereby what is influencing the decision making in the improvisation process. An outside recording will have very different effects to a studio one. Not only this, but the environment provides elements of sensory feedback, even if unrelated to the instrument involved. Large reverb adds aural feedback, vibrant colours or natural environments give plenty of visual stimuli.

iv) **Individual Musical Language** – Whilst this could be seen as a constraint, its unique identity, and everything that identity is built from (as mentioned earlier), means the resulting sound is something that defines each piece and runs as a theme through all of them. To optimise the influence and exploration of this, I kept some recording sessions with a simple setup and agenda – solo piano (familiarity), low lights (minimising sensory distraction) and simply playing whatever came to mind, whether I was thinking about the mundane or meaningful.

Most significantly, underpinning all of the above, I always allow spontaneous, human musical intent to be the original generator of core material.

The question remains how these processes of improvisation can be used particularly well into the realm of ambient music, and how ambience allows a very open field in which improvisers could perform.

3) Ambient Music: its purpose and generation

In order to put ambient in context and get a clearer definition of the genre, I have examined its origins and related genres.

The ambient music I study closely is some of the first released with the term ambient used to describe it – the early collaborative works of Brian Eno & Harold Budd. Eno first coined the phrase 'ambient' on the liner notes for his LP 'Ambient 1: Music for Airports,' defining it as music 'intended to enhance' environments and atmospheres – its purpose to 'induce calm and a space to think… (it) must be able to accommodate many levels of listening attention without enforcing one in particular; it must be as ignorable as it is interesting' (Eno, 1978). Ambient by this definition, as Siepmann points out 'escapes any normal genre boundaries' (2010, p. 174) and encompasses so much to the point that it 'stretches the boundaries of what we may commonly call music' because 'any music could be described as ambient…based on the level of attention or active listening with which we engage a musical piece' (2010, p. 175). However, we can limit what music falls in this category by studying music that has 'been designed for the purpose of creating a background while avoiding a frontal engagement of our senses' (2010, p. 175).

Yet, this is not the only genre, or earliest, to have been created with such purpose in mind. French impressionist Erik Satie is commonly cited as an early pioneer of music for background consumption, with his '*musique d'ameublement'* (furniture music). Only a few decades later in 1934, the later-named 'Muzak' Corporation was founded – producers of 'functional music' (Vanel, 2013, p. 48) for environments, and it remains operational to this day (although in 2013 it was bought by 'Mood Media,' dropping the name Muzak). Over the twentieth century the word Muzak became synonymous with canned/piped music that was 'formulaic and predictable' (Vanel, p. 48) with little cultural or aesthetic value, produced purely for superficial listening or with corporate agendas in mind. At a similar time in the late 1940s and early 1950s, Paul Weston started releasing his series of 'Music for…' albums – 'Music for Romancing' (1948) for example, that became known as 'mood music' or 'easy listening'. Perhaps Eno was giving a nod to Weston's idea when he named 'Music for Airports'. Following this mood music, the 1970s, in wake of the counter-cultures of the sixties and the associated rise in popularity of Eastern religion and spirituality, is generally accepted as the decade that gave birth so what is commonly known as new-age music. These influences secured exotic instruments, such as the Sitar and Koto ('Hear. Now. Be. (2010) and 'Music for Zen Meditation' (1964) respectively) a place in new age, alongside oriental tonalities due to the influence of Buddhist/Zen/Yoga mindfulness practices on the composers. Hibbett (2010) studies the birth of this widely disregarded genre (in a very similar way to 'Muzak') in far more depth. He observes that the new age label is often misapplied, and that it usually is created with very 'specific functions, thereby positioning itself more transparently as a commercial product and less as a piece of art' (Hibbett, p. 297). It is again the commerciality and objective, scientific function of the music that seems to draw it ridicule and discredit as art. Music for 'Healing,' 'Meditation,' and 'Relaxation' are regularly found in the names of new age albums – function and impact on mental health are stressed (no pun intended) as selling points, rather than artistic merit, proficiency or innovation.

Hibbett (2010) regards Eno's 'invention' of the ambient genre as simply a 'moment in the evolution of new age music'. Although he tempers this claim by acknowledging that Eno provided 'an intellectual framework, and, ultimately, a name that recodes and reroutes environmental music

from what would soon become the new age mainstream of the 1980s' (Hibbett, p. 300), essentially labelling Eno as the accidental saviour of environmental music from the clutches of the new age movement. So, the roots of the ambient concept lie in environmental music explored by the likes of Satie and Weston in the early twentieth century.

