

From creator to data: the post-record music industry and the digital conglomerates

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abstract

This article contributes to research on the changing music industries by identifying three dynamics that underpin the shift towards a post-record music industry. First, it examines how musicians have found themselves redefined as content providers rather than creative producers; a historical change from recorded music as product to content. Second, it focuses on tensions between YouTube and recording artists as symptomatic of disputes about the changing artistic and economic value of recorded music. Third, it extends this debate about the market and moral worth of music by exploring how digital recordings have acquired value as data, rather than as a commercial form of artistic expression. The article explores how digital conglomerates have become significant in shaping the circulation of recordings and profiting from the work of musicians, and highlights dynamics, structures and patterns of conflict shaping the recording sector specifically, and music industries more generally.

Throughout most of the twentieth century recording was central to the music industries. Driven by high volume consumer sales of 'sound carriers' (LPs, cassettes, CDs), the recording sector became a hub around which revolved publishing, live performance, studio production, artistic management, radio promotion, the marketing of star imagery, and sales of merchandise. The recording contract 'business model' dominated. This entailed recoupable economic investment in musicians ('advances') with profits derived from physical sales, and the licensing of copyright in sound recordings and published songs, and artists paid via percentage royalties. Recording and publishing operated within a blockbuster economic structure (Elberse, 2013) whereby a few star artists accounted for most income and the majority of musicians achieved neither critical acclaim nor commercial reward.

Facilitated by the buying power and influence of the post-Second World War 'baby boom' generation, the recorded music industry reached its peak of incomes and significance with the emergence and recognition of rock and soul music. This was encapsulated in the 12-inch vinyl album as commodity, and artistic statement in sound and sleeve imagery, allied to the concert as a ritualistic re-enactment of the recording (unlike the looser relationship between recordings and live performance in jazz, for example). Financial losses from tours were cross-collateralised against recording

revenues. Up to the end of the 1990s, scholars of music production could justifiably concentrate on recording as the determinate influence within a wider set of directly and indirectly related music industries.

Recordings continue to be made. But the period of dominance sustained by the recording sector is over. The most significant catalyst of the post-record music industry has been the introduction and rapid adoption of internet circulation and digital technology as a means of creating and curating, sharing and selling, bundling and licensing access to recorded music.

The impact of digitalisation on music has been and continues to be debated, less as a radical break with the past, as many envisioned initially - whether they were anxiously pessimistic or optimistically utopian (Rogers, 2013), and more as historical continuity. To recap briefly as context for the following discussion: From early in the twenty first century a familiar tale began to be narrated about how the major recorded music corporations (along with their representative trade organisations) initially found themselves vacillating, and in conflict with entrepreneurs offering listeners the prospect of unregulated downloading and sharing amongst peers (Arditi, 2014; Morris, 2015a). Slow to recognise the significance of interventions from technologies and new occupational groupings, reluctant to grasp the use of recordings by fans and casual listeners, and frightened by the disregard for copyright law amongst sampling musicians, the major record labels prevaricated (Mulligan, 2015; Silver, 2013; Witt, 2015).

In their indecision the major labels replicated a corporate pattern of 'structural and organisational inertia', 'institutional path dependency', and 'overestimation of [their] power' - characteristics identified within many other industries and sectors facing social and technological change (Dolata, 2011). Eventually the major record labels began describing themselves as music companies, reduced their reliance on recording by restructuring contracts as multiple rights (360 degree) deals, and sought to recoup investment from the full range of a musician's activities, art forms and revenue streams (Gervais, Marcus & Kilgore, 2011; Marshall, 2013). They also negotiated preferential licensing agreements and acquired equity stakes in a range of companies and platforms offering streamed access to music (Seabrook, 2014).

Yet, as the few, ever more oligopolistic, major corporations began to reposition themselves as music companies (seeking profits from multiple rights rather than dwindling income from record sales) they began to be drawn into further tensions with newer digital conglomerates of the IT and data industry, sometimes referred to as Big Tech (Mosco, 2017). These emergent tensions and their consequences are central to this article, and have received little direct attention from scholars of the music industries. As implied, I use the term music industries (plural) to refer to the wide range of companies and businesses seeking to profit from or support the work of musicians, music related products and services (practices, things and activities that cannot be easily classed together or substituted for one another – a concert ticket, a mixing desk, a vinyl album, sheet music and so on). I use the term industry (singular) to refer to a specific business or sector involved in the same product or service – recorded music industry, publishing industry, live music industry.

