Innovation and Tradition in Metal Music Production

Introduction

Contemporary music technology affords limitless potential and the internet has demystified the tools and techniques that underpin commercial record making. Technological development has changed the way record producers *need* to work with Metal music, often employing a far more fragmented approach. This fragmentation of production is informed by technology, as technology 'permeates the recording process in unique ways, influencing both the recording itself and the performance styles [of Metal music]' (Thomas & King 2019: 499) and extreme acoustic phenomena intersect with the commercial tensions of producing recordings that sound increasingly *extreme*. Much of the existing scholarship that explores the paradoxical problems of producing the 'dense concentration of musical sound -usually referred to as heaviness' (Mynett 2017: 1) does so by providing in-depth technical analysis of the processes and techniques employed by studio engineers, and how record producers traverse the construction of heaviness in innovative ways (Herbst 2018; Mynett 2017). Whilst these approaches afford an acute understanding of managing sonically dense productions, the sonic traditions of the genre and their relationship with developing technologies can be overlooked. Perhaps more importantly, the development of quantifiable production methodologies further promotes a fragmented approach to making records that is often assumed to be innovative.

This article explores technology's influence on producing Metal records through the lived experiences of seven renowned Metal music producers, and it is argued that what can be perceived as *traditional* production processes are production processes that favour capturing performances, embracing the potential of technology. In contrast, the construction of recorded performances through anticipated uses of technology often embodies *innovative* production methodologies. There are tensions caused by the anticipated use of technology and the participants highlight that commercial and artistic pressures have informed prescriptive and homogenous production methodologies under the guise of innovation. Record producers are faced with an ethical dilemma: how should technology be used and how will its use impact the reception of a particular recording? This study suggests that two opposing forces, the anticipated use of technology and the potential use of technology within music production, are the primary causes of this dilemma, advocating an approach more concerned with performance enhancement than celebrating performance capture. Mumford's 'post-historic man' (Mumford 2000, p.5) exemplifies the balance between external progression and internal regression and draws parallels with the tensions between performance capture and enhancement. Artists find themselves left behind by technological advancement. The analogy of man upon a stage is drawn, having been centre stage in existence, post-historic man now finds himself 'with the props and backdrops and lighting fixtures, indistinguishable, so to speak, from the scenery' (Mumford 2000, p.5). 'Post-historic' man, the contemporary musician, now finds himself indistinguishable from pieces of music technology such as the drum machine, and the performance element of recording music has moved into the background of the recording process as technology takes centre stage.

It is not the intention of this work to develop a production methodology as seminal methodologies exist within the field (Herbst 2017, 2018; Mynett 2017; Reyes

2008; Turner 2009; and Williams 2015).[1] The main aim of this article are to develop a deeper understanding of technological influence and the experience of using technology as part of a creative process, as well as exploring the tensions highlighted above. Importantly, by not seeking to further develop production methodologies, this article intends to offer a phenomenological exploration of how technology informs music production practice(s) within Metal music.

The Fragmentation of Record Production

A number of renowned authors have established the importance of the recorded artefact within contemporary musicology, demystifying the art and science of recording (Bayley 2010; Bennett 2018; Burgess 2013; Chanan 1995; Frith and Zagorski-Thomas 2012; Théberge 1997; and Zak 2001). The recording studio has also been embraced by popular culture via the internet, documentaries, behind-the-scenes content and exclusive editions of releases. It can be thought of as architecture, yet it can be contained within a computer screen or handheld device as it becomes ever more digital, mobile, and flexible (Slater and Martin 2012). The socio-cultural understanding of the studio as both technology and place has undoubtedly influenced the ways in which artists approach its own meaning, and indeed its use. Renowned record producer George Massenburg defined 'great recordings' as 'great tunes, great performances, and/or great innovations' (Massey 2009: ix). The way a recording is made and presented is as much a part of the musicology of contemporary musical activity as more traditional song writing and performance idioms that have developed over time. William Moylan in *Recording Analysis* writes:

> The sound qualities of the recording, then, contribute fundamentally to the artistry and sonic content of the record. The recording's sound adds qualities not found in nature, and reconfigures those qualities the listener already knows […] we should believe that what is sonically present on a record is what was intended, even if seemingly arbitrary or flawed. (2020 : 11)

The art of recording, whilst wholly technological, is a process by which musical meaning is generated. This meaning is generated in equal parts by the musical and sonic content of a recording, and is influenced by the technological interventions of the recording studio. More recently the recording process has been democratised and the rapidly changing landscape of record production can be attributed to technological developments. This requires musicologists to question the impact of the rapidly evolving environment and technology on musical activity. Paul Théberge writes:

> Recent [technological] innovations […] pose two kinds of problems for musicians: on the one hand, they alter the structure of musical practise and concepts of what music is and can be; and, on the other, they place musicians and musical practice in a new relationship with consumer practises and with the consumer society as a whole. (1997: 3)

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[1] When the terms production, producer or producing are used in this article, this refers explicitly to the recording, mixing, engineering or creation of music within the recording studio or digital audio workstation (DAW).