The aesthetic qualities of ambient music are often textural, timbre-based, using a focussed sound world, which employs just enough melodic content that the listener can be equally content to engage or disengage with it, without this quality being detrimental to the interest of the music. Therefore, there is often a complete lack of, or very few, rhythmic elements or metre. If they do exist, they are repetitive and pulsating. It is in such characteristics we start to see the imprint of minimalism – Bernard goes as far as to say it is 'doubtful such music could have into existence without the stimulus of minimalism' (2013, p. 350). Minimalist champions La Monte Young, Terry Riley and Steve Reich have 'influenced Eno more than any others' (Tamm, p. 23).

Harmonic and tonal devices are regularly employed too, but are not a necessary requirement of ambient music. As such, it is a subtle, understated style, that may well have a purpose/intended listener reaction from the composer, but this is never forced – the style only implies intention – there are many possible signifiers; emotions that are being signified (in stark contrast to stereotypical marketing and objective purposes of new age music). The listener is allowed plenty of room for subjectivity in interpretation. It might be likened to abstract painting – washes of colour that can be appreciated from a distance but also on closer inspection, examining the finer details of the brush strokes. It can engage with the listener on a subconscious level, inducing calm just as Eno says, or concentration perhaps due to a more relaxed mind. It may even invoke unease to some.

Other artists whose music fall into this description would include Nils Frahm, Keith Kenniff (a.k.a Goldmund), Jon Hopkins, Julien Marchal, Max Richter, Alaskan Tapes, Sophie Hutchings, LUCHS, Library Tapes, Stars of the Lid and Aphex Twin's ambient works. Most of these are millennial or 1990s artists that have a focus on the piano. Interestingly, the likes of Nils Frahm, Max Richter and Sophie Hutchings also fall into an emerging genre labelled 'contemporary/post/neo/modern classical.' This terminology is obfuscating, because post-classical is the convergence of various styles – largely post-minimalism, ambient, electronic and pop. The popularity of this genre has risen in recent years, thanks in small part to its popularity in film placement and sync use. The suitability of this music for application in film highlights the often prescribed, dramatic tone of this music. Tracks such as 'Main Theme' from Ólafur Arnalds' soundtrack for Broadchurch (2015) and Jóhann Jóhannsson's 'Payphone' from the 'McCanick' (2014) soundtrack demonstrate this well. The style is becoming so popular in soundtracks that is almost something of a cliché in the contemporary popular film world. Yet, even though the roots of this music are in ambient, this evolution sees more prescription of emotional intent given than in ambient – the use of harmony, melody and dynamics give the listener a clear message of how they are supposed to react to it emotionally. Ambient music, on the other hand, generally walks a fine line of this drama – there is dramatic potential (for instance Frahm's 'Passing' (2016)) but the interpretation of this is left to be very subjective rather than objective. Kyle Gann (2007) says that post-minimalist music characteristically 'avoids the representation of anxiety. Even when post-minimalist music is partly dissonant, harsh, or rhythmically complex, it has a sustained, continuous character that gives an impression of overarching calm.' This, by extension of influence of minimalism and post-minimalism on particularly contemporary ambient artists, is also a fitting description of ambient. This ambiguous 'fine line' that

ambient walks has been used regularly by the likes of Richter to great effect in soundtracks to offer uncertainty and suspense to the audience.

In order to build a basic framework for ambient music, I have analysed the 'original' ambient albums by Eno and Budd – 'The Pearl' and 'Ambient 2: The Plateaux of Mirror'. The albums demonstrate some quantifiable features and characteristics of musicality that have become idiomatic not just to Budd and Eno's own works but ambient records in general. These characteristics ensure the music successfully fulfils the purpose of ambient we have previously established.

a) **Timbre – textural drones or low-register, slow, repeated bass lines.** 'Lost in the Humming Air', 'Still Return', 'A Stream with Bright Fish', and 'Foreshadowed' are all good examples of this. Having a texture or repeated pattern throughout the piece, even with slight variation, creates a wealth of space for the melodic content to rest on, and also results in creating a subjectively calming soundscape in which to immerse the listener if they so choose. The droning sounds are also kept dynamically even, which allows the melodic content room for expressive dynamic phrasing without the difference in dynamics being jarring. Constant sounds also blend in best to 'background noise,' as people are accustomed to the hum of computers, or the passing of traffic etc.

