The Software Slump?: digital music, the democritisation of technology, and the decline of the recording studio sector within the musical economy

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Abstract. The music industry has been radically transformed by software. As has now been well documented, the development of software formats such as MP3 and the rise of Internet ‘piracy’ have had significant impacts upon intellectual property rights and distribution within the industry, with significant impacts for record companies. This paper explores another part of the musical economy which has also been radically transformed through code, although, to date, this crisis has passed by with very little comment. The paper looks at the recording studio sector and reveals how the introduction of software into the recording process encouraged a vertical disintegration of production in musical agglomerations from the late 1970s onwards and, in so doing, helped leading recording centres to strengthen their hold on the market for recording budgets. However, the impact of software since the mid-1990s has been less benign for such centres. The rise of more affordable digital recording rigs and easier programming protocols represents a democratisation of technology, making available a process that was once accessible only through the facilities and skills provided by a recording studio. Software and code have ushered in a regime of distributed musical creativity, which is having significant impacts on the organisation of the musical economy. As a result, the recording studio sector is undergoing a severe crisis which has produced a spate of studio closures, redundancies, and underemployment within musical agglomerations. As a result, the ‘institutional thickness’ of key recording centres has been significantly depleted in recent years.

1 Introduction
The role that software plays within the economy is now widely acknowledged (Dodge and Kitchin, 2004; 2005a; 2005b; 2007; Lessig, 1999; Thrift and French, 2002; Wise, 1998). Software is recognised as a significant economic agent in at least three ways. First, the production of software constitutes an important industry in its own right. There is no clearer signal of this than the fact that Microsoft is one of the world’s largest companies, and that the software industry is a significant generator of income and profits the world over (Auletta, 2000; Hozic, 1999). Indeed, the industry is so large that it is able to remain highly profitable despite a chronic problem of copyright infringement in many countries of the world, while it is also able to support the business model of open source which is based on the giving away and sharing of code between programmers and users (von Krogh et al, 2003; Weber, 2004; Zeitlyn, 2003). Second, the significance of software can be determined, ironically, by its taken-for-granted nature. Software and code have sunk into the business background (Leyshon et al, 2005a), and much of the economy would simply be unable to run without it, and all manner of procedures, conventions, and protocols are highly dependent on the unproblematic unfolding of software programs (Dodge and Kitchin, 2005b; Thrift and French, 2002). Moreover, within some industries software has been part of the business vernacular for decades, since at least the 1960s in some cases. Third, and finally, software is seen as a catalyst for economic change. This view of software and code became particularly prevalent in the 1990s as part of the hyperbole that surrounded the

† The title of this paper was inspired by The Sophtware Slump (2000) by Granddaddy (V2 Records).
The unfolding of the New Economy. As the dot-com bubble burst in 2000, many people were equally quick to dismiss the significance of this software-fuelled era of rapid boom and bust (Henwood, 2003). However, while it is important to guard against the danger of technological determinism in explaining economic change, recent critical reflections on the New Economy have concluded that its legacies have been significant and enduring, with important geographical consequences (Leyshon et al, 2007; Martin, 2007; Pratt, 2007; Zook, 2007).

This paper focuses upon the second and third aspects of software as an agent of economic change outlined above: that is, it explores the ways in which software may be seen to have been embedded in industries over often surprisingly long periods of time, and also how the utilisation of software can be part of quite fundamental processes of sector-wide change. It does this through an analysis of the musical economy, which as is already well known, has undergone significant changes since the 1990s as a result of software applications that have both enabled the Internet and developed compression programs such as MP3 that tipped an already struggling industry into a full-blown crisis of reproduction (Fox, 2004; Jones, 2002; Leyshon, 2001; 2003; Leyshon et al, 2005b; McCourt and Burkart, 2003; Power and Jansson, 2002). To date, most of the research that has focused on the crisis of the musical economy has done so through an analysis of problems within distribution and sales, with attention inevitably aimed at the implications for record companies and the media conglomerates of which they are a part. This paper goes beyond record companies and seeks to uncover the consequences of the crisis of the music industry within another set of institutions that is at the heart of the agglomerated musical economy: recording studios. However, the approach to software in this paper needs to be qualified. The paper develops a historical geographical account of the recording studio sector, and of the role of sociotechnical change in its evolution. As such, the paper seeks to place the emergence of software in context; software emerges as an agent of change at two particularly important periods—the late 1970s and from the mid-1990s onwards—to change the trajectory and organisation of the recording studio sector. Drawing on original research undertaken in British recording studios, the paper reveals an even deeper and transformative crisis at the heart of the musical economy which in part turns on the introduction of digital technology controlled by software.

The remainder of the paper is organised as follows. Section 2 sets out the context for the paper, and outlines the ways in which a combination of the Internet and the development of software compression programs has served as a catalyst to bring about fundamental change within the musical economy. It refers to the concept of the musical network, which is useful in understanding the ongoing nature of the crisis besetting the sector. Section 3 sets out an economic geography of recording studios, and outlines their role and function within the overall musical economy. Section 4 undertakes a sociotechnical history of recording studios, looking at the ‘analogue’ and ‘digital’ eras in turn, and reveals how the privileged position of studios within the musical economy has been undermined through the incremental development of applications within the recording process, which has led to a growing democratisation of technology. Section 5 concludes the paper.

2 Copyright capitalism in an era of digital reproduction
Since at least the 1990s a number of industrial sectors have been caught up in a crisis afflicting copyright capitalism in an era of digital reproduction (Lessig, 1999; 2001). Industries that produce commodities which rely on copyright legislation for their efficient commercial exploitation but that can also be rendered in digital form have been subject to significant processes of restructuring over the past decade or so.
They include the motion picture, photographic, publishing, and software industries (Currah, 2003, 2006; 2007; Gluckler, 2005; Pratt, 2007; Vaidhyanathan, 2001). However, it has been within the music industry that this digitally induced crisis of reproduction first came to prominence and arguably has developed most fully (Leyshon et al, 2005b). The scale of the problem facing the music industry by the middle of the first decade of the 21st century can be gauged by comparing legitimate and illegitimate download services. Developed by Apple to provide a legal download site which would ensure that customers generated revenues for music that would flow through the music industry value chain, iTunes has undoubtedly been a very successful innovation. In 2005 the site recorded its billionth download, and the revenues from downloads reached more than $1 billion per annum in that year. The service had a library of over two million songs available, which was heavily trawled producing 420 million downloads in 2005 alone. The downloads from the site are subject to digital rights management, which limits the number of machines to which they can be copied so the files do not circulate endlessly and without limit across the Internet. The download platform has also been successful for Apple in other ways too; it is supported by its highly successful range of MP3 players—iPods—which may have even have promoted legal downloads as the files downloaded from iTunes are playable only on machines with Apple software.(1) Moreover, Apple is not the only company offering downloads that ensure that revenue flows from consumers to record companies, publishing companies, and artists; there are now over 300 legal online sources of music available on the Internet.