Technology forces change and Théberge presents an underlying determinism as musical activity is combined with an industrial process. Reyes addresses that recording studios must act both commercially and artistically and that record producers exist within a service industry:

> [...] in order for the professional recording industry to stay afloat, studios have to be in demand. But demand may be waning as the digital age puts more power in the hands of everyday people. The less rare the technology and the more widespread the knowledge to use it, the greater the threat to professional studios and their standards of practise. (2008:16)

As the recording industry has embraced technological development (and democratisation by proxy), the act of generating musical meaning has become a product of challenging convention, or at least the producer's ability to understand that the reality created through acutely constructed productions is dramatically different from capturing musical performances in the live domain. Chanan's *Repeated Takes* discusses the process of multi-track recording, and overdubbing,[2] and how these technological developments altered practice:

> Before multi-tracking, the objective was to do a series of takes until you had enough to be able to assemble a definitive version with editing, by splicing sections of each together. When multiple tracks are recorded on the same tape, it is no longer safe to splice it, so punching-in takes over. By the same token, however, the essential activity of the musician, the performance of music becomes more and more fragmented. (1995: 144)

Chanan suggests technology changes the perception of the definitive version of a musical work; as well as altering the generation of musical meaning. Fragmented production methodologies exist as a direct result of technologies that afford more acute control of musical performances in the studio. Katz (2010: 3) further explores the resultant effect technology has had on the way music is produced, in which 'recording's influence on human activity [...] impute[s] causal powers to technology'. This makes any performance within the recording studio setting problematic, alluding to the decentralisation of recorded musical performances and the commodification and repeatability of the recorded artefact (2010: 25). Fragmented production methodologies inform repetition beyond the practice of recording music and out into consumption. Likewise, Knowles and Hewitt advocate the view that recordings are often fetishized, holding the live performance to ransom with authenticity:

> This tendency towards the increasing technologisation of live performance can be seen to be narrowing the difference in performance and production practices between the studio and the live performance. (2012: 6)

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[2] Overdubbing is the process of recording each instrumental part of a piece of music separately, on top of one another. For example, a modern digital recording system affords the ability to record a drum kit in isolation, only for the guitar, bass and vocal parts to be recorded at a different time, in a different location or using different technology. This enables performances to be created from multiple individual performances, no longer meaning recording music is limited to capturing whole performances by the whole ensemble or band.

This view support Chanan's fragmentation and highlights the necessity for live performances of recorded music to be made intelligible for the audience. This requires new technologically influenced 'skills in performance' (2012: 6). Live performances of music could be seen to no longer exist as technology assumes its position onstage. As in Knowles and Hewitt's 'live' setting (2012: 11), the recording studio (in both the traditional and more contemporary form) has also become a space to construct performances through the increasing intervention of technology. For Metal music, using technology to multi-track in the studio has *become* the performance, with very few artists tracking 'live'.

Metal Production & Technology
Metal embodies constant musical and sonic innovation, and fundamental genre specific production aesthetics that have become more acute: guitar distortion, extreme equalisation and dynamics processing, and the quantisation of instrumental performances. These are afforded by technological development and the increased intervention of technology in music production. Metal's extreme performance paradigms, such as tempi and distortion support multitracking *as* performance, presenting a particularly deterministic technological relationship. Mynett's *Metal Music Manual* (2017) exemplifies this underlying determinism. One of the first key practices that Mynett details is the use of 'click tracks' and 'tempo mapping' (28 – 33). With Metal music often implementing virtuosic performances, the use of click tracks to quantise performances to a strict 'grid' affords efficient editing and easily repeated, precise production aesthetics. Deterministic production decisions are clearly supported by their repeated use within Metal productions. Replacement and sample reinforcement of drums; hyperrealism of performance and timbre; the extreme quantisation of rhythmic elements; and dynamics processing are among the many examples of technological processes commonplace in Metal production.

It is this close relationship with technologically informed production aesthetics that causes tension for the producers of the genre. *Production Perspectives of Heavy Metal Producers* (Thomas & King, 2019) outlined that using a phenomenological approach offers an alternative and complimentary exploration of Metal production and technology. Thomas & King (2019) highlighted that Metal music production has become an increasingly fragmented process that is now less concerned with capturing musical performances in favour of enhancing performances to adhere to idealistic representations. These works showed that producers at the forefront of Metal in the UK recognise a series of accepted sonic ideals that manifest as technologically informed, genre specific, production aesthetics that have developed over time:

> This resultant effect of striving for specific production aesthetics has led to the existence of a recorded [Metal] production methodology [...] This methodology can only be put into practice if those using it adhere to accepted ideals of [Metal] production. The producers [...] suggested that production aesthetics, and, more importantly, an accepted ideal [Metal] production, highlights how technology has influenced the production of [Metal] music. It is also apparent that music technology has developed alongside changing ideals. (2019: 515)

It was also highlighted that:

Technology affords extreme processing, forcing producers to work in particular ways, which can often cause artistic and technical tensions. The intrinsic link between [Metal music] and technology enables producers to make reality-warping technical decisions, altering performances in space and time, but also implanting unreal-ness at the heart of [Metal] production. (2019: 516)

This reliance on extreme technological processing makes the production process non-linear, and this non-linearity is increasingly evident in the processes that digital recording technology affords record producers. The production process is now unrecognisable from analogue tape recording of the mid-twentieth century. The development of this technology, and how this has influenced the production of Metal music is evident in the super-ordinate themes that Thomas & King (2019) highlight as problematic: the anticipated and potential uses of technology in the recording studio. These tensions are explored below, with direct attention given to the relationship these tensions have with concepts of tradition and innovation.