b) **Lack of conventional form.** Generally ambient music has no structure that adheres to Western convention. Most tracks suggest an infinite form – and the listener merely looks in for a period then wanders away. Even the furniture music of Satie 'is grounded on such principles, forever eluding resolution' (Vanel, 2013, p. 12). Sometimes a fade in/out assists this illusion, or the sense of space and repetition of ideas. Yet, the key to this lies purely in the lack of discernible structure. If any kind of structure is there then it is in the change of root chords throughout the piece, in which case it is possible to devise a ABA or ABCA type patterns pieces such as 'The Plateaux of Mirror' (0:00 A section, 1:30 B section – AB form). Certainly, there is no set framework for form within the ambient world it would seem.

c) **Repetition of a singular idea/motif.** Here again lies the fingerprint of minimalism, and we see its concrete impact on Eno's music. 'Not Yet Remembered,' 'The Silver Ball' and 'The Chill Air' both employ repeated chord or melodic patterns that only develop slightly and slowly over the duration of the track. Variations and developments are so subtle in the context of the whole sound that listeners would not particularly be alerted to it once the 'hook' or initial idea is established, yet if one listens closely there is enough variation of timing and notes to keep intrigue.

d) **Tonality.** All pieces on 'The Pearl' and 'Ambient 2: The Plateaux of Mirror' have either a major, minor, or modal tonality. There is no atonality, nor indeed any change of tonality in the duration of a piece that could be considered jarring for the listener, unlike many examples of contemporary ambient music (think Aphex Twins '#2' in which the instrument has heavy detuning effects applied resulting in a loss of tonality). Keeping the listener rooted in a particularly key or mode again ensures no significant amount of attention need be given to it

e) **Phrasing and melody.** Budd regularly leaves plenty of space between melodic phrases, allowing Eno's delay line (expanded upon later) to shine through with textural timbres generated from the original piano signal. This is perhaps most prominently encountered in 'A Stream with Bright Fish'. This sparse approach provides a quality of thoughtfulness and reflection that invites emotive interpretations from the listener – the melodic ideas

themselves are not overstated or overambitious, but encourage the listener to dwell on each note and texture up close through their simplicity.

Varying combinations of each of these features are crucial to all pieces recorded by Budd and Eno on 'The Pearl' and 'Ambient 2: The Plateaux of Mirror'. This lays out a vague framework for ambient music, whether Eno/Budd intended to have one or not. However, it is not only the identifiable features of musicality that build the ambient framework – techniques of production and performance are equally important.

On 'The Pearl' and 'Ambient 2: The Plateaux of Mirror' we see the bringing together of Budd's minimalist, improvised piano combined with the studio mastery and ambient texture generation/manipulation of Eno:

> "Lost in The Humming Air was recorded all in one go, there was no overdubbing, Brian was in the control room with the CS89 creating these humming sounds and I was in the studio listening to it on cans at the piano. I started to improvise to these humming noises and it began to all come together - someone had the sense to turn the tape machine on, and a couple of minutes later there it was!'' (Everard, 1984).

So, the ambient sound world, birthed with technology, and piano improvisation are equally important in the creation of these works. It is clear over all their combined works that Budd's improvisation with Eno's studio processes and use of technology had an effective, productive synergy that resulted in these landmark ambient albums. It seems computers and technology can catalyse human improvisation, if controlled by a human live, or as part of a collaborative improvisation, where a musician interacts with pre-recorded or live computer generated sound.

Eno's foremost use of technology in the studio, during recording process of his original ambient works, is the delay line technique, which has become archetypal to Eno. As Siepmann explains, the delay line in its first incarnation was 'a collection of several tape recorders looped together with a single sequential path' (2010, p. 174), and developed into 'an assemblage of tape recorders, filters, and tone generators arranged in a variety of orderings and pairings, each rendering slight variations in tempo, texture, timbre, and harmonic variability' (2010, p. 179). Even more interesting are the questions that Siepmann poses about the technique and its use in improvisation at the start of the article, most interestingly 'how does improvisation help inform our positive account of ambient music and the way we experience it? (2010, p. 174). Siepmann concludes that the 'delay line process…remains a specialized example of the kind of creative choices that any composer or musician makes to generate an overarching sound world. A basic schema of input-mediation-output may be found in a near infinitude of musical situations' (2010, pp. 192-193). Indeed, Eno is well known for his pioneering of using the studio and technology as an instrument to 'play' as part of the composition process. Eno instructs the original sound generation, continuing its guidance through whatever chain of processes he has set up.