However, the scale of the problem facing the industry is that these are dwarfed in scale and scope by systems that make it possible to download illegal or ‘pirated’ material. As long ago as 2003 the top-ten peer-to-peer (P2P) download programs—systems that facilitate the illegal downloading of music—had themselves been downloaded more than 640 million times, and it is estimated that 2.3 billion files are downloaded across these networks every month. For example, consider one of the most successful of these networks, Kazaa; by 2006 it had been downloaded more than 239 million times, commanded a user base of over 140 million computer users, which was more than double that of Napster at its peak, with as many as four million users simultaneously online at any time (BBC News 2006).(2) The availability of so much copyrighted material on sites such as this, for which no fee is received, has created an environment which poses a significant threat to the musical economy. Unlike other piracy cultures that have chronically beset the music industry since the first availability of consumer recording and playback technologies in the late 1960s and early 1970s, the free exchange of music in MP3 format has been a more intractable problem; given that MP3s produce a durable and near perfect copy of the original recording, they are available in an insecure format that can be copied and recopied without any reduction in quality and they are exchanged in an environment that is indifferent to intellectual property rights (Choi and Perez, 2007; Higgins, 2007; Higgins et al, 2007; Ouellet, 2007). By way of illustration, consider this following vignette. For the last few years I have given a lecture on the economic geography of the music industry as part of an introductory first-year class on human geography. During the lecture I always conduct a straw poll to gain an indication of the number of students

(1) However, it has been argued by some, including the European Union, that this lock-in is motivated more by Apple’s attempt to reduce competition with its own service rather than by an inherent concern for music copyright. Moreover, the machines will happily play MP3s obtained from illegal download sites. Note that since this paper was written Apple has removed DRM (digital rights management) on new titles.

(2) Following a string of legal actions against it, the owner of Kazaa, Sharman Networks, announced in 2006 that it would convert to a legal music download site (BBC News 2006).
who download music from P2P sites and their awareness of the illegality of their actions. Among the 200 or so students there is always a forest of arms raised in response to both questions, indicating that they are regular users of such sites, and that most are aware that what they are doing is illegal. However, as McCourt and Burkhart (2003) observed in their pioneering analysis of online file trading, most people calculate that their chances of being caught are remote and, in any case, they are only doing what everyone else is doing. To pay for commodities that one's peers are routinely obtaining for nothing, particularly when there are considerable constraints on the expenditure of students, means that one must have a particularly strong moral compass. Indeed, it is probable that there is now a culture of expectation among many music consumers that the default position for obtaining music is that it should be free, an observation which is backed up by the figures recorded by Internet consultancy Comscore, which analysed the outcome of the 2007 experiment by the band Radiohead who chose to make their new album (*In Rainbows*) available online but allowed consumers to set their own value for the tracks. Over 60% of consumers chose to pay nothing at all, apart from the obligatory 45 pence administration fee (Comscore, 2007).

The correlation between the rise of material available to be downloaded freely on P2P download sites, and the sharp fall in the volume of global music sales—a decline of at least 15% between 2001 and 2004—unsurprisingly led many people within the music industry to argue that this rise of freely downloadable material was the cause of the fall. While it would be naïve to suggest that the amount of material available online has had no implications for retail sales, research commissioned by the music industry itself would suggest that the relationship is a little more complex and ambiguous than many industry insiders believe. The value of UK recorded music sales actually increased in real terms between 1978 and 2004 (see table 1). Sales also increased between 1994 and 2004, while data on UK-based record companies’ net invisible earnings between 1993 and 1998 reveal that this form of income peaked in 1995, going into decline before the MP3 gift economy broke out of the tightly defined groups of hackers and programmers to which it was formerly confined (table 2). Therefore, Internet piracy is better seen as a ‘tipping point’ in the development of the music industry, which was already struggling and on the verge of crisis (Leyshon et al, 2005b). Internet piracy has legitimised the talk of a crisis of reproduction within the music industry.

### Table 1. Real value of UK recorded music sales, 1978–2004 (£ million: 2004 constant prices (source: dates from British Phonographic Industry).

| year | £ million |
|------|-----------|
| 1978 | 934.2     |
| 1984 | 688.8     |
| 1994 | 1 188.4   |
| 2004 | 1 214.1   |

### Table 2. UK-based record companies net invisible earnings, 1993–98 (source: Dane et al, 1999).

| year | £ million |
|------|-----------|
| 1993 | 233.0     |
| 1994 | 225.4     |
| 1995 | 317.7     |
| 1996 | 280.0     |
| 1997 | 262.5     |
| 1998 | 207.7     |
But, in truth, this crisis had been brewing for many years, as the recorded music increasingly had to compete for the under-24 ‘share of wallet’ retail market with new objects of consumption such as computer games, mobile phones, and DVDs. Having seen the discourse of crisis become legitimised, those who ran the large record companies wasted little time in resorting to tried and tested procedures of industrial restructuring. Rounds of job losses were followed by a series of contractual changes with artists, which involved the cancellation of contracts, as well as making surviving contracts broader in scope to include new potential revenue streams such as merchandising, etc. One significant outcome of this process was a shrinking of artist rosters, and, particularly significant in the context of this paper, large reductions in the size of budgets for A&R, which includes the recording budgets that pay for producers, engineers, and studio time (discussed in more detail in section 4).

Thus, the development of software has clearly had a material impact on the musical economy, at least as far as distribution and sales are concerned. In the remainder of the paper the focus shifts to the process of musical creativity and to the recording studio sector.

3 The economic geography of the recording studio sector
The recorded music industry is, for the most part, an urban phenomenon, and the realisation of musical creativity is a spatially agglomerated process. Like other creative industries, the music industry is rooted in communities of workers anchored to particular places which, once established, become “magnets for talented individuals from other areas, who migrate to the centres in search of personal and professional fulfilment” (Scott, 2004a, page 7). London has been an important centre for the music industry since at least the 1960s, when the major US and European record labels increased their capacity in the city as British popular music become internationally significant in the wake of the success of The Beatles and the ‘British invasion’ of US popular culture. London is now the headquarters of one of the large ‘big-four’ music conglomerates—EMI—and has traditionally been an incubator site for smaller and independent record labels.