Methodology
This research makes use of *Interpretative Phenomenological Analysis* (IPA) and semi-structured, in-depth interviews. IPA concerns itself with interpretations of lived experience and analysis of these interpretations, whilst providing a 'focus on personal meaning and sense-making in a particular context, for people who share a particular experience' (Smith, Flowers & Larkin 2009: 45). This methodology, whilst relatively young, has found a place amongst record production scholarship (Auvinen 2016, King, 2016, Martin 2014). Adam Martin's *The Role and Working Practise of Music Producers: An Interpretative Phenomenological Analysis* (2014) is a contemporary example of phenomenological research that explores the lived experiences of music producers and how the role has changed over time, suggesting that the contemporary role of music producer is best described with a tripartite model 'encompassing social, musical and technical responsibilities' (2014: 200). Furthermore, IPA '[situates] participants in their particular contexts exploring their personal perspectives' (Smith, Flowers & Larkin 2009:32), making IPA an ideal choice when exploring the shared experience of the use of technology to produce Metal records.

Seven key record producers and engineers make up the active population of the sample and can be considered critical cases, providing rich data. A method of purposive sampling has been used by way of a single stage sampling procedure (Creswell 2013: 158). Purposive sampling allows for participants to be selected under a number of critical criteria (Flick 2009: 122) including the selection of extreme cases, typical cases, maximal variants, intensity variants or critical cases. Smith et al. suggest 'samples are selected purposively (rather than through probability methods) because they can offer a research project insight into a particular experience' (2009: 48).

Critical cases are selections made based on expert opinion and would be recognised by a significant production credits or contribution to recorded HM music. Each participant was selected for this research according to the releases they are credited for engineering, mixing, or producing. All are classed as producer/engineer as they have significant credits in both roles and still actively engineer recordings. The

interviews were conducted in 2014, at each of the participants private studios (unless otherwise stated) and the participants include:

1. **Romesh Dodangoda** is a Grammy nominated producer based in Cardiff, South Wales. He owns Longwave Studios and has worked on numerous releases by artists such as: *Bring Me the Horizon; Bullet for My Valentine; Earthtone9; Monuments; Motörhead; and Sylosis.*

2. **Mike Exeter** is a Grammy award-winning engineer, trained at Full Sail University in Orange County, Florida and is currently working freelance, based in the West Midlands, England. His production credits include: *Black Sabbath; Cradle of Filth; Heaven & Hell; Iommi; and Judas Priest.*

3. **Russ Russell** specialises in the production of Extreme HM music. He has also been a regular front-of-house engineer for HM bands at large scale music festivals including Download; Reading and Leeds; and the Ozzfest. His credits include: *Dimmu Borgir; Evile; Napalm Death; The Rotted; and Sikth.*

4. **Tom Allom** was engineer for the first three releases by Black Sabbath, alongside producer Rodger Bain and was one of few people to witness the birth of the recorded Metal Music. His career spans forty years and his production credits include: *Black Sabbath; Def Leppard; Judas Priest; and Krokus.* This interview was conducted at Tom's private residence in London.

5. **Dave Chang** is a record producer based in Reading, England and has been working in numerous studios for over twenty years, including Abbey Road. Credits include: *Earthtone9; Electric Wizard; Forever Never; Gorerotted; Orange Goblin; and Stamping Ground.* This interview was conducted remotely.

6. **Oz Craggs** is the owner of Hidden Track Studios in Folkestone, England. He is also a part-time touring musician in grunge-metal band Feed The Rhino. Although only working as an engineer and producer for just over a decade, Oz has worked with hundreds of artists including: *Dead Harts; Feed The Rhino; and Mallory Knox.*

7. **Martyn 'Ginge' Ford** is the original drummer for Welsh Metal/Reggae/Dub band Skindred. He has considerable experience in performing a unique brand of Metal music across the globe. As a producer and engineer he has worked with: *Bullet for My Valentine; Trivium; and Slipknot.*

Analysis

The interview data collected between May and November 2014 in analysed below. The interviews were coded following the IPA method of Smith et al. (2009), applying their multiple reading method to allow the interview data to reveal subordinate and superordinate themes. IPA relies on the use of extended quotes to allow the experiences of the participants to be explored unmediated. The following analysis explores the lived experiences of the participants, whilst providing detailed exploration of the problematic nature of the use of technology. The prominence of technological influence is highlighted by Tom Allom, suggesting that technological development is at the heart of the changing landscape of record production:

Well, technology is unstoppable. That's the reality. (Tom Allom, 2014)

The interviews revealed that in striving for specific sonic aesthetics, production becomes a balancing act between the potential and anticipated uses of technology.