So, the delay line technique is an idiomatic use of technology in the generation of ambient music, contributing to lush, slowly evolving textures heard in the likes of 'Lost in the Humming Air' and 'A Stream with Bright Fish'. Budd interacts with these resulting textures real-time in his improvising on the piano, as well as overdubbing on them. If this is what was used in the 1980s, what of today and contemporary ambient artists? Digital signal processing enables virtual delay lines to be created, and

opens up an infinite number of audio tracks/sends/returns in contrast to 24 track tape recorders. Despite the potential for complexity, the tendency seems to be to retain simplicity. Keith Kenniff says of his 'Goldmund' releases 'It's mostly really simple…like a synth sound run through a couple of different effects. I kept it minimal and pretty simple, so it's a lot of reverb.' (Innerversitysound, 2015). Thirty-six years after Eno and Budd's work together, Ólafur Arnalds and Nils Frahm collaborated in improvisation and production in their 2016 album 'Trance Frendz' to create ambient and post-classical works using piano, synthesisers and live processing chains. For all the change and advances of audio technology, the techniques are strikingly similar – real-time manipulated analogue processing chains and minimalist-influenced musicality to name a couple. Budd recently collaborated with Robin Guthrie of the now split Cocteau Twins to create the 2011 album 'Bordeaux'. Tracks such as 'Radiant City' make use of electric guitar as the central improvising instrument rather than piano. Indeed, thus far, most music in question has been piano orientated. However, to be clear, there is no reason that other instruments could not replace this if they are capable of playing in such a way as to fulfil the purpose of ambient music. Keyboard or any polyphonic 'chordal' instruments with long sustain and decay tails are likely to be far better suited to the task as they allow a wealth more scope for the creation of smooth harmonic texture than a monophonic instrument.

4) Improvisation with Ambient Music: why the synergy works

Clearly, here both in the origins and latest evolutions of ambient music, we have a concrete example of how improvisation can work with technology to produce successful ambient music. Having established the processes, characteristics and philosophies of each discipline, a pattern emerges of similarity and compliment. The table 1 below demonstrates this:
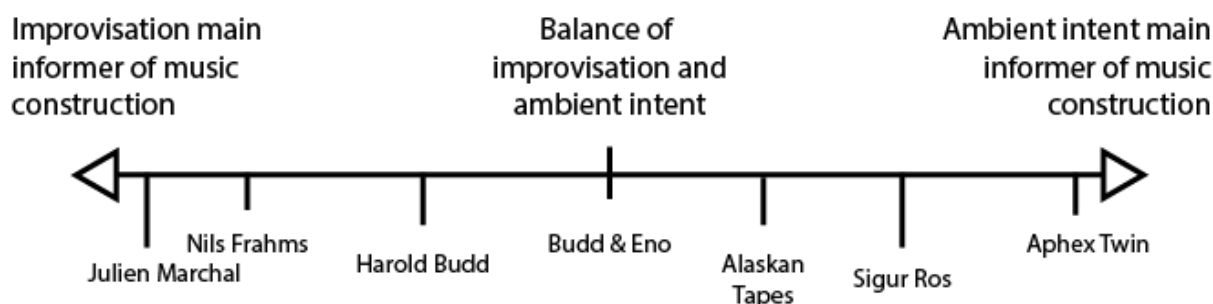
Ambient Music	Improvisation
Timbre-focussed, created by live manipulation of audio through dynamic processing chains. Unexpected artefacts and occurrences in this chain have an impact on the piece's direction.	Spontaneous performance, unexpected 'mistakes' can impact the direction of the improvisation. Instrumentalist manipulates their instrument to produce a desired sound.
Lacks conventional form	Lacks conventional form
Any melodic content is sparse and simplistic	Sparse, simple phrasing/playing is beneficial as it allows time for the improviser to think and make choices from their 'reservoir' in between phrases.
Heavy use of repetition of ideas with development and slight variation	Improvisations are built from event-clusters, idea and development, repetition and variation over the improvisations temporal space
Allows instrumentalist room to interact with reactive audio signal chain	Can be solo or interactive with other musicians or media
Designed with calm and space to think in	Main origin of musical intent lies in the

mind	improviser expressing emotion or feeling
Designed to frame an environment	Can be influenced by sensory response to environment