The urban focus of the recorded music industry can be explained to a large extent by the concept of the musical network (figure 1). Elsewhere (Leyshon, 2001) I have argued that there are four main types of musical network: creativity, reproduction, distribution, and consumption. Each of these plays a distinct role in the value chain of the musical economy, and also has its own distinctive geography. Creativity, which involve practices such as composition, performance, and recording—what Scott (2000) describes as the ‘creative field’—is the network within which music is at its most unstable and volatile. As a result, this network involves the participation of large numbers of actors with different skills and competencies from an array of different institutions. These actors and institutions tend towards agglomeration in an attempt to cope with spillovers, which are endemic where knowledge is volatile and in process (Bassett et al, 2002; Bathelt et al, 2004; Coe and Johns, 2004; Pinch et al, 2003; Scott, 2001; 2004b). To date, academic research on the functions that make up networks of creativity have mainly focused on the role of record companies (Negus, 1999a; 1999b), while those studies that have been concerned to determine the impacts of the current crisis on the musical economy have also tended to take the record company as their default institutional focus (Leyshon et al, 2005b).

This paper makes a start at rectifying this imbalance by focusing on the role of recording studios within networks of musical creativity, and analyses the impact of the ongoing crisis of the music economy upon them. It also identifies two critical moments in the history of the recording studio sector when software has helped to reconfigure
the institutional and competitive structure of the industry. The paper draws upon research which I undertook between 2005 and 2006. It consisted of an empirical analysis of commercial success of studios, which identified the leading studios worldwide based on their contribution to the best-selling CDs of 2003. The analysis of this data is developed elsewhere. Suffice to say that the leading studio centres identified by thesis research were, in order of significance, London, Los Angeles, and New York. The research also involved interviews with owners and employees of recording studios and management companies in the UK, as well as various freelance workers, generating over 30 hours of interview material. All interviews were transcribed and coded.

3.1 The recording studio business

While the volume of geographical work on the music industry is limited, the amount of work on recording studios is virtually nonexistent. The sole contribution to date is the study of recording studios undertaken by Gibson (2005) as part of a broader analysis of the relationship between music and urban landscapes. While this is a perceptive and valuable study, it touches only on the economic role of recording studios within the broader musical economy, although it does indicate a possible business model for economically failing studios that, nevertheless, have iconic status as a result of earlier achievements: that is, studios are able to convert themselves into urban heritage sites. Indeed, there is very little academic literature at all on the recording studio sector, and much of what does exist emanates from fields such as musicology, sociology, and science studies (Hennion, 1989; Horning, 2004; Kealy, 1979; 1982; Perlman, 2004; Porcello, 2004; Theberge, 2004). Moreover, very little of this material has taken a broader perspective of the economic role of recording studios within the contemporary musical economy.

Perhaps one of the reasons for this is that there is actually very little background information on the economy of recording studios. Most of the information that does
exist is in the form of estimates, and much of this is for the UK. The best source of information emanates from reports undertaken for and by the National Music Council in 1999 and 2002. For example, a report by the National Music Council (2002) estimates that in the early 21st century there were around 300 or so ‘economically significant’ recording studios in the UK (although what represents economically significant is never defined). A majority of these studios—nearly 200—were located in London. Taking a broad definition of the sector, the report estimates the number of employees engaged in the recording studio sector to be in excess of 1000, and calculates that the value added of the sector—that is, the sum of income from employment and self-employment, plus the gross trading profits of companies and the value of rent received—to be about the £50 million per annum. In addition to this, the report estimates that there were around 350 full-time producers, which, combined, were responsible for generating £20 million of value added to the economy. This report was an extension of an earlier study undertaken for the National Music Council by Dane et al (1999) which provided a more detailed analysis of what might be described as the value chain of the musical economy. An analysis of value added per employee revealed that the average figure across the industry was £29 000. The highest contributions to value added per capita were made by composers, publishing companies, and record companies, whereas both recording studios and record producers fell well below this industry average at £22 000 and £18 000 value added per employee, respectively (see table 3). What this analysis reveals is that the recording studio sector is not a particularly profitable or efficient part of the musical economy overall, particularly when compared with record companies and publishing companies, notwithstanding the deepening of the crisis of the music industry described above. Nevertheless, it is, or at least has been, a crucial part of the overall value chain of the musical economy, producing commodities upon which large parts of the industry depend.

So, how are we to understand the role played by recording studios within the broader musical economy? One way to do this is to outline the assets that they possess that enable them to generate business within the music industry. If one does this then studios may be seen as sociotechnical spaces that use, in combination, the following assets: space; time; technology; expertise; and ‘emotional labour’. I will now deal briefly with each of these assets in turn. First, recording studios provided dedicated spaces for the recording of music, which vary from large orchestral rooms to smaller and more intimate spaces, but all of them have distinctive acoustic properties that have been created either by their original design or through subsequent iterative acts of

| Table 3. The value chain of the UK musical economy (source: Dane et al, 1999). |
|-------------------|-------------------|--------------------|
|                   | Value-added (£ million) | FTE employment per employee (£) |
| Composers         | 930               | 1 500              | 620 000           |
| Publishing companies | 96            | 1 275              | 75 000            |
| Collection societies | 26           | 913                | 28 000            |
| Performers        | 350               | 46 000             | 8 000             |
| Record companies  | 405               | 7 128              | 57 000            |
| Record producers  | 14                | 750                | 19 000            |
| Recording studios | 15                | 660                | 22 000            |
| Manufacturers     | 87                | 3 000              | 29 000            |
| Distributors      | 86                | 2 578              | 33 000            |
| Retail            | 279               | 16 090             | 17 000            |
| Total             | 2 228             | 79 894             | 29 000            |
tinkering, which make them suitable spaces for the performing and recording of music (Cogan and Clark, 2003; Cunningham, 1998; Simons, 2004). Second, studios sell time in these spaces, and are the sites for project-based work (Christopherson, 2002; Grabher, 2001; 2002a; 2002b; 2002c; Hertel et al, 2003; O’Mahony, 2003; Ó Ríain, 2000; von Krogh et al, 2003). This mode of work is common across the creative industries more generally (DeFillippi and Arthur, 1998; Jones, 1996), and recording studio projects can last from just a few days to many months. Third, studios provide dedicated technology that facilitates the recording of music, and to that end are the sites of considerable sunk costs that have accumulated over many years. Fourth, studios provide expertise in the operation of recording technology and, crucially, the ability to combine it with the relative skills, proficiencies, and musical ambitions of its clients. Fifth, and finally, recording studios provide what has become known as emotional labour: that is, interactive service work heavily loaded with feeling and affect that is part of the service being provided (Hochschild, 1983; Steinberg and Figart, 1999). Unlike the other four assets, the significance of emotional labour became obvious to me only after undertaking several interviews in studios and observing just how ‘nice’—there is just no other word to describe it—everyone in recording studios seemed to be. (3) This contrasted strongly with the indifference and passive aggression that I perceived in my initial attempt to gain access to studios in the first place, which proved to be difficult if not impossible places to access without a personal referral or reference to an already known contact within the recording studio sector. (4) It became clear that an asset of what might be described as congeniality was deliberately cultivated and worked upon, and is a long-standing feature of studios, having been observed in studios as early as the 1970s (Kealy, 1979; 1982). Moreover, compared with other assets, emotional labour is one whose significance is not being eroded by broader forces of competition and technological change within the musical economy. Thus, while demand for space, time, technology, and expertise is (increasingly) substitutable, emotional support and encouragement for the creative process is an asset that studios can actively cultivate and promote. Moreover, it becomes a reputational asset (Gluckler, 2007) that can be strongly linked to particular studio spaces and infrastructure.

