

Beyond the Studio: The Impact of Home Recording Technologies on Music Creation and Consumption.

By Matthew Homer

In December 2008, the music company EMI announced the closure of its Olympic Studios in West London. Following this news, these comments were left on the Music Week website:

Recorded there on and off for 15 years. Know all the staff very well. Is still the best studio in the UK and it will be very sad to see it go. It's a shame that the music in the UK all sounds like it is coming out of a game-boy and there is not enough demand to keep proper live studios open anymore.

(personal communication, December, 2008).

I am happy to see studios like these closing. They run out dated business models in an industry that has changed rapidly. The past has gone!! Long live the new producers and engineers who work from computer based set ups creating great material and at a price that is appealing.

(personal communication, December, 2008).

The forum where these comments were posted included similar contributions either lamenting Olympic's demise or applauding EMI's decision to close the studio. One poster on the site ended her contribution by stating: 'My heart will skip a beat now every time I pass that place – the end of an era' (personal communication, December, 2008). As one of four British studios closing in 2008 alone, the death of Olympic is indeed indicative of a wider problem facing traditional music recording (Coleman, 2009, para.17). For instance, Chris Gibson traces the pressures that have either caused established studios to disappear completely or adapt themselves for other markets (2005, p.193). As indicated by the statements at the beginning of this paper, Gibson partially attributes this situation to the rise of home recording technologies which enable artists to record their music without hiring a studio.

This paper will focus on the popularity of home recording technologies and their affects upon the ways in which music is created. I will investigate how artists are using software and hardware in the production of their music and whether the use of this technology represents new freedoms in artistic innovation. The case of Olympic captures this moment of transition. In an article for *The Independent* newspaper's website, journalist Nick Coleman seems to have found a middle ground between the studio's detractors and its enthusiasts:

Olympic will not be taking its roster of former alumni with it – it is only a building. Jimi Hendrix...is long gone. And the Spice Girls...and Led Zeppelin ...ought to be further gone than they appear to be...So we won't be losing any music when Olympic goes, only a small part of music's historical hinterland. Nevertheless, there is something unquestionably sad

about the news. There is more to a great studio than machinery. There is what “the studio” means to musicians; what it means to the very sound of music; and what a studio brings to the story of music, as a component in a narrative shaped as much by myth as it is by reality (Coleman, 2009, para.19).

This statement introduces the key elements that are integral to the debate surrounding the traditional studio’s demise and home recording’s growth. To illustrate, in his references to Hendrix and Led Zeppelin, Coleman draws attention to the nostalgia that seems to cover up the overwhelming difficulties faced by older models of recording in the 21st Century. Such changes include technological, economic and social developments which seem to have provided conditions more favourable to the home studio than its predecessor. However, what the extract also highlights is that there are certain musical and extra-musical factors that are unique to studios such as Olympic. Such factors provide a welcome complication to the argument and it is an area that I will draw upon over the course of this work.

Having attended a three-day conference as part of Brighton’s Great Escape music festival, I found that there was a consensus that home recording technologies were having an impact on the ways in which music is created and consumed. For example, Jakes, a vocalist and respected figure within the Bristol Dubstep scene, explained to me that the rise of home recording technologies has enabled more people to create music (personal communication, May, 2009). However the artist was quick to emphasise that while new technologies have encouraged a greater accessibility to creativity, home recording has always had an influence on the music industry. This point was stated to me on a number of occasions at the Festival and is one that can be seen in the history of music making from the latter half of the 20th Century (Berk, 2000, p.200; Negus, 1999, pp.495-497). In his seminal text *Subculture: The Meaning of Style*, Dick Hebdige outlines the ‘do-it-yourself philosophy’ that helped to define 1970s punk against the ‘mainstream pop and rock’ of the period (Hebdige, 1979, pp.110-112). This is explained when the author refers to punk fanzine *Sniffin Glue*:

Sniffin Glue, the first fanzine and the one which achieved the highest circulation, contained perhaps the single most inspired item of propaganda produced by the subculture – the definitive statement of punk’s do-it-yourself philosophy – a diagram showing three finger positions on the neck of a guitar over the caption: ‘Here’s one chord, here’s two more, now form your own band’ (1979, p.112).