Studies of the recorded music industry since digitalisation have been concerned with the responses and difficulties of record labels in the face of downloading and piracy (Rogers, 2013), the impact and operations of streaming and downloading services (Morris, 2015a), and the changing character of contracts (Marshall, 2013). Few studies have placed these changes within a broader corporate context. Two notable exceptions are David Hesmondhalgh's and Lesley Meier's (2017) periodization of a general historical shift from CE (consumer electronics) to IT (information technology), and Jung-yup Lee's focused study of how the South Korean music production was 'experiencing digitalisation at the fastest pace in the world' in the mid-2000s (2009, p489). Lee stressed the impact of the ICT (information and communication technology) industries. Analysing the mediation of Korean pop music through the internet, the influence of mobile service providers, streaming services and on-line intermediaries, Lee argued that 'ongoing digitalisation radically transforms what we conceive as the music industry, and renders the nature of music redefined and contested' (2009, p490).

This article offers a further contribution to research on the corporate contexts shaping music culture, and an intervention into debates about the changing place of recorded music within the wider digital or post-digital economy. I start by highlighting how musicians have found themselves redefined as 'content providers' rather than creative producers; an important historical change from recorded music as product to

content. I then focus on tensions between YouTube and the recording sector as indicative of disputes about the changing artistic and economic worth of recorded music. I take this discussion further by highlighting how digital music has become valued as data, rather than a (commodified) form of artistic expression. In addition to these more detailed discussions, I wish to convey a more general irony: Although most of the digital conglomerates have introduced music or music video streaming services, and whilst they profit from and impact upon the work of musicians, recorded music has become less significant within the hierarchies of worth in the digital economy as defined and dominated by Alphabet (Google, YouTube), Apple, Amazon, Microsoft and Facebook – currently the top five companies in the world, measured by market share (Mosco, 2017, p65).

My argument concentrates on one brief, but significant, moment in the history of recorded music specifically, explaining how changes in the digital economy are impacting on the practices and economic circumstances of musicians. My focus is geographically specific in that I draw mainly from sources in the UK and USA. However, the issues I am discussing are relevant to many parts of the world due to the way digital conglomerates are increasing their influence over cultural production and the more general circulation of information and knowledge.

From the creator of product to curator of content

In a series of interviews in the early 1970s, Michael Wale described how a publicity department ‘push’ a ‘company’s product’ (1972, p262). He quoted a plugger explaining that he was more likely to get radio play for his label’s recordings if he had ‘good product’ (p289). Record label staff used the word ‘product’ when referring to recordings delivered by musicians and the process of packaging, selling and promoting these as singles or albums. The term was an abbreviation and acknowledgement of a process of production (rather than a performance). Yet it was also informed by a more general lexicon of ‘product-market’ approaches to business strategy that gained currency during the 1960s with the rise of management science, the influence of organisational theory and adoption of ‘product management’.

The term 'product' became routinely used in the recording industry during the 1980s, and the occupational title of 'product manager' became more widespread as the strategic approaches of marketing, accounting and business affairs gained ascendancy over the less rationalised and 'instinctive' practices of repertoire management (songwriting, arranging and production) and talent scouting (see Negus, 1992, 1999). The idea of popular music as a product informed theoretical models, whether scholars used the analogy of a 'production line' (Ryan & Peterson, 1982) or a 'systems model' of raw material being 'filtered' as it 'flows' through a series of gatekeepers (Hirsch, 1972), approaches indebted to Theodor Adorno's reference to the 'assembly line' like character of cultural production. Scholarly models of products and production lines were informed by empirical realities of the time.

For some musicians, the notion of their creative work as 'product' brought to mind these unsavoury images of factories and assembly lines. Yet, the industry was organised according to the manufacture of tangible artefacts. Producing recorded music required the maintenance of a costly infrastructure of record pressing plants (later security ringed CD production complexes), warehouses, inventory management systems, and a complex of land, sea and air transportation routes and hubs.

The manufacturing and distribution process could not idle while an artist took their time to deliver a track or an album. A senior executive I interviewed in April 1989 recalled a time working for a label with its own record pressing plant and explained: 'I'd get a call from manufacturing and they'd say "we need product". And I'd say "well, I don't know if I have any", and there'd be a scream down the phone. If I didn't have a single or album ready I'd have to find one, just to keep the machines turning' (Shepherd, 1989). A pressing plant needed to keep staff busy. The contracts with road haulage and shipping needed fulfilling. The warehouse space needed filling and emptying. The racks on the retail shelves demanded new singles and albums, whilst unmarketable product went to traders feeding off record industry 'failures' by selling to aficionados of the 'bargain bin.'

The term 'product' was not simply an ideological distortion of a purer activity of artistic creation but a metonym for the entire way that commercial recording was organised. Production and product - the specific space of the studio and the more general manufacture and shipment of sound carriers - mediated the composition, consumption

and performance of music. The term product acknowledged the fusion of both the sound and the 'sound carrier'.