(3) I should emphasise that this observation is based on more than twenty years of experience of undertaking corporate interviews. While interviewees in others sectors where I have researched have for the most part been polite and courteous, and often generous with their time and knowledge, the welcoming atmosphere within recording studios was markedly different. This, in part, may be a product of the fact that most recording studios are effectively small businesses, but it is also a product of their recruitment strategies and deliberate attempt to create an environment that is facilitative and supportive of creativity. However, as the paper makes clear later, that tangible sense of congeniality does not mask the often brutal power relations that frequently play out within recording studios.

(4) Traditional modes of gaining access to elites within organisations proved ineffective in recording studios. Letters, e-mails, and telephone calls to identified individuals in recording studios were not returned and I was forced to change tack and negotiate access via the Association of Professional Recording Studios (APRS). Once I had successfully undertaken a couple of interviews that the APRS helped set up, I was able to use these names in approaches to other key gatekeepers which helped to gain wider access. Eventually, I was being approached by people within the industry who wanted to speak to me as they were curious about my research and wanted to contribute. This culminated in a presentation that I gave to the APRS in the summer of 2006. The problems of gaining access were revealed to be a result of the high level of approaches they receive from individuals seeking employment or intern experience at recording studios, so that most employ a ‘don’t call us we’ll call you’ policy. In addition, within the higher profile or ‘top end’ studios there was an general unwillingness to engage with anyone wishing to write about recording studios, which was attributed to negative experiences with journalists in the past, but also to the need to protect the privacy of their often high-profile clients.
Thus, in much the same way that Thrift (2005) has argued that the affective turn within capitalism more generally is really driven by a hard-edged concern for competitiveness and profitability, so the cultivation of congeniality within studios is a response to the fact that many of the other barriers to competition within the sector have been progressively lowered and eroded. Recording studios were once highly privileged sites that allowed only those with sufficient resources to gain access to their facilities; now, with the growing ubiquity of digital recording media, and the possibilities of open access distribution sites such as MySpace and YouTube, all manner of artists that might have been prevented from finding an audience through the normal narrow channels of the music industry at least now have the opportunity to do so. This presents a significant challenge to the long-term viability of recording studios, and the analysis in this paper seeks to explain how this has come about.

3.2 The recording studio market and business models

The assets outlined above are deployed by recording studios in a market that is characterised by oligopsony: that is, a market characterised by few buyers. The demand for the services of recording studios is driven by a relatively small coterie of record, motion picture, and television companies which, for the most part, provide the investment that enables artists to use professional studios. As is typical of oligopsonies, the concentrated power of buyers has encouraged intensive competition among suppliers, which has brought about a significant deflation of studio fees.\(^5\) It was widely reported during interviews that the rates for renting studio time in 2005–06 were the same as in the mid-1980s, which, if one takes into account the economy-wide inflation of wages and prices over that time, represents a significant deflation of the fees that studios are able to charge. All studios have a set of posted ‘day rates’ for the hire of their studios, but it was admitted that it was very rare to be able to charge this as the representatives from the record companies in particular, who constitute the heaviest demand for studio time, were well aware of the level of competition between studios for business and would expect a discount on the published rate. The APRS has sought to resist the tendency towards rate discounting, and encouraged studios to hold the line on fees, arguing for a transparent market whereby studios compete on their posted day rates. However, as a number of studio managers admitted in interviews, the tendency to cut a deal was difficult to resist in times of slack trading. Studio managers were all too aware that in a market of comparatively few buyers there were only so many clients who refused to pay the going rate for services that one could turn away. The problem of fee deflation is further exacerbated by the progressive lowering of the barriers to entry in the market, as the cost of technology falls and, in particular, by the use of software to stand in for and replace acts of studio craft that were formerly embodied and tacit in nature. It is also exacerbated, at the margins, by the existence of so-called ‘vanity projects’, where wealthy individuals set up recording studios not so much based on coherent sustainable business models but more as glamorous ventures which create a space where it is possible to associate with (famous) musicians.

There are two main types of market in which recording studios operate. The first is the recording market, which is the de novo recording of material. This, in turn, is divided into two areas. On the one hand, there is the classical and film score market. On the other, there is the ‘rock and pop’—popular music—market. The studio rates in the UK for these markets combined vary from £400 to £2500 per day, with the

\(^5\) There is a sizeable economic literature on oligopsonies, which are particularly prominent in agricultural and natural resources sectors, where the retail end of the supply chain is often characterised by oligopsony (see Just and Chern, 1980; Lowry and Winfrey, 1974; Schroeter and Azzam, 1991; Sexton et al, 2007).
higher rates largely being earned by studios that have large rooms which are used for orchestral recordings. Most studios now charge by the day rather than by the hour, which became the standard way of costing studios from the 1970s onwards as new studios dedicated to a rock and pop market undermined the regime of union-regulated working hours that restricted sessions to 3 hours at a time. The ‘days’ that can now be hired at studios are, in effect, 12-hour days—which converts into hourly rates that vary from £33 to £200 based on the day rates reported above—and for that usually include the use of an in-house recording engineer and a ‘tape-op’ (or tape operator, a generally menial position or ‘gofer’ for the artist(s), producer, and engineer). As will be outlined in section 4, record producers used to be part of the package bought by users of recording studios, although from at least the 1950s onwards these increasingly became freelance employees (as now are engineers), and are hired by the company organising the recording session. It is the producers who are given responsibility for the recording budget, and have a large choice over the studio and environment in which the work will take place.