The music derived from this principle was distinguished by a celebration of amateurism and being at odds with accepted notions of music making, a point that Hebdige also outlines in the following:

In the early days at least, these ‘garage bands’ could dispense with musical pretensions and substitute, in the traditional romantic terminology, ‘passion’ for ‘technique’, the language of the common man for the arcane posturings of the existing élite, the now familiar armoury of frontal attacks for the bourgeois notion of entertainment or the classical concept of ‘high art’ (1979, p.110).

In the same decade, a similar ‘do-it-yourself philosophy’ could also be found in the New York hip hop scene (Toop, 2000, p.91; Rosen, 2006, para. 3). As accounted by David Toop, this genre grew from the Bronx and made use of existing music that ‘was then edited on record turntables in real time’ (2000, pp.92-93). Accompanied by MCs who would provide lyrics to the tracks, this music broke away from established genres such as jazz and rock and opened up music making to a whole range of new artists (Blake, 2007, pp.ix-x). Through its extensive use of the turntable, the genre is notorious for its use of samples and has since inspired a range of musical styles (Blake, 2007, pp.ix-x; Marclay and Tone, 2004, p.343). This subject is discussed by artists Christian Marclay and Yasunao Tone who examine the possibility that hip hop’s DIY ethos actually influenced the design of subsequent digital technologies:

MARCLAY: But when they started making their sampling keyboards and stuff, I think maybe there was already that understanding that it was useful to sample because HipHop [sic] DJs were doing it.

TONE: Well, the clientele [sic] was expected to be not just musicians, but the general public.

MARCLAY: Anybody could become a musician (2004, p.343).

Both artists concur that the music of hip hop has subsequently affected the industry to the point where new music technologies are manufactured to recreate the techniques of acts such as Grandmaster Flash and Afrika Bambaataa. In this way, the cases of punk and hip hop demonstrate how music can grow from the garage and the streets to influence the ways in which the music industry and technology companies think about the art. In their discussion, Marclay and Tone also hit upon the important subject of music technologies and user agency. To expand, the artists agree that the statement ‘anybody can become a musician’ was a philosophy shared, not only by punk and hip hop, but also by preceding art movements such as Fluxus and the *musique concrète* experiments of Schaeffer, Stockhausen and Varèse (Cox and Warner, 2004, pp.5-6; Marclay and Tone, 2004, p.343; Schaeffer, 2004, pp.76-81; Varese, 2004, pp.17-21). What these movements shared was the desire to interact with established technologies and artworks in new and innovative ways. As I will now discuss, such novel engagement with existing tools has created new possibilities not only for art and music making, but also for the music industry as a whole.

At this stage, I have introduced how punk and hip hop musicians opened up new possibilities in music making through their novel approaches to established genres and technologies. Like the experimentalists of *musique concrète* before them, their achievements were met by pushing the boundaries of the technology at their disposal (Berk, 2000, p.191; Cox and Warner, 2004, pp.5-6). With the proliferation of new home recording technologies, it would seem that this trend shows no sign of changing as the creative genius of new artists continues to be measured through the

innovative ways in which they apply their tools. While I will analyse the relationship between home recording tools and creativity later within this article, it is necessary to focus first on the new technologies and their promises for the future creation of music. In the text *Sound Unbound*, minimalist composer Steve Reich introduces the subject of music and technology by referring to his audio-visual shows of the 1990s (2008, pp.1-4). Discussing his ‘video opera’ titled “Three Tales”, Reich explains how he featured tapes of prominent scientists talking about their disciplines (2008, p.3). Amongst these was the robotics expert Rodney Brooks, who argues that

We’ve always thought of our brains in terms of our latest technology. At one point our brains were steam engines. When I was a kid, they were telephone-switching networks. Then they became digital computers. Then, massively parallel digital computers. Probably, out there now, there are kids’ books which say our brain is the World Wide Web. We probably haven’t got it right yet.

(Brooks, 1997, cited by Reich, 2008, p.3).