The idea of music as 'product' implied material objects 'containing' music. It suggested a process of creation and authorship, and identifiable 'record producers.' It acknowledged the creative labour invested in the physical artefact. The listener could recognise a musician's work in a tangible way, whether in a small single record placed on to a turntable or a lavishly adorned album package carried under the arm.

The re-description of recorded music as 'content' suggests a generic type of information that simply appears for the benefit of 'users'. The digital track, 'un-bundled' from its location within an album, is another bit of information to be accessed on a computer or mobile device. The idea of content detaches the entity - a song, a symphony (a painting, or poem) - from its authorship and its making and towards its constituents (lyric content) in much the same way that the term content is used casually and more generically - fat content, sugar content, adult content.

A product is manufactured, packaged, promoted and purchased. Each step in this linear chain entails an identifiable economic transaction and potential point of profit for different intermediaries and occupational groups. In contrast, digital content is uploaded, circulated in the hope that it will be 'used' in a manner that allows it to be 'monetized' (an opaque buzzword for generating revenue). As John Lanchester has commented: 'In the internet world, companies often seek growth first the strategy for monetising the product comes later. This is a sensationally good way of going broke' (2014, p186). It is also a tactic for wasting resources in circulating an ever-greater number of recordings that will never be heard let alone 'monetised'.

A recording industry organised according to the manufacture of physical product was constrained and limited. When the machines required product, the amount of vinyl or CDs that could be manufactured was finite; limited by materials and machines, along with space in warehouses and retailers. In contrast, digital content is almost infinite, a quality that has led to pronouncements of a shift from scarcity to abundance (whether a profusion of songs, news stories or photographs). This is borne out by evidence of the quantity of recorded tracks available or 'released' and the number of self declared musicians active in

the economy. In the UK, in 1994 the number of newly released albums was reported by the Official Charts Company as 11,654. In 2014 that figure had risen to 47,751. In 1965 the Performing Right Society had a membership of approximately 6,000 songwriters and composers. By 2015 this was approximately 112,000. In relative terms, PRS income had dramatically declined. The collecting society was sharing the equivalent of a much smaller total. At 2015 prices, this was equivalent to approximately £16,600 per songwriter/composer in 1965 and £5,900 in 2015 (see Hunter-Tilney, 2015). Anita Elberse reported that of the eight million digital tracks sold in the USA in 2011, 94 per cent sold fewer than 100 units, and 32 per cent sold only one copy (p160). The overabundance of content has increased in subsequent years.

In an age of abundance the curator becomes more significant than the creator. The playlist becomes more culturally and commercially important than the idea of the album as artistic statement and commodity. In 2017 Drake referred to his new release *More Life* as a 'playlist' rather than an album, acknowledging a broader shift in public preference for playlists of music defined by genre and activity (workout, chill, party, roadtrip, walking) rather than specific performer identity (Hogan, 2015a). Yet this also signalled a clear continuity with the way albums have, in many ways, always been 'playlists' since the early boom of mood music LPs in the early 1950s (Keightley, 2004) and Frank Sinatra's influential musically themed concept albums that began appearing as 78rpm disc collections from 1946 (Granata, 2004). Playlists are also a legacy of radio programming, used since the 1950s as a way of framing the range of music played and identity of a particular broadcasting station.

The playlist is partly a response to the changing preferences of listeners, indebted to the practices of peer to peer sharing, facilitated by Napster, when music fans quickly began compiling their own lists, selecting from rather than accepting the sequences of tracks on released albums (Morris, 2015a). A new commercial role has emerged for professional curators, adding brand identity to streaming platforms (Morris & Powers, 2015), offering selections from an ocean of available songs. Curating is also continuous with the role of DJs and music journalists. For example, rock critic Robert Christgau's curatorial 'consumer guide' was introduced in New York's *Village Voice* in 1969.

Product was listened to on dedicated music players, from the cylindrical phonograph through to the gramophone and hi-fi. The iPod, with its store of digital music, was the last dedicated music player - an important transitory moment in the journey from physical sound carrier to digital data. The conspicuous physical presence of the phonograph - around which people ritualistically congregated or sat alone in 'ceremonies of a solitary' (Eisenberg, 1988) - is supplanted by unobtrusive ambient content accessible on mobile devices. As content on computers or phones supersedes product on phonographs, new corporate conflicts emerge. I now move on to how tensions between product and content result in conflicts that pitch recording companies, music publishers and musicians against the new digital conglomerates, most conspicuously YouTube/Google.