In the UK at least, the institutional fabric of the recording studio market is characterised by a distinctive hierarchical division. At one extreme, there are the so-called ‘top-end’ studios that are large, often prestigious institutions which have large rooms capable of high-quality orchestral recording for classical and film score production. These include studios such as Abbey Road (formerly EMI studios) and AIR (formerly owned by George Martin, producer of The Beatles recordings). Just below this level is a set of smaller studios that mainly ply their trade in the established rock and pop market. Many of these studios are less than forty years old (see section 4). Below this level there is a long tail of small budget studios (and increasingly home studios) which cater for those unable or unwilling to pay the rates demanded by the more established studios. There is, in addition, a fourth recording studio business model: that is, the residential studio, which is essentially a recording hotel, where artists both live and record for the duration of the project. They are normally located in rural areas—notable examples in the UK include Rockfield and Chapel Studios, located near Brecon and Lincoln, respectively—and often hired by record labels when they have a newly signed young band who they wish to isolate from urban temptations in order to get music recorded.

The second type of market in which recording studios operate is the postproduction market. This covers a range of work on already recorded music and includes mixing, scoring to visual material, and the mastering of disks. The attraction of this work for studios is that the rates for studio space are higher than for merely recording, and there is a high demand for space for such projects, although the duration of the projects is shorter. For example, the process of mixing, which involves finalising the balance of sound within recordings, usually takes about two days per track. For both mixing and music scoring, the fee covers the use of the technology and space only, as the producers and engineers are freelance. However, the third arm of the postproduction market, mastering, is unusual, in that it is the last remnant of the traditional model of recording studio provision. The fees paid for mastering buy both the in-house engineer and the studio in which he (and it is invariably he) works. Mastering is the final act of the creative process, where the mix of the tracks is transferred onto a master disk which is then sent off to networks of production where the now stabilised cultural commodity is mass produced and distributed (see figure 1). This is a highly specialised and concentrated market, and the Anglo-American market is dominated by a handful of studios with a reputation for high-quality mastering, such as Sterling Sound in New York, Gateway Studios in Portland, Maine, and Abbey Road studios in London.
The paper so far has placed the recording studio sector within the context of the musical economy as a whole, and outlined its market structures and some pressing imperatives. The next part of the paper sets the evolution of recording studios within a broader historical context, and charts their rise and fall in line with associated developments in the social organisation of the musical economy and the development of technology and, in particular, software.

4 A sociotechnical history of recording studios: an anatomy of decline

Since the development of Edison’s first recording device in the late 19th century, the musical economy has evolved in lockstep with technological innovation and development. However, up until at least the 1940s the sociotechnical evolution of the recording studio sector served to lock up expertise in studios, making them privileged sites of knowledge and expertise. But, beginning in the years after World War II, innovations in recording technologies have worked in the opposite direction, lowering both the cost and barriers to entry. Digital recording and the use of software are just the latest stage in this process.

4.1 The analogue era

A close relationship between the process of recording and technological development ensured that a laboratory-like regime persisted for decades within the recording studio sector. For example, consider the case of the studios built by EMI at 3 Abbey Road in northwest London. This purpose-built studio signalled a new development within the musical economy, and a move towards vertical integration that was already underway within the motion picture industry at the time (Christopherson and Storper, 1986).

Opened in 1931, at the then not inconsiderable cost of £100,000, the EMI studios were the world’s largest complex dedicated to gramophone recording (Southall, 1982). Thereafter, other large record companies—companies such as Pye and Decca in the UK, Warners, RCA, and Columbia in the US (Millard, 2005)—began to build their own dedicated recording studios which combined musical creativity and technological development within dedicated spaces. They became sites of innovation within which companies integrated activities all along the value chain of the musical economy. Thus, the equipment used in studios was often bespoke and available only within that company’s studios. For EMI, this equipment was often developed in its manufacturing division located in Hayes, and would be tested in the Abbey Road studios which would have sole use of successful innovations. The laboratory-like status of studios of the early 20th century was extended to the dress code expected of its employees, who were required to wear white coats at all times (see figure 2), a practice which extended into the 1950s (Southall, 1982). Technology was carefully guarded, as was a set of tacit skills and competences developed by recording engineers, such as the placing of microphones in relation to the instruments being recorded, practices which, according to Horning (2004), “were considered in large recording companies to be proprietary information” (page 709). Indeed, at least until the 1960s, studios were highly regimented and bureaucratised institutions, which, in part, reflected the role they played within the large vertically integrated organisations of which they were a part. Campaigns by musicians’ unions both in the US and in the UK against what was seen to be the threat to the livelihoods of performers from recorded music led to a series of accommodations between record companies and the labour that worked in their studios in the early 20th century (Coleman, 2005). The unionisation of both musicians and engineers within the studio environment saw the imposition of a maximum of three separate 3-hour recording sessions per day maximum—10.00–13.00, 14.00–17.00, and 19.00–22.00—and a clear demarcation of duties and responsibilities within both
the studio and the control room, which Kealy (1979) describes as a regime of craft union regulation. An outcome of this system was the development of clearly defined technical career paths for engineers, and in Britain the large recording studios played the same role in inculcating a training labour force much in the way that the BBC did within the field of broadcasting.

The legacies of this more formal and rigorous approach to the production of sound lasted well after Abbey Road had abandoned the obligatory white coats in the 1950s. A recording engineer who was recruited by EMI in the early 1970s confirmed the strong links that existed between the research and development arm of the companies' manufacturing and technical division and the recording process in the studio:

“There was a chief engineer who set technical standards in the studio, it was very much the technical off-shoot of the record company and they were used as an advisory centre ... in those days there was a laboratory so we tested every bit of gear before it went into use and it was very much the technical department controlled what went on in studios” (interview 3, freelance engineer/former Abbey Road employee, male, fifties, 2005).

This particular mode of development—where the leading studios dominated the recording industry, were owned by major recording companies, and were connected to their technical equipment divisions—created idiosyncratic studio spaces that were unique to each organisation. The space in each studio was different, and the acoustic environment often developed incrementally and organically in relation to the nature of the materials used in its construction or to subsequent experiments with baffling and other materials introduced to the studio fabric. In addition to variations in the

Figure 2. The studio as laboratory: recording engineers (in obligatory white lab coats) at work in EMI studios, Abbey Road, 1930s (source: Southall, 1982).