The Potential Use of Technology

The potential use of technology conceptualises the record producer's agency over technology within a production, fulfilling a learned and developed recorded aesthetic whilst allowing technology to transcend its intended use. Producers have embraced technological affordances whilst maintaining a level of self-enforced distance from it. This also suggests that recorded Metal music has both embraced and been causal in the development of music technology, but typifies a production philosophy that capturing a performance was still critical, whether producers would edit or replace elements of it at the mix stage, or not. There are also issues surrounding technological transparency, efficiency and perfection. These issues are explored below to offer contextualisation of the potential and innovative uses of technology.

Technological Transparency

The participants believed that the production process and the technology used should be transparent. It was clear that the producers aimed to make the studio transparent, unobtrusive and creative. This could mean that the studio environment does not impose any pressure on the artists and that the technology used does not hinder any moments of creativity, whilst being reliable:

> I need [technology] to be transparent. I get really frustrated when it doesn't work […] if I'm having to think about the technology I can't think about the music. (Exeter 2014)

> Trying to let the band just be creative and do what they do and make the most of what's in their head as well as in their fingers. (Chang 2014)

Transparency is about having control over the technology so that creative moments can be captured. This can also be expressed in a more personal context; technology must be able to be used for whatever the producer needs, to afford flexibility, contrasting those who focus on the artist. Technological transparency is the understanding of what the technology can do to improve workflow, not just reliability:

> That's what's great about technology. [I] can use it to get whatever [I] need out of it. It's pretty flexible. (Ford 2014)

> I have learnt that there is an end point that I need to get to. I'm trying to get there as quick as possible. So I will use technology, abuse technology to get to that point. I'm not scared of it. (Craggs 2014)

Transparency has two clear roles: facilitate creativity and performance whilst remaining unobtrusive; and to act as the ontological link between understanding what constitutes genre specific production aesthetics, and the way in which they are achieved. This suggests contemporary production requires technical expertise to

facilitate the process. This is not only to achieve Metal sonics but also realise producers' visions.

Efficiency and Perfection
Further to transparency there is a sense that the participants want technology to make productions more efficient. This can be seen as a product of transparency, technology facilitating and encouraging productivity, whilst being easy to use:

> [Technology] really enabled us to do what we were already doing a lot better and quicker. (Chang 2014)

> Workflow, that's what's important about the technology. I honestly don't give a rat's arse about converters; I just want to get the artist to not be frustrated. (Exeter 2014)

The examples above show different perspectives of efficiency as a product of technological transparency. Technological development affords efficient processing, allowing the freedom to consider more artistic elements, and an investment of time with a certain piece of technology can afford intuitive workflows. The democratisation of technology has reduced the time spent on the more tedious preparatory work, allowing recording budgets to spent more wisely, reducing tracking time and shifting focus to the mix stage, something that contemporary Metal production increasingly demands. Martin Ford discussed artists preparing their own tempo maps and DAW sessions before entering the studio, because they have access to studio technology at home, allowing him to focus on capturing great takes:

> What [editing technology] does is speed up the process later on. […] Playlists are probably more important than anything. Taking as many takes as you possibly can. (Ford 2014)

> [Technology provides] the resource of having this endless; let's throw this shit at a hard drive. […] it's not always easy but when you are in the thick of it its good because you're focused on it and the technology really helps […]. (Exeter 2014)

Editing audio allows each element of a production to exude precision, whilst also reassuring the producer that there is consistency. However, there is a downside:

> [Technology] allows you to open up a mix and move the hi-hat half a dB. […] it's like things are not really finished. (Dodangoda 2014)

Technology's affordances have prompted producers to be acutely aware of minutiae within production. The potential uses of technology allows producers to capitalise on the consistency required, sometimes making controversial decisions:

> 99% of the time I will just have the one guitar player do all the rhythm, just from the tightness aspect. […] Then you've got nice tight rhythms, both sides. Guitar players often end up doing the basses as well. (Ford 2014)

This highlights that using efficient recording methods is integral to Metal productions. Working practices are directly influenced by the way in which producers are expected to work towards recorded aesthetics. The more precise the performances, the more precise the tracking and editing have to be; there is no room for imperfections in Metal (Thomas & King, 2019: 516). Perfection has become an expectation of the artist and listener and is now intrinsically linked to the nature of digital audio reproduction. The participants considered what precision (or perfection) actually means in the context of the production process and how it becomes crucial. Herein lies the dichotomy between technical expertise and artistry:

> [...] people's threshold of precision, not only in playing but in sound [...] If you give [listeners] a wooly old analogue, out of time [modern Metal] recording (again I would stress with the right bands it's fine) people would go what the fuck is that? (Russell 2014)

> I don't set out to make perfect records [...] perfect records never excite me. [...] it's more of an impressive technical exercise rather than a good album. (Russell 2014)