Recordings, YouTube and the moral economy of musical value

In previous academic research and criticism, record labels have often been portrayed as unsympathetic to the interests and creative whims of musicians. An argument, informed by political economy, has pitched musicians against music corporations as an artistic version of the struggle between capital and labour (see, for example, Chapple & Garofalo, 1977). Evidence to support the endurance of this tension can be marshalled from court cases, with notable disputes with labels involving George Michael, Prince, Dr Dre, Kesha, Trent Reznor and Pink Floyd (to name some of the most prominent).

However, emergent tensions have begun to *unite* musicians *with* the traditional music industries (recorded and publishing most obviously) against the newer digital conglomerates. During 2016 the grievances of musicians coalesced with the concerns of representatives of the recorded music sector, forming a chorus of complaint about the use of music on various streaming services. YouTube was singled out for most criticism, publicly condemned in a campaign orchestrated by the Featured Artists Coalition (whose Board included Annie Lennox and Ed O'Brien), and in a letter delivered to the European Commission, signed by Paul McCartney, Coldplay, Lady Gaga and others (Hogan, 2016; Peoples, 2016).

Building on a history of links between moving image media and music, notably MTV, the relationship between YouTube and music companies has always been one of

'mutual antagonism and mutual dependency' (Forde, 2016, np). Since its launch in 2005 by former employees of PayPal and acquisition by Google the following year, YouTube has become pivotal for disseminating songs and images, for identifying audiences and for building a 'fan base' (Wasko & Erickson, 2009). Yet, musicians, publishers and labels have habitually complained that they should be receiving greater financial payments in addition to promotion and publicity.

The issue became articulated in the idea of a 'value gap'. The recording industry and its artists argued that there was an unfair imbalance between profits made and revenues passed on to musicians and music companies. The shortfall – the gap - resulted in music companies having reduced income available for reinvestment in new artists; a risk that content users were not facing (Dredge, 2016). One aspect of the dispute entailed the complaint that a streamed song is not adequately rewarded financially. The same basic grievance has been levelled at other streaming platforms, most notably Spotify, whereby musicians and labels familiar with previously liberal revenues from 'unit' sales and radio broadcasting have been aghast at the relatively small size of payments when expressed as a percentage return against individual streams (see Marshall, 2015; Milne, 2014).

The dispute about payments for streamed music is underpinned by an unexamined ontological question about what exactly a stream is. It is not equivalent to a 'unit' sale. It is not comparable to a physical recording being 'played' on radio. Evidence from streaming data suggests that listener's appreciate their ability to access only a small part of any track, with just under 25 per cent of tracks skipped in the first five seconds and 35 per cent skipped within the first 30 seconds (Lamere, 2014). The purchased, downloaded and saved digital music file may or may not be an artefact (Sterne, 2006), but streamed music is not experienced by listeners in a manner consonant with how musicians perceive recording as a repository of the creative time and effort invested in composing and producing. For musicians and their representatives, the issue is exacerbated by the way a 'safe harbour' clause allows YouTube to evade legal culpability (and hence financial responsibility) for 'user generated' content that freely incorporates unauthorised existing copyrightable material.

YouTube initially reacted to the value gap grievance by stating that they *were* making a return to musicians and labels (using software to identify tracks), stressing how

labels also receive substantial income from the advertising that accompanies videos; a source of revenue indebted to Doug Morris's negotiations when head of Universal Music in 2007 (Witt, 2015). However, record companies and publishers disputed the figures. In November 2014, when early complaints were being voiced, I was told by a member of a music trade organisation (who wished to remain anonymous) that YouTube was under-reporting the volume of recordings being streamed, a concern alluded to in other sources (for example, Mulligan, 2016a). Despite requests I was unable to obtain any evidence to verify this perception. The recording industry did not make publicly available any detailed information beyond the routinely voiced claims of record executives, such as Jimmy Iovine, that music was making up as much as 40 per cent of YouTube content (Garrahan, 2016).

The recording and music publishing perspective was in stark contrast to research conducted in 2016 by Pexeso which reported that music videos and music-related video content was 4.3 per cent of YouTube 'traffic', compared with 33.4 per cent for gaming, for example (Resnikoff, 2016). This was followed up in the middle of 2017 by YouTube's parent company Google commissioning RBB Economics to provide further research 'evidence' to support their standpoint. This report, published in 5 sections, entitled *Value of YouTube to the music industry* (RBB, 2017), used online surveys with 1,500 listeners, tracked 5,000 songs in 4 European countries over 3 years and analysed data on YouTube streams. Unsurprisingly, the findings were overwhelming positive about YouTube and stated that it allowed a diversity of music to reach listeners (notably by older, and by less well known artists); it helped listeners discover new artists, and facilitated breaking new acts. As a promotional medium it provided 'value added' benefits by increasing streams and downloads on other paid services and contributing to longer 'song life cycles'. Ultimately, RBB reported that YouTube 'provides substantial direct revenues to the music industry, amounting to some USD 1 billion in 2016' (RBB, 2017, Paper 5, p17).