(6) The importance of the very fabric of the studios to the sound generated within them has led studios to adopt cautious and conservative approaches to renovation. For example, when the parquet wood flooring laid down in Studio 1 at Abbey Road in 1931 eventually needed replacing because it had worn away, concerns about the implications of the renovation for the resonance of the room meant that the studio undertook the job in the most laborious way possible: block by block, overnight, and stretching over a much longer period than if the studio had been closed for a large-scale refurbishment.
acoustic environment, different studios often worked with a distinctive palate of technologies. Although some of the equipment was generic, much was specific and unique to the studio, having been produced by the manufacturing division of the large company. Moreover, the ways in which this equipment was deployed varied from studio to studio, and recording configurations often “depended on experimentation, trial and error, and innovative thinking” (Horning, 2004, page 707). Moreover, distinctive employment cultures emerged within each studio; all producers and engineers were salaried employees of the studio, their regular employment guaranteed by the fact that until at least the late 1960s the studios were available only to artists signed to the record company that owned it. This contractual requirement locked artists into particular studios and guaranteed work. As a result, there were few knowledge spillovers between studios, as both staff and artists tended to be confined to the same space over relatively long periods of time. A particularly good illustration of this system in action is revealed by a vignette from the early recording career of Pink Floyd which is contained in the 1960s memoirs of promoter and producer Joe Boyd (Boyd, 2006). Having negotiated money from a management agency to pay for a recording session in one of the fledgling independent studios in London, which he produced, Boyd found that the band’s manager used the resulting single—Arnold Layne—to negotiate a long recording contract with EMI. Despite his role in the initial success of the band, the deal meant the end of Boyd’s role as the band’s producer because EMI insisted that all future recordings would take place at Abbey Road under the control of one of its house producers.

But, although this policy effectively meant that artists had producers and engineers imposed upon them, it produced creative opportunities in other ways. Because studios were constructed in part as technical laboratories, there was a very liberal attitude to the use of studio time by artists. As studios could be used only by artists signed to the record company, the studios were often not used to full capacity, and were certainly not seen as profit centres in their own right. Recounting the period in which he worked in Abbey Road in the early to mid-1970s, one engineer observed that the large Studio 1 at the complex was often at a standstill and available for other activities as it was not booked to full capacity:

“the number 1 studio is 90 feet by 40 odd or whatever, huge area, and if it wasn’t busy we’d play badminton in there or there’d be someone maintaining a car ... it was pretty laid back” (interview 3, freelance engineer/former Abbey Road employee, male, fifties, 2005).

The loose and liberal organisational space of the studio came into its own for those artists who wanted time to experiment with new musical styles and technologies, and it was during the 1960s that the studio became a compositional tool in its own right, rather than simply a space for making natural sounding recordings of music that could otherwise be performed live (Cunningham, 1998; Coleman, 2005). In this respect, the studio system worked for the record companies, but it was an era that was already coming to an end.

The decline of the record-company-dominated studio system can be traced back as far as the immediate postwar period, and is related both to significant technological developments in sound recording, which increasingly democratised technology, and to the rising profile of ‘star’ producers and their attempts to break free from the restraints of bureaucratic careers. The immediate postwar period had a significant deflationary

(7) Abbey Road was a particularly good illustration of this tendency. It was the studio at which both The Beatles and Pink Floyd, leading exponents in the use of the studio as a compositional tool in the late 1960s and early 1970s, recorded much of their musical output.
impact on the cost of equipment used in sound recording as surplus military technology found its way onto the open market (Cunningham, 1998). The barriers to entry to the sector were lowered still further by the development of tape as a recording medium, which made the process of recording much cheaper and easier than the traditional direct-to-disk method (Jones, 1992). The development of this technology meant that the investment needed to establish a recording studio fell significantly, so decentralising the capacity to make sound recordings, weakening the hold of the large vertically integrated record companies (Kealy, 1979). In the US, for example, the 1950s saw a growth in the number of recording studios linked to newly formed record labels, which were now able to compete with established companies as the postwar market for recorded music grew, particularly with the rapid growth in sales of popular music and linked, in part, to the rise of the sociological phenomenon of the teenager. Many of these new studios were owned by small and medium-sized record companies, who were often willing to rent out their other facilities to other record companies without studios, lowering the barriers to entry still further.

The growth of independent recording studios, and a greater capacity for knowledge to spread beyond the large established studios, was propelled further by an undermining of the bureaucratic career that had hitherto dominated employment relations within record companies and their studios. This was weakened by the growing celebrity status of ‘star’ producers and engineers and the imbalances between the money which the recordings they made for their employers earned and the relatively modest incomes they were offered in return. By trading in on their past successes and becoming self-employed, producers and engineers could pursue entrepreneurial careers with significantly larger incomes, based in large part on being remunerated by a share of the profits from the sales of the record they produced and engineered. However, even in the 1960s, the number of independent studios that would allow such freelancers to work was limited (Cunningham, 1998). A significant fracture in the traditional model of labour regulation in the UK came in the late 1960s when George Martin, the producer employed by EMI to manage the recording sessions of The Beatles, quit his job and first started up an independent management company and second established a recording studio. Thereafter, there was a shift of successful producers and engineers to freelance status, and then in the 1970s a growth in the number of independent studios which provided the space for freelance producers to work beyond the studios, of the record companies. Many of these studios were often set up by producers, and their business models were, therefore, based more on producers’ royalty income than on the efficient management of the studio assets themselves. In this regard, at least, independent studios were similar to the established record company studios.

4.2 The digital era
The rather casual approach to the use of studio assets came to an end in the late 1970s. For the traditional studios, it was often the result of the record companies of which they were a part being taken over by larger corporate bodies. For example, when EMI was taken over by the electronics conglomerate Thorn in 1979, financial discipline was imposed on the Abbey Road studio, which subsequently ran as a cost centre. This quickly saw the studio opened up to non-EMI artists and producers to maximise returns from the use of studio space. For the sector as a whole, it was the development of new digital recording consoles by UK technology companies such as

(8) This innovation was also a by-product of military investment in sound technology, as tape as a recording medium had been developed in Germany by AEG and I G Farben and utilised for the broadcast of propaganda. It was discovered by chance by Allied forces at the end of the war after raids on German radio stations (Coleman, 2005).
Solid State Logic (SSL) and Neve, both established in the late 1960s and located in Oxford and Cambridge, respectively, within what would later be identified as the British high-fidelity cluster (May et al., 2001). These firms specialised in making recording consoles: that is, the control desks at which engineers and producers work to craft recordings in studios. SSL and Neve were responsible for the development of so-called ‘in-line’ recording consoles, which gave engineers more control over the various sounds and components that were recorded in the studios, each microphone and effect having its own set of faders and controls (see figure 3). More importantly, from 1977 onwards, SSL began to integrate computer software into recording consoles, which significantly increased the ease and flexibility of recording sessions. This development was to further break the hold of the large studios over the recording market and usher in a new wave of competition in the sector. In particular, it was the development of a recording console with ‘Total Recall’ that ensured their SL 4000 E desks transformed not only the practice of studio management but also the market for studio space, and Neve developed a similar system—the NECAM system—a year later. By integrating software and memory into the operating of desks, producers and engineers were able to easily reestablish the settings between recording sessions. Previously, detailed notation would have to be made of the position of faders and other instruments. This was not an insignificant task; during the 1960s, four-track recording was the standard, although this had increased to sixteen tracks by the early 1970s. By the end of the decade, 32-track machines were common. However, by saving the settings onto a floppy disk, the producer or engineer could ensure that the settings were exactly the same from track to track, from session to session.