> [...] people are generally striving for more perfect sounding records. I don't necessarily agree with that. I'm a big fan of mistakes, it makes a record sound human. (Dodangoda 2014)

Russell and Dodangoda suggest that a perfect record is the result of normalisation (Taylor, 2010), it is no longer produced with artistic sensibilities, it is produced in a formulaic way influenced by technology. The participants are acutely aware of the deterministic influence here, suggesting that the producer has agency when making the decision to use certain technology and what it affords. However, using technology can also be central to achieving an aesthetic rather than adhering to a definitive way of producing a Metal recording:

> If I can use these tools like drum quantising or drum samples [...] to give that more energetic sound, then I will use it. [...] With heavy music there is [...] the term 'overproduced'. You pick you're moral and ethical standpoint [...] where you feel comfortable [...] You have to know what you're starting with and what you're going to end with. I think that's probably the key in all of this stuff, having a vision for the end and knowing what that vision is [...] however you get there really is irrelevant to me with whatever you are using or however you use it. (Craggs 2014)

> I think that's what defines a good producer; you've got to be open-minded. But you do have to control the process. (Exeter 2014).

This realisation supports productions that employ accepted standards, and that by using technology responsibly it is possible to creatively produce Metal music. In the same way that Craggs questions the ethics of technology, Dodangoda states when a production method is clearly working then the balance between performance and

perfection permeates the technological processing, the technology becomes transparent.

> I don't want everything to sound too perfect but you want to make the band sound good. Its finding that nice balance where you can keep a sense of natural human element in there and not make it sound like a computer's just playing it back. (Dodangoda 2014)

All the benefits and restrictions of technological affordances can often be reduced down to whether or not they fit the participant's approach to recording. This can include: the physical operation of technology and how it influences the flow of a recording session; the aspirations for the recording and whether certain technology *needs* to be employed; and how technology impacts upon the musical performances. For Russell, technological affordances act to determine how technology is used throughout the process almost retrospectively:

> It's not often a conscious thought process but I guess when I'm micing up a [drum] kit in the back of my head I know what the technology is going to do to it later, and that is influencing me and even the way I am micing it up I guess. (Russell 2014)

Because Russell understands the affordances of specific technology, in this case microphones, he knows how they will respond to certain sonic stimuli affording a pathway through the production. Furthermore, when working with clients who seemingly understand the potential of technology, and know the ways in which productions can be edited, other preconceived production ideals become as problematic:

> I'm getting more younger bands now come in and say […] we don't want things to be edited. You say, we will see. I'm not going to make that decision right now, we will see how you get on with the performances and the sounds you get […] that's the vibe and it sounds good then great. (Russell 2014)

> When I mic up a [drum] kit I will compress and EQ on the way in, before it touches the software, with outboards and I'm not scared to do that. […] It's using technology to get you to that end result quicker […] I think there is a new generation taught to not make decisions because they don't have to. (Craggs 2014)

This exemplifies the tension for producers who would like to work in direct opposition to the precision and perfection discussed above. However, for this approach to be successful the artist must be able to provide a strong performance. This also highlights the tensions caused between using technology to its full potential and technology removing the act of making decisions; it is understanding how to use this technology that makes the process more efficient, not just what the technology affords.

Decision making can also apply to specific pieces of physical technology, becoming familiar with their potential and embedding them into production workflow.

Having preferences for technology supports the idea of a production methodology for recorded Metal music, whilst also suggesting that technological development may not always determine how Metal records are produced. The participants know what technology they want to use, and why; it does not seem dictated by any particular outside influence:

> I've figured out what I like doing with certain instruments. I've finally found the preamps I love on guitars and even down to what drum heads I love. Over the years you find out what gets you the sound you want. (Dodangoda 2014)

This is the difference between professional and amateur record makers, highlighting the attention given to the source recording. There are of course financial influences to consider. The potential of affordable technology has given rise to an amateur recording interest. Affordable software allows Metal to be made at home, without any live elements. Technology seems, or so Dodangoda believes, to have influenced how people perceive making Metal music, as opposed to influencing how Metal sounds. Of course, these could be argued to be symbiotic:

> People who are into Metal tend to have their own [studio] at home and they use software packages […] I don't think [technology has] changed the way [HM] sounds but the way people make it maybe; technology has played a part. (Dodangoda 2014)

The potential use of technology causes a unique tension within music production. This tension can be described as a dichotomy due to the opposing relationship technology has with the artistic processes in record production; a division between the science and art. The dichotomy between artistry and use of technology causes the participants to question how and when they use technology. For most, the recording process is about achieving an ideal result. Some highlight this in a personal capacity whilst others suggest it is about working collaboratively. Technology's potential is clearly embraced, emphasising how Metal record production is becoming more methodical and fragmented. Producers expect technology to work in their favour whilst also remaining unobtrusive. The affordances that technology offers may have increased the pressure on producers to follow production methodologies, often causing the participants to question how, why, and when they use certain technology. In reality, technology often plays a smaller role than most would presume and that capturing musical performances is still paramount. It is this act of capturing performances that informs a sense of reality, and tradition in Metal music production.