Building on Brooks’ observation, it seems that all parts of the music industry are now thinking in relation to digital technologies and the Internet. Focusing specifically on the creation of music, Ken Jordan and Paul D. Miller, the latter otherwise known as ‘DJ Spooky that Subliminal Kid’, trace the impact that digital technologies have had on the musical process:

Today that ease of access and malleability [granted by digital technologies] is transforming the way musicians conceive of and make music. It is now simple to convert sound into digital streams, so it can flow anywhere across the computer network, to be manipulated by a continuing growing array of software.

(2008, p.100).

As the authors subsequently explain, one of the effects caused by these new technological developments is an erosion of the established boundaries between “‘artist” and “audience”” (2008, p.102). While Jordan and Miller analyse this erosion mainly in relation to the Internet, this blurring of boundaries can also be seen in that many more people now create music simply because of the greater accessibility to digital tools. An indication of the extent to which home recording technologies are now available can be gauged from guides such as those on BBC Radio One’s web page. As part of their ‘One Music’ scheme, which informs its young audience about working in the music industry, the website provides a step by step guide for buying and using home recording tools. In a similar way that *Sniffin Glue* represented the punk approach to music, sites such as Radio One’s can be seen to represent the philosophy of the digital musician (Hebdige, 1979, p.112). With over seven pages of instructions on home recording, the information presented on the One Music site is far more detailed than that in Hebdige’s example. However, what both of these texts demonstrate is an impetus to encourage young people to make music. Like the DIY ethos that informed *Sniffin*

Glue's 'now form your own band' statement, One Music offers the following advice on beginning a session using home recording technologies:

First of all, let's look at how to set the correct level for the signal you're recording. Think of the signal chain like a door frame. When you're setting up the signal chain, you want to keep the signal as far as possible from scraping its feet on the floor, without it banging its head [on] the top of the door frame (BBC, n.d., para.2).

While the BBC's site is more pedagogic in its approach than Hebdige's punk fanzine, both examples present their young audiences with ways to create and record music outside the traditional studio.

In its efforts to make the creation of music more accessible, the One Music site presents the argument that digital technologies offer a greater democratisation of the music making process. This is a view expressed in Daphne Keller's article, "The Musician as Thief" (2008, pp.135-147). Writing specifically about the process of sampling in music creation, Keller compares 'the sonic collage[s]' of John Cage and William Burroughs 'in the analog [sic] era', with the possibilities opened up by digital equipment:

It took John Cage a year to make his four-minute-long Williams Mix. William Burroughs spent untold hours constructing cut-ups with razor blades and tape...Digital recording technology revolutionizes and democratizes this recycling process, making complex manipulation of recorded fragments easy and relatively affordable (2008, p.135).

Keller relates the democratisation that digital technologies bring to music creation through their 'relatively affordable' price and ease of use. I found these factors to be highly significant in the home recording-traditional studio debate. To take the first of these two points, Mark Kelly, keyboardist and co-songwriter for the band Marillion, explained to me that cost was a big attraction for new artists to use such technologies (personal communication, May, 2009). Taking into account the purchase of the necessary hardware and software, Kelly stated that musicians are able to make 'high quality records for £2000' (personal communication, May, 2009), a figure that was also cited on the BBC's guide to home recording (BBC, n.d., para.3). This is in contrast to the £800-£1500 per day fees that studios such as Olympic had to charge to stay alive in the business (Coleman, 2009, para.17). This observation was also emphasised in an interview that Red Hot Chili Pepper's guitarist John Frusciante gave to the *Electronic Musician* website (Tingen, 2005). In the article, he compares his experience of recording his studio album *Shadows Collide with People* (2005), against his six follow up releases which were produced at his home:

for the amount of money that I spent on *Shadows Collide with People*, I could have bought lots of studio equipment and had it forever. And I love the idea of being able to create music all the time without having to book studio time. A lot of the time the best studios in town are already booked, while in other cases, studios you like may close (Tingen, 2005, para. 26).