The integration of software into recording consoles ensured that the SSL and Neve machines became the desks of choice for producers and engineers. As a result, they became necessary investments for recording studios wishing to capture the work of leading producers and engineers, who were now almost invariably freelance, and were responsible for the choice of studio for their recording projects. Indeed, to use the terminology of actor-network theory, consoles integrated with software and with the capacity for memory became obligatory passage points for studios wishing...
to attract producers. This required significant investment, from record companies
and independent studios alike. The SSL and Neve consoles cost between £250,000 and
£300,000 each, and, given that most establishments would need one for each of their
constituent studios, this represented a considerable investment, particularly for the
independent studios. But, ironically, this very act of investment served to move power
away from studios and towards producers, because it now became the consoles and not
the studio spaces per se that were the most desirable assets in the recording process.
The fact that in a very short period of time most recording studios installed similar
consoles powered by software and with the capacity of memory eroded the technolog-
ical gap between studios and made them far less idiosyncratic spaces. Through a floppy
disk, work was now transferable between recording consoles, and therefore between
studios, which improved producers’ choice of workplace, but also increased the power
of the record companies in leveraging rates for recording time by playing one studio off
against another.

Therefore, it is from this period—the early 1980s onwards—that one can begin to
see a new era of destructive competition pervade the recording studio sector. As the
ubiquity of SSL and Neve consoles levelled the technological playing field, record
companies and other buyers of studio time exploited their oligopsonistic power to
progressively drive down the real cost of hiring studio time–space by encouraging
studios to discount rates to secure business. As indicated above, studio rates have
been more or less stagnant since the mid-1980s, which represents a significant decline
in rents in real terms. This had beneficial impacts for those who paid to use these
spaces, and the gradual deflation of rental costs in real terms opened up at least some
of these spaces to artists that would otherwise have been priced out. However,
heightened competition between studios began to have regressive effects on working
conditions. It is from this time that the studios began to price hiring rates based on the
‘lock out’: that is, a day’s booking would include the use of the studio for a 12-hour
shift, including the hire of an in-house engineer and usually a tape-op. This led not
only to an effective devaluation of the price of studio time but also to a significant
increase in the working hours endured by engineers. The move away from a profession
characterised by a regime of craft union regulation was recognised as early as the 1970s
by Kealy (1979; 1982) as the rise of less bureaucratic independent studios instilled more
of a service ethic in the studio sector wherein the client’s needs were valorised above
all others.

The problem which confronts engineers is that, although some are still employed as
salaried employees, many are now classified as retained staff: that is, they get paid a
small salary to be available to work for the studio, with their pay increasing when there
is work to do, which is funded out of the fees paid by the client. Moreover, engineers
are expected to progress to freelance status before they reach thirty years old. To do so,
they have to build up a reputation and portfolio of work that will enable them to pursue
a more entrepreneurial career in the not too distant future. As a result, they submit
to an exhausting work regime:

‘it’s ... 24/7. You know, you feel guilty about asking for a Saturday off ... in a months
time ... if you were to leave a studio and go freelance you could probably earn in
days what you earn in a month as a retainer ... [12-hour shifts] minimum ... you leave home at nine and you get home at midnight, one o’clock and that’s nearly
everyday, and if you have one day off, a Sunday, for instance, all you want to do is
sleep, or do your washing’ (interview 5, studio engineer, male, twenties, 2005).

Thus, employment conditions within studios conform to a familiar model of
project-based work, found in other parts of the creative sector, of punishing overwork
when studios are busy, but with little or no pay at other times (Christopherson, 2002).
But, unlike in some other sectors, this results in relatively low salaries for engineers; in 2005/06 the average starting salary for an engineer in central London was £12,000, which was about half national average annual earnings.

The collapse of craft union regulation brought about a casualisation of training, with greater emphasis being placed on applicants’ subjectivities rather than a set of formal skills. Indeed, there is a search for compliant employees with ‘emotional intelligence’. One studio manager expressed a desire for what he described as ‘translucent’ staff: those who ‘are there, but not there’. This was seen to be an important coping strategy for engineers in dealing with the often monstrous egos of artists (and some producers). When recruiting, he was looking for:

“People who have complementary personalities, and by that I mean not ... sycophantic. They must be the kind of people that ... are quite happy for their egos to be smashed and jumped on 50 times a day and get on with it and realise it’s all part of the process of that artist [who] has to walk in and be the boss. [A]t times, yes, he [the client] is going to be goddam rude to you and the rest of it, make you feel like shit” (interview, studio manager, male, fifties, 2005).

Thus, like other interactive service workers—but here over prolonged periods of time in the close proximity of a recording studio—engineers have to work out a way of balancing the conflicting needs of clients and the studio management, but also their own ego and self-esteem (Leidner, 1993). Studios also look to recruit engineers that have the potential to become successful freelancers, as they may become future clients for the studio as producers/engineers, who might bring commissioned work back to the studio. In this way, studios seek to generate their own future demand through the labour market.

This era of destructive competition among recording studios ushered in during the 1980s, as the recording process incorporated software and digital technology, was mitigated for a decade by a boom in postproduction work. The advent first of CDs and then DVDs saw a marked increase in work that transferred sound from analogue master disks to digital media, which effectively masked and compensated for the more competitive market in de novo recording. However, from the mid-1990s onwards, clear signs of a looming economic crisis began to emerge within the recording studio sector. This was manifested in at least four ways. First, a new generation of software applications served to disrupt the recording studio sector. The large recording consoles—still for the most part supplied by SSL and Neve—were increasingly supplanted by more overtly software-based digital recording systems. The rise of systems such as Pro Tools, which is essentially a PC-based recording console, has become the latest obligatory passage point for studios and has meant another round of significant investment.(9) Although the recording rigs are considerably cheaper than the large recording consoles—at around only £30,000 per system, they are about a tenth of the price of the standard desk—their initial cost conceals significant ongoing expenses in terms of software upgrades and new releases. The shift to digitally based recording has also removed one important income stream for studios—the supply of tape for the recording process. Studios insisted on sourcing all their own tape and admitted placing considerable markups upon it in pricing studio time. However, direct recording to hard disk has made the use of tape superfluous. Moreover, the switch to digital recording has reduced the demand for space and time in the studio. The shift to software-enabled recording has significantly reduced the cost of entry-level equipment, which has improved the quality and capacity of home recording. This has encouraged

(9) Pro Tools was originally released in 1991 by Digidesign based in Silicon Valley, which is now a subsidiary of Avid Technology, having been purchased in 1995.
many artists to do considerable amounts of pre-studio preparation work, which signals a further fragmentation of project work to incorporate the space of the home or at least the home studio (Goodwin, 2006). In this regard, software and code have made possible a regime of more distributed musical creativity, which represents a democratization of technology.