YouTube acted further by appointing Lyor Cohen, an ex-senior executive of Warner Music and Def Jam as 'global head of music' with the reported aim of 'building bridges' due to his familiarity with the problems and perspectives of record labels and publishers (Rys, 2016). However, attitudes soon divided with some suspicious voices muttering that he was providing insider knowledge to the benefit of YouTube, or that he was going to start dealing directly with musicians and fracture the relationship between record labels and artists.

The recording industry and YouTube were splitting along a broader schism. On one side, the 'business model' of investment in artistic production, remuneration through copyrights and unit sales within the recording and publishing industries. On the other side, a model of generating income from the way 'content' attracts advertising, a model deployed lucratively by the new digital conglomerates (and drawing on the earlier use of advertising to finance commercial radio and television).

Neal Mohan (2016), Chief Product Officer at YouTube and Senior Vice President, Google, argued that YouTube was demonstrating the potential of advertising generated revenue. He claimed that 80 per cent of music listeners are casual listeners and it is these that can generate bulk money from advertising, rather than relying on revenues generated from targeting recordings at fans. In contrast to Mohan, Joe Lennon, CEO Subwoofr, (to cite one proponent of this counter-argument), claimed that advertising requires a lot more consumption to generate revenue. Instead, he argued against targeting casual listeners and for a focus on fans, directing attention at those actively spending money on music. Drawing on research by Nielsen, Lennon (2016) argued that 40 per cent of music consumers are fans, with an additional category of aficionados (a lower percentage of 14 per cent of music consumers) accounting for 34 per cent of recording industry revenues.

Statistics can be used to support various arguments. If these numbers are treated less as indicators of the real world and instead as business constructions that are used in imagining and disagreeing about the markets for music, what we have here are arguments about the characteristics of music consumption, and the most viable model of revenue generation. One contention is that the music industries should concentrate on the habits of the casual music listener; the person satisfied to access recordings in bundled packages or 'free' platforms with little direct economic outlay. It is in this area, it is claimed, that large revenues can be generated from advertising based models. In contrast is the assertion that it is more advantageous to focus efforts on analysing and targeting the activities of the dedicated aficionados, those who invest time and money on recordings (digital and physical), artefacts, merchandise and concert tickets. Although a numerically smaller constituency of people, fans place greater importance on music, are more committed and provide the most reliable source of revenue for the traditional sectors of recording, publishing and live performance. This 'model' is also based on musicians' experiences and

perceptions of the importance of active music fans for their critical and commercial success. Fan engagement with product and performance is visible and audible to musicians, unlike the casual listener clicking on adverts and skipping in and out of various music related content.

Recording and publishing have been central to how generations of popular musicians have experienced their art, obtained investment and made a living. The potentially huge revenues realisable from live performances in big arenas and stadiums, lucrative brand endorsements, and income from merchandise, tend to be possible only for the minority of established major superstars (Hogan, 2015b). For pragmatic reasons, the majority of musicians and their representatives have been attached to making a living from the sales and rights to 'units' whereby payment is made for purchasing and listening to individual songs or instrumental tracks. If a song or collection of songs is purchased as CD, vinyl or download a payment should be made to label and musician. If a song is heard in public a royalty payment should be made to publisher, record label and musician. It is this 'business model' that is challenged by YouTube. Underlying it is a contrast between the musician-as-artist's belief in their music as a means of expression and a point of public identification, and the casual listener's distracted skipping through an ambient flow of content where music is often decontextualized and irrelevant.

The new digital conglomerates, such as YouTube, have developed a model of charging for access to a bounded platform for various types of bundled content, and generating income from the advertising that intervenes in that content; a musician's worth and hence their income will come from how they attract advertising. This is a stark contrast to the musician's and the recording industry's assumptions about music being measured according to sales and rights that recognise the individual creations of musicians.

There is not simply a commercial logic at stake here, but an ethical mediation of the market via a moral economy of artistic worth. The idea that economic transactions are mediated by ethics can be traced back to debates about 'moral economy' during the eighteenth century, a concept deployed by E P Thompson (1991) when narrating a history of how workers and consumers asserted their right to intervene in price setting, and vividly evoked in his studies of riots over the price of corn in the late eighteenth century.

Thompson used the term specifically to refer to ‘confrontations in the market place over access (or entitlement) to “necessities” – essential food’ (1991, p337), although he acknowledged that the concept could be developed and applied in other circumstances.