Although Frusciante's home studio is a far cry from the basic bedroom set-up depicted in sources such as the One Music site, the artist does draw attention to the point that home recording has economic benefits over the traditional studio. I put this point to Chief Economist at PRS for Music¹ Will Page, who invited me to consider the problems faced by the traditional studio in relation to William Baumol's cost disease theory (personal communication, May, 2009). As Page details in a paper for the PRS, this model 'examines the phenomenon of areas of the economy that have experienced no increase of labour productivity in response to rising salaries' (2008, para.19). To illustrate, the author gives the following example:

if the music industry pays its musicians 19th century style salaries, the musicians may decide to quit and get a job at an automobile factory where salaries are commensurate to high labour productivity. Hence, musicians' salaries are increased not due to labour productivity increases in the music industry, but rather due to productivity and wage increases in other industries (2008, para.20).

In terms of the focus of this essay, Baumol's theory seems to go more in the favour of home recording technologies than their studio counterpart. For instance, Coleman stated that, to survive, 'a large studio has to charge at least £1,500 a day' (2009, para.17). As I discussed with Page, it could be argued that as much, or greater, productivity is possible through home recording technologies. The artists may rather refer to these cheaper tools than the more expensive fees requested by the studios (personal communication, May, 2009).

While there seems to be significant economic advantages for artists to record at home, it is important to draw attention to what exactly is lost when the musician dispenses with the professional studio. For instance, with the loss of venues such as Olympic, there is also the loss of the experienced engineers and producers who have been extensively trained to make high quality records (Jenkins, 2003, para.36)². In dispensing with such expertise, the home recording artist seems to have thrown the established hierarchy of music making into question and redefined notions of what skills are needed to create outstanding tracks. With sound editing software such as Pro Tools now being used by both professionals and home recording artists (Levine, 2007, para.3), there remains the question as to how far a strong literacy for such packages can in itself go towards making good music or whether there is still a place for industry expertise and equipment. I will return to this issue of sonic literacy³ and whether the musician can make innovative records without the professional studio and its experts.

With home recording technologies potentially providing a democratisation of the music making process through their affordability, it is important to explore what this greater access means for the creation of music. Through its ease of use, the proliferation of digital technologies has arguably enabled greater experimentation in the music making process. In doing so, such developments offer

the potential for further innovation for the artist. This is recognised by Michael Berk who details the influence of ‘the desktop studio’ against a history of technological developments in the music industry:

the future of music technology is likely to be centered [sic] on the desktop. Advances in desktop processor speeds and hard disk capacity have made it possible to run all the elements of a virtual electronic studio - multitrack recorder, signal processors, and sound sources - on a single machine. This makes it likely that the electronic music of the future will conflate composition, recording, sound design, and rhythm programming in new and baffling ways (2000, p.201).

A prime factor behind the seemingly endless possibilities of digital technologies comes from the invention of the Musical Instrument Digital Interface in 1981 (Berk, 2000, p.196; Blake, 2007, p.68; Pinch and Trocco, 2002, p.317). Commonly referred to as MIDI, this phenomenon is a communication protocol that enables one computer to control many other compatible devices such as a synthesizer or sequencer (Berk, 2002, p.196; Simoni, 2006, p.282; Blake, 2007, p.68). As Andrew Blake summarises, ‘one keyboard could control another’, enabling a single device to create a variety of sounds and techniques for ‘recording, or...live performance’ (2007, p.68).

Compared to previous methods of making music, such as those demonstrated by Cage and Burroughs, the introduction of MIDI opened up new ways to manipulate and experiment with sound. It also gave rise to fresh approaches in creating and playing music. This observation is most apparent in the move away from the “‘live” event’ recording of the traditional studio to the seemingly endless editing and sampling possibilities of digital technologies (Mallinder, personal communication, July, 2009). For Berk, one feature of MIDI that revolutionised music creation was its interface that ‘brought a visual dimension to audio editing’ (2000, p.196). As he explains:

Previously, trimming rhythmic loops had involved a fair amount of foresight and calculation: Graphical editing let producers make decisions on the fly and brought on, for better or worse, a period of increasingly radical (or outlandish) editorial experimentation (2000, p.196).