This exhibits how improvisation and ambient music share common characteristics. If the source of ambient material is from an improvisation, as is the case for many of Budd's tracks, then the result is sure to be very human, thereby emotive music. This is particularly beneficial to ambient music as one of its purposes is to induce human-felt calm and space on a subconscious level. Giving the improviser the task of creating ambient music provides them with a framework that otherwise would just not be there for them – free improvisation proposes to have none. Yet, the ambient framework is gentle enough to allow room for much freedom of expression from the improviser without being so rigid as to make the improviser feel restrained in their performance.

The collaborations of Eno and Budd generally sit on the middle ground of this union of improvisation and ambient music, each complementing the other in balanced proportion. But when bringing together two elements, there is always scope for having more of one and less of the other. Listening to other artists' work, I can see how this might be implemented in a whole host of pieces. Figure B shows the sort of scale that related music might appear on.

Figure B:

If we were to take piano improvisation as the focal element with influences of the ambient purpose and framework taking a lesser role, the records of Nils Frahm are quite probably the best examples of this to date. Frahm has a very similar piano style to Budd in his own work – his piece 'Circling' and Budd/Eno's 'Their Memories' have striking similarity. In fact, many of Frahm's improvisations could quite easily fall into the ambient category, due to their fulfilment of the definition. This is evident in pieces such as 'Merry', 'Do' and many more. In some pieces Frahm does use generative tones and textures, but in just as many cases it is pure solo, improvised piano. Yet, his style of playing in many of these pieces ('Vice Versa' for example) is such that even without use of textures created by additional technology and processes, he manages to create ambient piano music, albeit perhaps less sonorous and more 'pretty' (purposely evocative) than Budd in places. His focus on use of technology is also more on the position of microphones – the capturing of the source in such a way that texture is created without dynamic post-processing, due to an over-emphasising of the piano mechanics, and even his own breath. His 'Felt' album is an excellent demonstration of this. Not limited to Frahm, other pianist-improvisers who have achieved similar success in creating ambient music include LUCHS (whose track 'Chasing Cloud Nine' could almost be mistaken for a Budd-Eno

piece – it certainly occupies the same middle-ground on the spectrum scale), Patrick O'Hearn, Ólafur Arnalds, Goldmund, and interestingly, Harold Budd's solo works. It seems the host of music created by these artists demonstrates one can create intentionally ambient music without having to even use delay line or similar techniques at all.

Perhaps at the extremity of the improvisation end of the spectrum we move out of the ambient framework altogether – with music from the likes of Derek Bailey and The Necks. Interestingly, The Necks' hour-long improvisations (such as those found on 'Unfold' (2017)) have much in common with post-classical works – they build on repeated musical idea, and manage to generate drama – like post-classical artists, their music has drawn the attention of directors for film placement. Also at this end of the spectrum one could find some of the great Jazz improvisers – Thelonious Monk and Miles Davis to name a couple. Traditional jazz is recognised as a genre (encompassing many sub-genres) in its own right, far from the conventions and musicality of the ambient framework. Yet, upon further examination, it seems to me that jazz could actually be classified as ambient music. Particularly pre-1960s, one of the main uses of jazz is to provide a musical backdrop for social environments – cocktail lounges, bars, restaurants. It provides an 'atmosphere,' whilst not being overly intrusive, and it is not so demanding as to require constant attention from the listener. Echoes of the ambient purpose are very evident.

But what of the other end of the spectrum? The music that falls here is ambient music that may well be improvised, but not obviously so. A lot of ambient-influenced pop also fits here. It is worth noting that even if it is not improvised, if it categorises as ambient music it is worth pondering how such a sound *could* be improvised in this project. Aphex Twin's 'I' or '#20' are examples of this. In such pieces, the improviser would take on Eno's role, manipulating the processing chain live, improvising in an interactive way (this may include generating source sounds with a keyboard synthesiser). But, a lot of such ambient music lacks obvious melodic content that appears when an instrumentalist improviser is part of the process.