The Anticipated use of Technology
Anticipated use of technology describes the influence recorded Metal music from outside parties. It implies agency being held in equal parts by the artist and by technology. Producers are informed by the artists they work with, the recording industry, the widespread dissemination of production via the internet or education, and how they may have used production technology in the past; often presupposing the use of technology in Metal record production. This tends to have negative

connotations and forms negative production traditions; limitation through anticipation. Mynett's work (2017) supports this view, recognising that record producers and engineers are often charged with *creating* a reality, rather than capturing a performance; in anticipation of particular technological processes. The artist's preconception of recorded Metal music is informed by the democratisation of recording technology and the availability of software offering ready-made Metal aesthetics. Influences from prolific producers or engineers are highlighted as well as the influence of specific pieces of technology. Striving to achieve ideal recorded aesthetics can manifest as expectations from artist and producer, from commercial or industrial parties, or as projected expectations by audiences. Expectation and anticipation differ in that anticipation pre-empts a result, whilst expectation suggests a conscious understanding that something will happen, not necessarily having a result in mind.[3]

Participants communicated that they felt pressures to achieve the sonic expectations artists have:

> If bands want to sound like something that's what we try and do. […] You want to please fans and do things that people will like. (Chang 2014)

> It becomes an ethical question, […] do I not give them what they want? […] I own a [Peavey] 6505 for that exact reason. People want X guitar sound, who am I to suggest that that's not what they want? (Craggs 2014)

Facilitating artist expectations whilst balancing artistic input demonstrates technological tension. These tensions are not limited to producers who are working on contemporary Metal music. Allom highlighted tension between artistry and service provision in the 1980s, with budgets that were significantly higher than that of today:

> When I listen to the stuff I did in the 80s, I wish to hell that we didn't use those drums sounds […] it sounds so dated now but everyone was doing it. You wanted to be […] contemporary. Successful records were sounding like that. (Allom 2014)

This must inform the production aesthetics that artists firstly anticipate, and secondly come to expect.[4] These expectations are linked to successful records (which seems to be related to sales in the above case) however, this success is not quantifiable in the context of this study. Importantly, production is now expected to happen in a certain way, defined by cost, which did not seem to be part of the equation for Allom. For example, the strict editing already discussed returns as the participants want to make records in which editing does not play a significant role; they *want* to capture

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[3] To briefly ground this separation within phenomenology, Leydesdorff's (2009) critique of social systems suggests that phenomenological 'meaning can be understood as holding current value as well as an anticipation of possible futures' (p.2). Here the positivity of value is linked to anticipation.

[4] Artists can anticipate how a recording will sound, this is positive. The act of expecting a certain outcome seems to have negative connotations; almost as if these outcomes are not achieved the recording has failed. If an artist anticipates being able to record something and have it sound a certain way, but this doesn't happen in reality, because it was only anticipated, not expected, it is not a negative result.

performance. Ford, before justifying why he would prefer to record this way, allowed budget to stop his train of thought:

> You are sort of expected to edit […]it costs a lot of money to not [edit]. [Mixing without making edits] tend not to get done […] It is machine like, but that's how modern Metal sort of is now […] Setting up a whole band and capturing it as it is. In Metal you don't do that. Its cost. […] [Technology] seems to have knocked that out. Especially in the Metal side of things. Everyone expects it. I do think [producers/engineers] fuel it a bit, especially if it's going to be a commercial record. You can't sound bad. (Ford 2014)

Ford clearly disagrees with the emphasis on expectations of precise editing and hyper-realistic performances, it seems he has come to accept that it is an ideal that cannot be disregarded for contemporary Metal productions. Interestingly Ford does recognise the fact that producers can fall into a trap, something Ford relates to success and self-preservation. The production process has been reduced to decisions based on expectations. The anticipation of technology, and its use, is clearly influencing the decisions being made by producers, but also their experiences. *Everyone expects it*.

Influence and Imitation

The influences that the participants drew upon revealed a trend in how certain producers are revered and certain technological processes provide the basis of contemporary Metal production. More acutely, producers that are linked to successful productions become ubiquitous with anticipation. Andy Sneap's productions hold influence over a community that sets out to imitate or replicate his work.[5] This imitation informs anticipation; ultimately artists and other producers want to replicate the positive aspects of other productions. Russell suggests that technology has made this easier whilst also presenting the problem of normalisation (Taylor 2010).