Thompson identified the market as the point at which exploitation can be identified, and when opposition can be voiced, observing; ‘too often discourse about “the market” conveys the sense of something definite’, when it is more often ‘a metaphor of economic process, or an idealisation or abstraction from that process’ (1991, p273). The valuing of non-market endeavour, informed by a Romantic aesthetic (a legacy of the artistic response to industrial capitalism), has been an enduring sensibility amongst popular musicians throughout the era of recorded music (Frith, 1988, 1996). The radical aesthetic experiments and innovations of jazz, rock and rap have not simply been counter to a commercial or capitalist logic but frequently constitutive of the market. The value gap dispute is an illustration of the struggles through which the creative is esteemed socially and economically. It concerns the social and artistic value of music, how this should be recognised and rewarded, and how music should be circulated within digital networks that apparently allow the ‘free’ flow of ideas and information. These ethical struggles underpin and inform arguments about how music should be distributed (sold, accessed via subscription, bundled with other services and products, or offered ‘free’), and the type of payment and price for that form of distribution (a license or royalty for a stream or download sale, or a cut of advertising revenue).

From music as art to music as data

The recording industry and new digital conglomerates diverge on more than remuneration and the morals of the market. For musicians and their representatives, performing and recording constitute an art form. For all the criticism the music industries have received over the years from aggrieved fans, journalists and performers, and despite its corporate structures, the commercial worlds of recording and publishing have been indelibly infused with the aesthetic sensibilities of blues, Romanticism and pop art Modernism. From big band jazz and the solo singer of the 1920s-30s and onwards the recorded labels have made an economic and affective investment in musicians as creative practitioners able to produce music that is potentially, and often demonstrably, radical whilst being expressive of individual, and collective identities.

In contrast, digital conglomerates are driven by a tougher cocktail of ruthless entrepreneurialism, obsessive corporate imaging, contractual secrecy, and the cult of personality (Steve Jobs, Bill Gates, Mark Zuckerberg, Jeff Bezos). The artistic qualities and effort that has gone in to the composition, production and performance of music are irrelevant to how digital conglomerates make money. As I have argued, the dispute between musicians and YouTube is, at one profound level, about recognising the artistic relevance and social value of music. For the digital conglomerates music is 'content' that attracts subscriptions and 'traffic'. It is a 'customer engagement tool' (Seabrook, 2014). Music is a means to another end rather than an end in itself.

The squabble over advertising and rights may have created waves in recording and publishing, but these are ripples for digital conglomerates when considered with the other ways they generate income. The emergent tensions that I have been referring to in this article can be thrown into sharper relief by considering, albeit schematically given space, the broader ways that the digital conglomerates generate revenue.

First, is the generation of revenue from advertising, with Alphabet/ Google and Facebook accounting for over 50 per cent of global internet advertising (Fortune, 2017). Regular reports suggest that advertising accounts for approximately 90 per cent of Google/ Alphabet and 95 per cent of Facebook income, with revenue from advertising providing significant returns for Amazon and Microsoft (Mosco, 2017). Advertising revenue has allowed the likes of Google and Facebook to build corporate structures and to exert influence. But, the aspirations of the digital conglomerates lead way beyond advertising. The disputes with the music industry should be considered alongside the other ways in which these corporations are generating revenue and exerting power over production and consumption.

After advertising, an important way that revenue is generated is through the production and sales of physical products. Phones, mobile devices and laptops, along with Beats headphones, have been central to the financial dominance of Apple, and important for Amazon and Google. Digital conglomerates also generate revenues from the production, management and maintenance of servers and data storage systems, used by many big corporations along with governments and charities (Mosco, 2014). Cloud

computing is also a lucrative source of revenue for Microsoft, shrewdly making its business applications software (word processing, spread sheets) ever more integrated into cloud computing, and Amazon whose Web Services cloud computing network has become the 'global leader in cloud computing' (Mosco, 2017, p70). Amazon's involvement in physical products also encompasses digital retailing of ever more consumer luxuries and daily necessities, a domain in which it has been able to exert an almost near monopoly.

Digital conglomerates are expanding their portfolios through research and development spending (invested at a strategic loss) in new products that are predicated upon entering production and being sold within coming years. This includes types of virtual and immersive technology, robotics, 'intelligent' electric automobiles, banking systems, information management, artificial intelligence, and health care systems. Big tech companies are using their expertise and access to sophisticated skills in technology and engineering, hardware and software, often through strategic alliances (such as that between Facebook, Walmart and Uber, or Amazon's many deals with third parties), and exploiting their access to labourers mining raw materials in Africa, or working on assembly lines in Asia.