5) <u>Commentary on Compositions</u>

With the contextual, theoretical and philosophical foundations of ambient and improvisation laid, this section demonstrates the insight into how improvisation can create ambient music that recording this portfolio of compositions has added to the research. From a holistic perspective, this portfolio contains plenty of variety due to the different focus of exploration in each track. Some are very much improvisation focussed, whereas others are more ambient focussed and have non-improvised elements (such as post-production effects and processing), taking the concept of the spectrum I discussed earlier in the analysis. It is very much a portfolio of experiments in ideas of improvisation and ambience, each with different styles and influences, from pop to minimalism.

There are fewer ambient focussed pieces, but they are: 'Cloud Surfing,' 'True,' 'Moment 1,' 'Ponder' and 'The Long Rhode.' The main difference in the creation of these pieces was my intention to specifically create ambient through my improvising. So, I was either anticipating post-processing whilst playing the piano, or using electronic sounds as a core instrument instead of the piano. However, 'Moment 1' and 'Ponder' both started out as pure improvisations without this agenda, but I found post-processing on both created good ambient pieces.

The slow, measured pace of 'Moment 1' allowed a subtle processing chain of delay, reverb and filters to shine through and draw out the sustaining frequencies of the piano, which proved effective in adding to the space and depth of the sound, allowing the listener a more immersive experience. Whilst recording this I also had a mic' to my mouth to record my breath. This was combined with close-mic'ing of the piano and juxtaposed to the spacious sustain to create high frequency mechanical and breath noise which produces intimacy and some erratic 'percussive' variety to an otherwise very repetitive, droning improvisation.

'Ponder' was originally a repetitive, upbeat piano improvisation not too dissimilar to Frahm's 'Keep'. However, during post-processing I experimented with some pitch shifting and time warping with layering resulting in what is there. The time stretch created the tremolo-like effect which somewhat disguises the piano timbre and creates a new texture altogether. Heavy use of pulse and repetition render it rather minimalist in style. Pursuing a thematic line of enquiry, I decided to add a location recording of somebody taking a shower. The effect intends to be almost a surprise for the listener should they notice, as it puts them in a personal environment that also portrays something very mundane. My intention is to highlight how people can do most of their silent thinking in such spaces, with the minimalist piano texture representative of constant thought.

'Cloud Surfing' is the outing into using computers to improvise. I chose to use 'The Mangle' software granular synthesiser (created by Tom Maisey) to do this, anticipating that the strength of granular synthesis for creating evolving textures would enable ambient creation. The Mangle has 10 waveform slots and enables different control for each via MIDI or directly, with individual control for parameters such as grain ADSR, filters, grain amplitude, grain position, macros, pitch shifting, grain frequency and many more. I imported an early mix of 'Phipps Chordal' to each of the 10 slots, set some parameters differently across each (using a combination of intuition and pure chance), then began to play and recorded the improvisation from there – 'Cloud Surfing' was born. Improvising on this soft synth added an element of uncertainty to my choices and actions – I was not always sure what the result of a parameter change would do. This meant I sometimes adapted to 'mistakes' or create accidental artefacts. Yet, the fact I could let it continue sound generation indefinitely if I paused was a benefit over an instrument, as I could rest and take longer over the thinking process.

'True' and 'The Long Rhode' continued the computer based theme somewhat. In both I created a rhythmic groove with granulation-born base polyphonic texture over which I could overdub an improvisation. In 'True,' I used vocals to do this, improvising the melody and lyrics from words I had in a personal lyrics ideas book already – originally written from examining my own feelings about personal experience. I then added some harmony to the vocal melody with an improvised take using Antares' Harmony Engine EVO. Adding intelligible vocals brings a definite pop edge to the ambient sound.

'Horizon,' 'Settle (The Cavern),' 'Grace,' 'Moment 2,' 'Phipps Chordal' and 'Lyme' were all purely improvised piano recordings taken in several studio recordings. Despite this there is some variation in style, largely due to shifts in prioritisation of influencing factors of my human musical intent. 'Grace,' 'Phipps Chordal,' 'Lyme' and 'Moment 2' are each an expression of a personal memory and associated emotions or meditation on a particular feeling. Lyme has some added delay line post-processing. In 'Horizon,' I was consciously making effort to use mechanical sounds of the piano as part of my playing. Other than that, there was no purposefully explored angle, and the outcome of

that seems to be a piece that sits somewhere between ambient and a drama-tinged post-classical. In 'Settle (The Cavern)' I tried to allow my muscle memory free rein my not looking at the keyboard in terms of notes, but instead finger structure based on a diatonic tonality, starting in A minor and ending in C major. This seemed to remove and regularity of harmony or melody, other than a gradual descent in pitch.