Second, there has been a steady decline in the size of recording budgets, which reduced the volume of money circulating within the sector:

“it would be nice if you had ... a budget of £100 000 to include some money for the producer in there. But we’re making, you know, we’re making albums for 20 grand ... [a] lawyer was telling me this story, it was either Universal or Sony, the ... recording budget was £85 000, it could never be less than that, that was written into their standard contract that they would offer all bands, £85 000, and you could argue a case for more, but you couldn’t spend less. I’d be very happy with 85 grand on most projects these days” (interview, producer manager, male, fifties, 2005).

Third, there has been an increase in runaway production from London to cheaper locations, typically for orchestral work and film scoring, which have had a disproportionate impact on the top-end studios. Traditionally, the large London studios have benefited from runaway production for film score work from Los Angeles; the large Hollywood studios have negotiated deals with US entertainment unions to be able to outsource a proportion of film scoring work away from Los Angeles, which parallels the runaway production of other parts of the filmmaking process to places such as Vancouver (Coe, 2000a; 2000b; 2001; Scott, 2002). The relocation of film scoring work to London was a boon to the large recording studios, and provided something of a buffer to the trends mentioned above. However, in recent years there are signs of this runaway production bypassing London altogether for even cheaper locations in central Europe, such as Prague and Budapest, which not only are establishing their own satellite production clusters for the film and television industries more generally (Coe and Johns, 2004), but also have a strong orchestral tradition with a labour market of trained musicians familiar with the classical canon.

Fourth, studios have also paid the cost of overestimating consumer demand for high-fidelity playback, and many invested heavily in equipment that would produce recordings in the 5.1 format, which is suitable for home cinema ‘surroundsound’. However, the market for such recordings has been slow to take off. Ironically, the growth in MP3 players and the use of PCs as home jukeboxes actually indicate the opposite trend and the embrace of relatively low-fidelity playback platforms. Fifth, and finally, the long-term failure of UK-based artists to break into established large markets and achieve popularity in the large US market has had a negative effect on studios. Several informants told me that the international success of British acts between the 1960s and 1980s had beneficial effects on studios because it had positive reputational effects as international artists would be drawn back to the spaces of creativity of music they liked and admired.

5 Conclusions
This paper has explored the impact of the ongoing crisis of the musical economy on the recording studio sector. Technological change is intimately bound up with the history of the industry more broadly, but in this paper I have argued that, as in the distribution and retail parts of the industry, software has had significant implications for the economic viability of recording studios. Indeed, software has played a significant, albeit unforeseen, role in the crisis that currently besets the recording studio sector, which is characterised by falling recording budgets, declining demand for studio space - time, deteriorating employment conditions, continuing erosion
of barriers to entry, runaway production, and, increasingly, studio closures. One of the major outcomes of the crisis has been an accelerated vertical disintegration of production. This process has been underway since at least the 1970s, as the number of independent studios and equipment suppliers increased, and most record companies have either sold or closed their own studios.\(^{10}\) However, the current crisis has driven the process of vertical disintegration ever further. For example, record companies are now increasingly devolving the responsibility—and cost—of delivering albums to management companies. Record companies have scaled back their involvement in the A&R activities that are responsible for discovering and developing new talent as they have increasingly become brand-led marketing companies. Management companies have responded to this growing reticence by emerging as significant intermediaries within the musical economy and are developing artists that they can pitch to record companies in the hope of securing long-term recording—but also significantly—marketing deals. The implications of this vertical disintegration of production is serving to embed the musical economy further into established musical agglomerations, which in the UK means a strengthening of the music industry’s ties to London and the wider South East region, which is now host to more institutionally diverse networks of creativity (albeit that some of these institutions have been thinned out).

The process of vertical disintegration can also be observed within the studios themselves. In order to cope with the dilemma of selling studio space—time in a falling market, and to respond to the ability to use smaller studio spaces to record and mix tracks, several studios have created what are known as ‘project rooms’. These are small, self-contained rooms which studios rent on an annual basis to producers. The rooms are large enough to record all but acoustic instruments (these can be accommodated by hiring one of the studio’s traditional recording spaces for the day). This strategy has the advantage of externalising revenue risk to producers, while producers benefit by having their own studios and office within a city-based creative environment which provides the buzz (Storper and Venables, 2004) often missing from the isolation and solitude of the home studio. However, while studios may externalise the risk of filling space in this way, they cannot avoid it altogether, and the turnover of producers in project rooms is quite high as many have found it difficult to generate sufficient work to justify the costs of the room over long periods of time.

In their efforts to survive the downturn in the musical economy, studios might seek to turn the vertical disintegration of production to their advantage by utilising their recording assets to become management companies or even production—publishing companies. Studios would be able to use their specific assets and advantages—technology, labour, expertise, etc—to help develop new talent and look to keep some rights to the product they sell on to record companies. However, the obstacle to such a strategy is that studios would need money to fund the identification and development of talent and, as was pointed out earlier, few recordings cover the costs of their production. That is why levels of capital concentration are so high among record companies, as they necessarily need to have deep pockets to cover the inherent riskiness of the business they are in. Alternatively, studios could seek to exploit their buildings as part of the musical heritage, in the manner that Gibson has suggested (2005). However, in the studios I visited, this option was seen to be at odds with any attempt to maintain a working studio environment and was either not seen to be a viable option or the

\(^{10}\) The major exception here is EMI, which retains ownership of the iconic Abbey Road studios. Whether this connection will survive EMI’s purchase by private equity group Terra Firma in 2007 remains to be seen.
studios were insufficiently famous for such a strategy to be possible. In the meantime, as studios seek to work out strategies for survival in a business environment that has turned against them, recording studios continue to close in all the major musical agglomerations of the Anglo-American world, which will have important, but as yet unforeseen, implications for the geography of the musical economy.

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