Digital conglomerates exert further influence and generate income through the production, acquisition and curatorial mediation of apps and software. Dominated by Apple and Google, the revenues generated by the 'app economy' in the USA are estimated to be greater than Hollywood, with Apple figures suggesting that the App Store was supporting 627,000 jobs compared with 374,000 employed in jobs created by Hollywood (Meyer, 2015). The app economy is expected to grow considerably, not only in leisure activities such as games, personal communication and the sharing of images, but in apps used widely in workplaces, schools, college and universities, in navigation, and in finance and banking. The expansion of the app economy is, in turn, entwined with an obsessive investment in the potential of an 'internet of things' summarised by Vincent Mosco as 'a system for measuring, monitoring, and controlling the activity of objects and living organisms through sensors that gather, process, and report data over networks' (2017, p39).

One stark consequences of this broader corporate context is the simple fact that recorded music is insignificant within the broader digital economy. Presenting figures

from 2013 to 2016 (along with future projections) Mark Mulligan provided evidence suggesting that ‘music’s role in the global digital content marketplace is small and shrinking’ (2016b, np). The financial value of digital recorded music is slight and declining as a percentage share in relation to apps and videos. This is perhaps an obvious reason why the big tech companies (such as Google and Amazon) are prepared to invest in the production of videos for vloggers, along with movies and screen drama but not in the production of music. Not only is recorded music relatively insignificant within the overall digital economy, access to listening is often purchased as a generic subscription to a bundle of content and apps, often packaged with a phone or mobile device. The recording is not chosen and purchased as an entity in itself, but is accessed and paid for within an overall fee for generic ‘data usage’.

Yet, at the moment when music becomes less significant as a recorded art within the broader app and content economy, its very use as data means that it begins to gain importance within ‘data capitalism’. Digital conglomerates exploit recorded music as part of the production, analysis, packaging and selling of data, and in the management of data for third parties (labels, publishers etc.). Information derived from the circulation and use of music becomes integrated in to a system within which digital conglomerates harness ‘big data’ to comprehend, control and anticipate behaviour through forms of ‘digital positivism’ (Mosco, 2014).

Robert Prey has highlighted how ‘all listening time is data-generating time’ (2016, p32). Jeremy Wade Morris (2015b) has made a similar point when stressing how media metrics companies manufacture ‘commodity communities’ as they package and sell audience data to other companies. Digital music can provide three distinct types of data.

First, is data about the characteristics of listeners identified by such criteria as location, time of accessing music, repeated listens to the same track or artist, adjustment of volume, range of musical preference (eclectic, narrow, new or old artists), and all manner of patterns of related hardware, software and internet activity. Listener engagement with specific genres, artists or songs can be cross-correlated with significant events (military conflict, royal wedding), controversial news stories, marketing campaigns or a performer’s touring and promotional activities.

Second, digital music consumption provides the opportunity for ‘semantic analysis of online conversations about music’ (Prey, 2016, p33). This entails collecting and analysing the words used and descriptions about musicians and bands in articles, reviews, blogs, forums and across social media platforms. This is sifted and can be reduced to recurring keywords, and dissected to construct networks or webs of connections between artists, between songs and between listeners in different places. Semantic data research also includes collecting and analysing the compilation of playlists by users and exploiting the links that listeners make between music and activity, such as cleaning, school work, rainy days, late night, running, commute.

Third, is the analysis of the sonic content of digital music whereby individual songs or tracks can be analysed and compared for obvious traits such as melody, harmony, rhythm and pitch, along with the instruments used, gender of vocalist and stylistic characteristics, such as danceability or use of distortion. Pandora Internet Radio’s Music Genome Project makes use of teams of musicologists to collect details of every track according to 450 identifiable characteristics (although not all are applied to every genre or recording). The Echo Nest (now owned by Spotify) analyses data from approximately 40 million songs and also allows the analysis of tracks and makes available various apps that allow consumers to link to related songs and styles.

Sonic analytics are used to algorithmically manipulate streamed listening behaviour, making it appear more ‘personal’ by providing constant suggestions, and by allowing listeners to engage in novelties related to their listening (accessing sequences of songs with the same beat, taking a sonic journey to related genres), flattering the individual on their unique profile. This data is also cross-referenced and combined with semantic and listener data when linking listener activities to the interests of advertisers. For example, data collected on individual listeners is reconfigured by Pandora and sold to advertisers as ‘2300 targetable audience segments’ (Prey, 2017, p8).

Due to the amount of data being produced, the structuring of various deals, alliances and collaborative ventures between companies in the big tech sector, this data can then be combined with, or cross-referenced and ‘migrated’ to other data sets. This can then lead to ‘function creep’ whereby data and technology that is developed for one apparent use is deployed more widely with other data, a practice that has caused concern

in discussions of government surveillance, privacy and human rights (see Bernal, 2016). Music listening data by itself can be used to predict streaming and purchasing behaviour, to mitigate corporate anxiety about uncertainty through 'risk management' (Negus, 2014) and to generate income when sold on to advertisers (seeking to place ads for sportswear or automobiles alongside playlists). It can also be correlated with a 'bewildering array' of other indicators when data miners seek predictors of credit worthiness, home ownership or leisure activities (Prey, 2016).