While this feature speeds up the composing process and enables greater experimentation, it also heightens tendencies for the artist to become obsessive about their work as the majority of audio tools can isolate and zoom in on minute details in a composition (Cascone, 2004, p.393). In this way, home recording equipment enables many more artists to create music in the same way that musician and producer Brian Eno advocates in his article “The Studio as Compositional Tool” (2004, pp.127-130). Writing about the increased possibilities that ‘tape’ and ‘three-track recording’ brought to music making through the studio, Eno states that

It puts the composer in the identical position of the painter – he’s working directly with a material, working directly onto a substance, and he always retains the options to chop and change, to paint a bit out, add a piece, etc (2004, p.129).

With advances in home recording technology, it can be argued that music software such as Cakewalk and Pro Tools magnifies these possibilities for the artist. This is recognised by composer and performer Ben Neill who contemplates the changes that developments in computer technology will have on electronic music:

I would submit that because of these technological advances, this is a unique moment in history in which music is also leading the visual arts. Electronic-music composers can work in a way very similar to that of painters and sculptors; being self-contained and not relying on others to perform one's art speeds up the process greatly (2004, p.390).

The digital technologies Neill writes about further jeopardises the position of the traditional studio in so far that it potentially eliminates the need for third parties such as engineers and expert producers. Musicians who have gone down this route include Richard Hall, otherwise known as Moby. Describing himself as 'a little bald guy...who makes music in his bedroom' (2008, p.156), Moby's multi-million selling album *Play* (1999) was recorded at his home using Cubase software and a traditional studio mixing desk (Sound on Sound, 2000, para.3; Bozza, 2001, para.5). Similarly, DJ Shadow's *Endtroducing* album (1996) was made outside the studio using 'an Akai MPC 6011 sampling workstation' and 'a Technics turntable' (Berk, 2000, p.196).

The successful experiences that Moby has had with home recording technologies have led him to be very positive about the possibilities of these tools. For example, in an interview with *rollingstone.com*, he explains that

There will be a time...when you will be able to use a laptop to create a song that sounds as if it were recorded by a band in a studio, and no one will be able to tell the difference. In the next few years, I wouldn't be surprised if they invent singing programs. You will type in a phrase and tell the program to have it sung by a Caucasian woman, eighteen years old, with whatever inflection you choose. Whoever invents that will make a lot of money (Bozza, 2001, para.9).

In lauding the potential of home recording technologies, Moby seems to have inadvertently highlighted factors that have often been used to criticise the phenomenon. In predicting that one day home recording technologies will be able 'to create a song that sounds as if it were recorded by a band in a studio', the artist draws attention to the point that such equipment cannot meet all the achievements of venues such as Olympic or Abbey Road. While it is important to emphasise that this interview with Moby was written in 2001, similar criticisms have since been levelled at home recording technology towards the latter half of the decade. For instance, Paul Tingen explains why John Frusciante 'vowed' not 'to record anything on digital anymore' (2005, para.21):

he far prefers analog [sic] recording "for the vibe that I feel my music should have, in terms of sonic warmth. I want my recordings to fill the room and be comforting, even if it's a really distorted, loud f---d-up sound. I'm probably one of the few people that go into a mastering place and insist that no computers are used (2005, para.20).

Frusciante's preference for analogue technologies is echoed by fellow artist Brian Eno who likewise states that analogue synthesizers had 'a personality' unlike the perfect sounds of the digital models (Pinch and Trocco, 2002, p.318).

Such is the esteem that Frusciante has for analogue technologies he has, as Tingen details, 'taken to buying up the old studio gear that's on the market as digital workstations become the norm and established studios close' (2005, para.22). In purchasing studio equipment for his home, John Frusciante raises an important point that home recording and the traditional studio are not necessarily exclusive from one another. Instead, by bringing the areas together in this way, Frusciante introduces the argument that home recording and traditional studio techniques can complement each other to produce innovative music. Similar points were put to me at the Dubstep talk at the Great Escape where the speakers explained that many musicians who use home recording technologies send them off to professional studios for mastering⁴ (personal communication, May, 2009). This is recognised by Chris Gibson who explains that, despite the struggles of big studios,

High-level mastering and post-production facilities will survive, but are likely to remain rare, and centralized [sic] in urban areas, and they will probably not acquire the notoriety or fame of their predecessors (2005, p.205).