> Take Andy Sneap […] it drives him a bit crazy that there is a whole area of Metal production which is specifically set out to copy him and over the years a lot of technology made it much more easy […] I'm not saying they can make records that sound like his […] it will certainly be very easy to trigger up drums to sound like that. (Russell 2014)

The participants highlight a culture of replication within Metal production and song writing. This further exemplifies the way technology now influences production and change the sonic aesthetic:

> You get a lot of records that start to sound the same because there might be something that everyone has started using. (Dodangoda 2014)

> Metal's another genre where […] people do want to follow, as opposed to lead. Because of that there have become standard preset ideas of how things should

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[5] http://www.ultimateMetal.com/forum/andy-sneap-151/ [online] accessed 30/06/2015 - A whole forum dedicated to the production style of Andy Sneap. Users discuss and review each others mixes as well as deconstructing Andy Sneap mixes. Sneap himself often comments on posts and offers advice.

be done. For example, replacing a kick drum with a sample. It's more common than uncommon now in the Metal genre. [...] I do think that's a shame because people aren't really asking the question as to why you are using that technology. (Craggs 2014)

Craggs wants to make music that satisfies the expectations artists have. But, when exploring the resultant impact on workflow, it seems that his main concern is how his work will be perceived. Anticipation becomes problematic when artists influences the producer's workflow. Artists outwardly aim to sound like their favourite records leaving them with a skewed perception of what record production, and technology, can offer creatively:

I don't want someone to bring in an album and say 'this is what we want to sound like' and then make them sound like that. A: I think it's impossible, it's an exercise in futility [...] B: it's not bad to be influenced [...] I don't think you have to play completely into it. I think so many people are focused on the isolated sound of a single instrument that when you combine it you get a very pretty sounding recording that doesn't have any energy. (Craggs 2014)

The issue that artists are becoming weathered to technology begins to alter their conceptualisation of recorded performances. Triggering sampled drums often embodies this and is increasingly integral to Metal production (Mynett 2017: 103). Dodangoda stands out from the other participants by refusing to take the view that just because there is an expectation of how a Metal record should be produced this is how it should be done:

I was [producing] a band called Bleed from Within. The drummer was so surprised when he listened to his tracks, he was like 'you can hear my ghost notes on the snare', he was so used to someone just replacing the whole thing. The Metal records I have worked on I've always tried to not make it sound like a Metal record [...] I just wanted it to sound like a bunch of people playing in a room [...] I wanted it to not sound like what anyone else is doing with that genre. (Dodangoda 2014)

This sentiment 'no bass on the record', echoes Mynett's thoughts: 'regardless of its less-prominent role, and mix level, the importance of the bass guitar is frequently underestimated and misunderstood within [metal music]' (2016: 23). Importantly, artists now *expect* their performances to be enhanced whilst producers alone recognise the apprehension of capturing authentic performances and technological influence. This has an optimistic underpinning. With expectations are so high, musicians now work harder to fulfil these expectations, with technology companies responding in kind:

Musicians get better [...] They are playing along to these records that have been edited. [...] kids that sound just like the record. You look at it on the grid and it's quite frightening. It's only because they don't know it's been edited. They think that's what that drummer is playing. (Ford 2014)

The reason why you've got programs that trigger drums is because people were doing it and wanted to do it easier. The reason why you've got so many bands that use triggered drums now is because it's so easy to do. […] particularly in Metal, I think it's the worst for it, whether you are a good band or not. (Russell 2014)

People have embraced the technology, you don't have to go into a big studio to make a record […] The technology has enabled artists to get far better value for money, spend a bit longer doing an album, spend a bit more time in pre-production. (Exeter 2014)

We were using Atari's with Cubase […] to do the drum triggering. [Technology has] really enabled us to do what we were doing already a lot better and quicker. (Chang 2014)

Making Metal Easier
Technology has made producing Metal easier, whilst the music itself fuels technological development. Technology blurs the lines between professional output, from larger studios and working producers, and those who have access to the same recording technology at home. Access to technology has influenced how amateur producers conceptualise the production process from the very beginning. This highlights how technological innovation encourages the fragmented approach with the focus becoming how each instrument, or track, sounds individually and a lack of consideration for how they sound together. Ultimately this is changing the perceived sonic aesthetics of Metal and the way producers achieve these. Technology seems to create new (negative) traditions by promising innovation. Anticipation is created with the promise of an improved workflow and making the complexity of Metal production aesthetics easier to achieve. The participants suggest that this ease creates repetition and can mean missing the performed aspects of a recording:

I think you can get lost in the smallest detail that doesn't matter and you end up sacrificing the performance […] if you are looking for so much perfection that you make the singer sing a line 1000 times they are eventually not singing the song. (Dodangoda 2014)

The super-ordinate themes that were present in the interview data, the anticipated and potential use of technology, provide insight into the ways producers make sense of the changing landscape of music technology. The participants explored how artists, the recording industry, and other producers influence the use of technology in Metal production which tends to have negative connotations and seems to impact the creative nature of the process, whilst promising ease of use under the guise of innovation. The potential use of technology provides a contrasting construction of how technology influences recorded Metal music. The participants expressed that there is often a tension between how technology is used and artistry, often causing the participants to question how, why and when they use certain technology. Technology often plays a smaller role than most would presume and that capturing performances and musical aspiration is more important to the participants of this study. Ultimately,

the anticipated use of technology implies a prescriptive production methodology that could be caused by expectations, industry, or influence from other artists or producers. The potential use of technology highlights the tension between the use and abuse of technology, technological affordances and employing an approach that favours aspiration.