The post-record music industry offers an abundance of data that is exploited by digital conglomerates and infomediaries. The dispute about whether revenue is more fairly extracted from advertising or the enforcement of copyrights is just one scuffle within a broader set of tensions about the value of recorded music, the characteristics that make it valuable and the way worth should be acknowledged, both culturally and economically.

Musicians, labels and publishers have been campaigning for recorded music to be recognised for its creative and artistic value (rather than as content that attracts traffic) and to be accorded greater economic reward. As the digital conglomerates continue to influence the conditions within which music is circulated and consumed, there are further conflicts imminent about how musicians and music companies should be recompensed for the data value of their music.

Diversity and divergence in the post-record music industries

In the post-record music industries the recording is displaced – as art form, as artefact, as tangible commodity. Musicians still make recordings, and these are commodified in new and in old ways. But, the record is no longer central in determining the scope and success of publishing repertoires, live tours, the demand for merchandise, studio budgets and the media appearances of performers. The recording - on CD, as download, as stream - loses worth as industrial product, as a saleable tangible commodity and as a cultural symbol. Within the digital economy recording acquires new exchange values as content and as data commodity, and new use values for consumers in the ubiquitous sonic stream (through subscriptions, apps, playlists for leisure activities and so on).

As musicians and music companies abandon their dependence upon income from recordings, and pursue multiple sources of revenue, so the music industries become less unified, less dependent upon a shared stake in recording as the route to success, and more splintered into sectional interests. This can be illustrated with two examples from different parts of the world – the UK and China.

In its *Measuring Music Report* (2017), UK Music - the trade organisation that represents music companies - recognises this lack of unity by dividing the 'music industry' into six 'core sectors.' These are musicians, composers, songwriters and lyricists; recorded music; live music; music publishing; music representatives; music producers, recording studios and staff. The core sectors are further broken down in to 'sub sectors'. So, for example, recorded music is sub-divided into three categories (record labels; online music distributors; design and manufacture of physical product and packaging). Live music is broken down into four categories (music festival organisers, music promoters, music agents; production services for live music; ticketing agents; concert venues and arenas). In 2016 recording was contributing 14 per cent of total music industry revenues to the UK economy, with live music at 23 per cent. Recording accounted for only 6 per cent of those employed within the UK 'music industry' (UK Music, 2017). UK Music, whilst seeking to lobby and campaign on behalf of a coherent singular 'music industry' recognises that recording is only one component part of this industry.

In a similar way, the *2017 China Music Industry Development Report* (CUC, 2017) divides the music industry into three 'segment industries': A 'core layer' contains music books and audiovisual publishing industry; music performance industry; music copyright brokerage and management; digital music industry. A 'link layer' is made up of musical instrument industry; music education and training industry; professional audio industry. An 'expanding layer' contains radio and TV music industry; karaoke industry; film, television, drama, games, animation music. The digital music industry accounts for 16 per cent of total revenues, with Karaoke accounting for 27 per cent, musical instruments at 12 per cent and music books and audiovisual publishing (physical artefacts) at under half a per cent.

Only taking examples from two territories shows that recording is one element within the overall music industries (it would be instructive to broaden these comparisons

with other music industries around the world). It also illustrates how the music industries in anyone place are shaped by the interplay of cultural and commercial contexts. Important core industry sectors in China do not feature in UK Music's core music sectors, for example. Although the Communist Party of China, through various committees and councils, seeks to 'strengthen the integration of the music industry with other industries' (p17), and although UK Music has a political mission to 'represent the collective interests of the recorded, published and live arms of the British music industry' (as stated on its website), it is no longer plausible to argue for a 'music industry' characterised by a concentration of shared interests (Azenha, 2006) or strategically advantageous structures of 'vertical' and 'horizontal integration' (Bishop, 2005).

The music industries are active through specific businesses and companies, interest groups, occupations and organisations, and these may be grouped into loosely themed sectors or layers. These sectors operate within looser competing and collaborating networks, portfolios of businesses structured according to multiple rights models, and strategic alliances.

These disunified music industries face challenges from 'digital positivism' (Mosco, 2014) as the digital conglomerates (and nation states) seek to comprehend and manipulate the behaviour of musicians and listeners by extracting and using data derived from the production, circulation and use of recording. But the post-record music industry benefits, as do all music industries, from the way music continues to be created and performed, continues to be created and performed, exchanged and acclaimed, experienced and enjoyed, in ways that escape the reduction of our lives to data.

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