In dispensing with much of the creative process that established their reputation and by relegating professional input to post-production, digital and home technologies have no doubt caused significant damage to the authority of the traditional studio set-up. As Gibson points out, such changes have seen a number of high profile studios disappear completely (2005, pp.192-207). However, the fact that services such as professional mastering are being used by home recording artists does reintroduce the question of how far a high literacy for sonic packages such as Pro Tools can go towards making successful records. On one level, the skills required for mastering a record are so specialised that it is highly difficult for musicians to take on this duty successfully. For instance, in a feature for *Electronic Musician*, mastering engineer Stephen Marcussen explains:

Mastering is an interesting profession, because there's no substitute for experience...You can be a mastering engineer with 18 months of experience, but you're really still a babe in the woods...There is indeed a lot to learn, especially considering that mastering engineers typically must be able to handle projects in different genres of music that have diverse sonic requirements (Jenkins, 2003, para.9).

From this perspective, the mastering process would seem to be far too complicated to delegate to a non-professional, a point that is emphasised through the disaster stories told by engineers such as Paul Elliot. In the same article, Elliot accounts how he often has to salvage tracks that have been damaged by artists trying to master their own records at home:

They go out and get an all-in-one type of box and feel they can master music for themselves...When it gets to us, sometimes the damage is already done, and they're hoping we can improve it. We sometimes are trying to undo what's been done (Jenkins, 2003, para.48).

By highlighting the shortcomings of 'all-in-one' mastering software, Elliot draws attention to an apparent gulf that exists between the standard of home recording technologies and professional studio equipment. In this way, it would seem that not only do techniques such as mastering require greater skill and sonic literacy than typical home studio tools, but they are also performed using facilities that are unobtainable to the upcoming musician. This is emphasised by Bob Ludwig, mastering engineer and 'president of Gateway Mastering and DVD', who outlines the equipment he needs to successfully master records:

We have six different kinds of analog [sic] play back electronics...We have Studer electronics, Ampex electronics, ATR-Services tube electronics, Cello Class A electronics, Tim da Paravicini's Esoteric Audio Research tube amps, and most recently the famous Aria pure discrete Class A electronics that were used in the Rolling Stones hybrid-SACD reissues (Jenkins, 2003, para.25).

Combined with the fact that such equipment is used in rooms with specialised acoustics (Jenkins, 2003, para.37), it becomes clear that successfully mastering tracks is not necessarily something that can be done in the average home⁵. This is not to say that home recording does not require significant skill in itself. On the contrary, engineers such as Paul Elliot and musicians including Jakes do stress that if the initial composition is of a poor standard then there is not much that mastering can do to improve it⁶ (Jenkins, 2003, para.52; personal communication, May, 2009). Considering such points, perhaps the most helpful way to understand the relevance of the studio in a world of home recording is to refer to established singer-songwriter Roger McGuinn. As detailed in Tara Brabazon's text *Thinking Popular Culture* (2008), the man behind the Byrds asserts that with home recording tools,

You don't have to sell out to the record company. You don't have to get five hundred thousand dollars, or whatever, and pay them back for the rest of your life to record a record. Now, you can just get a laptop, get some software, put a microphone on it and make a record. You have to know how to do it. It does help if you've had 35 or 40 years of experience in the studio. But, it still levels the playing field so artists can record their own stuff (Brabazon, 2008, p.233).

In this statement, McGuinn emphasises the importance of knowledge in both traditional recording techniques and those possible from home technologies. By doing so, he presents the argument that the potentialities for recording high-quality and innovative music are greatly expanded when the musician has strong literacies of both the professional and home recording studio.