'Conversational (For Ben)' was an experiment in improvising on a) a different instrument, b) in a different environment and c), by overdubbing a secondary improvisation. I recorded in a small valley within the very quiet Macclesfield Forest. This natural amphitheatre created good ambience and reverb aesthetics. I found my human musical intent being strongly influenced by the vivid environment around me – the colours, plants and birdsong, and also reacting to the sensations it evoked. As the phrasing ended up sparse, on listening back I realised that overdubbing a piano improvisation would make an interesting question-and-answer type effect, rather like birdsong which seemed fitting to the environment. When overdubbing, I found not knowing the clarinet part a challenge as I didn't know if the piano parts would fit with the upcoming melodies/notes. The recording itself is imperfect – there is a subtle jacket rustle from the sound engineer and mobile phone interference. I decided to leave this in as really this could be considered part of the improvisation.

For 'Hidden from View,' I had a guest vocalist improvise some phrases from a 'word cloud' I had given her to sing from. She also improvised the melody. I then improvised an overdub using a harmoniser, much like in 'True,' to add some polyphony. The harmoniser manipulates the vocal sound in such a way that they are more electronic in timbre, lacking in harsher high frequencies, and reducing the clarity of the diction slightly, which aids moving the overall sound into the ambient realm by reducing the need for the listener's concentration on the lyrics – the vocals blur the line of speech and texture. Much like in 'Conversational (for Ben)', the lack of anticipatory knowledge was a challenge to not creating any harsh dissonances by 'mistake'. I improvised on the piano with the same vocalist simultaneously in 'Interlude for Humming and Hygge.' We both responded to each other's dynamic, pitch/register and harmonic changes without any verbal or physical communication, only aural. I chose to impose this recording on a recording of a storm breaking, as for me, the improvisation invoked a sense of starting something new, made fresh. I felt the rain further assisted this picture.

6) **Conclusion**

In the course of performing and creating this album or portfolio, I have found that improvisation is a highly effective tool in the creation and recording of ambient music. Improvisation is a catalyst to the generation of ambient music in the following ways. Firstly, the lack of regular structure or conventional form in improvisation aligns with the lack of form found in ambient music. This helps the resulting improvisation performance add to the sense of non-resolution and possible infinite generation which is so important in ambient music. Secondly, the steady spacing of melodic content combined with the common usage of slowly evolving drones and textures to underpin melodic content in ambient music allows plenty of time for the improvisor to consider their choices when drawing from their musical reservoir to decide how their next idea sits in the temporal space of the improvisation. This aids those who are perhaps less proficient or practiced in the art of improvisation, as this generous decision making time is quite forgiving. Thirdly, the idiomatic use of

technology in ambient music, such as the delay line process, assists the improvisor in minimizing sub-conscious 'pre-planning' or musical limitations that their unique improvisor language will inevitably bring to the improvisation. This is due to the unpredictability and 'chance' introduced when the improvisation is being either fed through a processing chain live, of the improvisor themselves is using technology to improvise – 'mistakes' and unintended results force unexpected changes in direction of the improvisation, perhaps allowing truer spontaneity. Finally, the purpose of ambient music – to frame an environment, induce calm and a space to think – benefits from the heavy influence of the improvisor's use of memories, emotion and environment as stimuli in their use of unique musical language. If the improvisor draws on personal thought and emotion as their main stimuli, the resulting improvisation is usually 'thoughtful' in its musicality, through use of tonal, harmonic and melodic devices. I have found the central ingredients in the creation of this improvised ambient music to be use of technology, instrumentation, the intention and purpose of ambient music itself, my own improviser language and experiential stimuli. How much or little of each ingredient is focussed on dictates where each resulting piece sits in a triangle of ambient, post-classical and pop. For the contemporary ambient artist, improvisation is a highly effective, catalytic tool in the creation of ambient music which should be seriously considered as the underpinning method of content generation in ambient projects.

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