Conclusion - Tradition and Innovation

The relationship between the potential and anticipated use of technology suggests a dichotomy that could be defined as the relationship between tradition and innovation. The potential use of technology, or the producer as technological mediator, embraces tradition and performance; whilst the anticipated use of technology with the artist and technology as creative mediator, embraces innovation and constructed performance. The use of IPA revealed over 100 resultant themes each being key to the use of technology and the influence it had over the participants. The participants use technology every day and agreed that it partially defines their role but found it difficult to define how it shapes their approach. Through re-reading and interpretation it became far clearer that technology is acutely defining their actions but consciously held at arms-length. It is hoped that this research offers other some insight into the experiences of record producers experience technology and how to interpret their experiences.

The anticipation of heaviness (Thomas & King 2019: 502) has informed prescriptive and homogenous production methodologies that the participants could not deny becoming a part of their own production vocabulary. To create contemporary Metal producers consciously fall into line with other productions and use innovative tools and technology; reinforcing homogenous productions, no matter how resistant they may be. The pressures that producers feel when working with Metal music are primarily informed by an artist-constructed canon, as well as a democratised understanding of music technology. Artists are making recordings at home with the same tools as producers which is a relatively recent phenomenon. This encourages a sense of technological agency in the artists that traditionally would be the reason for employing a producer and/or engineer.

This balancing act creates further tension, with technology acting instrumentally throughout the production process. The reality is that contemporary productions cannot, and do not, always adhere to the philosophy of capturing great performances. Contemporary Metal production has become an increasingly fragmented process that is now less concerned with capturing musical performances. Instead, the genre favours enhancing performances to create recorded realities, that adhere to idealistic representations or successful recordings. What this also suggests is that the production of Metal music is underpinned by the desire to be innovative, not necessarily concerned with the artistry. This shift away from recording performances supports innovation as a manifestation of anticipations from artists. Performative inconsistencies can be reduced, and artists can produce recordings that deliver imaginative and challenging sonic hyper-realities. This affords homogenised production of dynamics and mechanically constructed performances, with an experience being created, rather than captured through fragmented recording sessions. This links with Eisenberg's plurality concepts (2005: 186) which present the problem that fragmentation of music production has caused music makers to lose sight of the how

to produce with a sense of tradition (or potential). Put simply, technology (as a tool) now affords so much that it is unclear what the tools are in some cases. More accurately it may be unclear how the tools should be used, and neutrality is removed; our experience of using the tools changes. This promotes innovative approaches, that assume that the artist (and technology) hold agency.

> [The robot] was the pipe dream of the master, the nightmare of the slave. Then it began to haunt the master (make your tools too sharp and they may turn on you) and secretly comfort the slave, who might soon have his own slave. (Eisenberg 2005: 189)

This dystopian image may seem bleak, yet it rings true for some of the outcomes of this research. Development of music technology to improve efficiency and sonic aesthetics, embodies sharpening (innovation), whilst those who make music are ultimately enslaved by the potentials of music technology. As technology has assumed the role the mediator of creative practice, the tools that have improved production have begun to make producing Metal music less exclusive and more affordable with professional producers of these records complying with expectations for fear of falling short.

Fragmentation, as a direct result of the development of recording technology, accepts the production methodologies of Mynett (2017), Reyes (2008) and Turner (2009). By conforming with accepted methodologies, producers have *had* to embrace certain technological processes. Russell suggested that producing Metal has become a 'technical exercise' (Russell 2014) and is no longer about capturing the essence of the artist in the room. Craggs acknowledges Metal records must sound of the 'ilk', they must compete with other hyper-real productions; both producers and artists feel the pressure that innovative use of technology creates. Subcultural anxieties extend this notion of authenticity in production, with different subgenres of Metal relying on specific production aesthetics (Reyes 2008). Tradition in Metal music production could quite easily be mistaken for nostalgia, but in the case of the participants of my research, tradition manifests as the realities captured by recordings. The development of technology has meant that producing Metal music has become increasingly fragmented but those producers who are able to, still embrace tradition in capturing musicians performing in space and time. Innovation and the creation of hyperreal experiences assume that artists and producers are challenging convention and generating new musical meaning, but the technologies are born of a need for more efficient ways of constructing energy, impact, and power in Metal production (Thomas & King 2019: 507). Innovation has therefore enforced homogeny through a socio-culturally informed production methodology. An awareness of this homogeny reflects the intention to create new sonic realities through constructed production techniques, rather than musical performances.

The emergence of production methodologies and idealism in Metal productions supports a normalised view of record production, a view that producers need to make records that compete with others of the ilk even if they fall victim to a number of compromises as a result of technological development. This relationship between tradition and innovation suggests that recorded Metal music can only be one of two things: an exercise in capturing great performances, or a representational performance that exhibit enhanced sonic ideals; as Zagorski-Thomas describes: 'at what point does

ever-increasing consistency in a performance cease to sound like an expert human and start to sound like a machine?' (2010: 63). The compromise here is that once an extreme process has been applied, the same process must then be applied globally to achieve intelligibility (Mynett 2017: 19). Technological development, as suggested by the participants, has changed the way Metal music is produced, and the tensions between the anticipated and potential use of technology, reflect the tension between traditional and innovative approaches to producing Metal music.

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