It appears then that the traditional studio still has a significant role to play in the future creation of music. This is emphasised by the case of the Yellow Fish Music Group, a business that lets out a large recording studio near Lewes in East Sussex. Speaking to the company's director Ross

McCracken, he explained that the advent of home recording has actually provided surprising benefits. For instance, McCracken stated that he is now receiving many clients who will begin recordings using their own equipment at home and then use the studio and its resources to improve it (personal communication, May, 2009). Instead of charging the larger sums that the likes of Olympic studios required to complete a record, Yellow Fish is able to offer various different services, such as mastering, rehearsing and recording, that artists can use to enhance their home recorded tracks (Yellow Fish, 2009, para.1-6). Other examples that demonstrate the continuing relevance of the studio in the 21st Century include Jack Kingslake's Hi-Road studio which aims to inspire young people in deprived areas of Bristol (Reeves, 2009, pp.78-80).

Like a number of studios across the world, the demise of Olympic in London is symbolic of a number of changes facing the modern day music industry. While developments in digital technology and the increased accessibility to home recording tools have eroded the dominance of these institutions, it would be an exaggeration to state that they have killed them off completely. Instead, it is more helpful to see the rise of these new technologies as one of many factors that are changing the role of the traditional studio in the 21st Century. Such factors also include the studio's economic viability which seems set to be increasingly uncertain in the current global recession. Despite this, it does seem premature to state that the traditional studio is now irrelevant. As musicians John Frusciante and Moby have pointed out, while digital and home recording technologies have enabled more people to make music, they cannot completely emulate all the benefits of the studio. Accordingly, there are now many artists who use the professional studio in conjunction with their home recording tools to create high-quality records. While this negotiation between the two arenas has seen the professional studio lose much of its influence in the making of music, it does still have an important role to play in the industry.

Notes.

1. PRS for Music is the recently re-branded name for 'the two royalty collection societies' MCPS (Mechanical Copyright Protection Society) and the PRS (Performing Rights Society) (PRS for Music, 2009, para.1).

2. The importance of training for studio staff is emphasised by mastering engineer Bob Ludwig who states: 'For me, it's essential for an engineer to be a musician as well...All of our engineers...play an instrument and have at least a four-year degree from a school that specializes [sic] in making music as well as recording and producing...' (Jenkins, 2003, para.36).

3. To define this term, it is helpful to refer to Comstock and Hocks who explain sonic literacies as 'the ability to identify, define, situate, construct, manipulate, and communicate our personal and cultural soundscapes' (n.d., para.2). Sonic literacies then covers how we comprehend and interact with various forms of sound and the sources that create it. This includes an understanding of how

sound can be used and manipulated through different sonic media such as radio, podcasts and, in the case of this study, home recording technologies (Comstock and Hocks, n.d., para.2-3; Brabazon, 2007, pp.103-129).

4. Mastering is most commonly understood as the process where recordings are transferred to their final medium for distribution (BBC, n.d., para.1). This will often involve the expertise of a mastering engineer who, through techniques such as ‘balancing, equalizing’ and ‘compressing’, will attempt to improve the audio and musical quality of a song (Jenkins, 2003, para.7).

5. In outlining the extensive equipment available to the professional mastering engineer, it is important to note that changes are taking place in this area too. As put to me by musician and academic Stephen Mallinder, digital technologies are replacing analogue tools and in doing so are introducing new skills and literacies that must be learnt by engineers and producers (personal communication, July, 2009). This is a fascinating subject and one that I am keen to explore in future work.

6. Another point of contention in the home recording - professional studio debate is found in the ways in which music is now being listened to in the 21st Century. For instance, Stephen Mallinder explained to me that traditional features of recorded music such as ‘warmth’ and ‘perceptions of frequency range are lost on consumers who will listen through mini-headphones, lap top speakers etc’ (personal communication, May, 2009). Similarly, in an article tracing the decline of standards in production and mastering, Robert Levine also draws attention to the point that producers are changing the ways they mix records ‘to compensate for the limitations of MP3 sound’ (2007, para.15). As Stephen explained to me, such developments make high-quality recordings part of ‘a niche market like many other traditional areas of cultural production’ (personal communication, May, 2009). With 110 million singles being downloaded in 2008 alone (BPI, 2009, para.2), the question of whether effective mastering is now necessary is one that requires further research.

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