

Music and the Internet

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The fact is, if you want to make a difference in music, you have to change the machine. (Christie 1998)

In my book *Rock Formation* I borrowed from Walter Ong and Jacques Attali when I noted that, 'The ability to record sound is power over sound.' (Jones 1992, p. 51) I continue to believe that statement to be true. Arguments that I then made about the increasing role computers would play in the production of music have been borne out. They were not hard forecasts to make: one only had to imagine that the processing power of computer chips would continue to increase according to Moore's Law¹ and then extrapolate the possibilities such increases would create for sound recording and reproduction. Even comments I made, vaguely tongue-in-cheek, expecting that we would have, in addition to the ability to record high-quality digital audio in the home, the ability to press CDs at home, and print colour inserts for CD jewel boxes, thus creating not only home studios but home pressing plants, have become a reality. However, with but a few years' hindsight, I want to append to these an argument that recording sound matters less and less, and distributing it matters more and more, or, in other words, the ability to record *and transport* sound is power over sound. Consequently, technology is an even more important element to which popular music scholars must attend.

I wish to make that argument against a backdrop formed by developments in network technologies, particularly ones related to Internetworking, and conclude by noting that these technologies have important consequences not only for myriad popular music processes, but for the ways popular music studies ought to rethink the articulations of market, audience, community, social relations and geography.

Distance and performance

Perhaps the simplest way to get at some of the issues concerning shifts in relations of music, geography and social relations is to divide the relation between technology and popular music into three categories: music making (production), music consuming (consumption), and music distributing (distribution) to aid analysis of the role network technologies play in each. I do not presume that network technologies are solely the cause of these shifts, for they were begun by the industrialisation of music generally, during the late nineteenth century. As Winston (1998) noted, while the earliest developments in sound recording were under way, Alexander Graham Bell (and others, such as Tesla) envisioned creation of 'a grand system' of networking. As with other processes and social relations that were forged during

that time, network technologies are driving further evolution of musical practices and processes at great speed, and they are, at least presently, the site of the most visible shifting.

Music making

Most clearly Internetworking technologies assist with overcoming distance between performers and/or studios, stages, etc. (as is the case with EDNET, a means of using high-speed/high-bandwidth connections to transmit audio between studios in real time or asynchronously during performance and/or recording).² However, other related technologies deserve consideration, as they are the means by which distribution over computer networks is made possible. Consequently, one must also take into account the visualisation of music through the use of sequencing software, the digital sampling of audio, digital audio workstations, new forms of software for music compression, encoding and decoding, and the like, that enable the ready mobility of digitised audio and MIDI files across networks. Music production in relation to nontraditional musical products should also be taken into consideration, as Neuenfeldt (1997) reminds us in the case of CD-ROM encyclopedia production.

Music consuming

At present, consumption of music via digital computer networks is of greatest concern to the music industry, insofar as it is the most clear way in which purchasing and listening practices are being reshaped by new technologies. These practices bear scrutiny by scholars, as well, for they involve a concomitant social reshaping by shifting the sites of hearing and listening and of buying music in spatial terms (i.e. in regard to the locus of encountering, hearing and purchasing). One should also consider the ancillary roles that discourse plays in relation to music consumption, and attend to practices engaged in on Usenet newsgroups, listserves, Internet Relay Chat (IRC), and the like. For example, Watson (1997) observed discussions on a particular Usenet newsgroup and noted effects on fans, performers and industry practice as a result of newsgroup participation and lurking. The practice of fandom is mediated by network technologies along with music, as is business practice.

It is also important to attend to the role computing and the computing industry play in matters of music consumption. From the time that computer makers began including CD drives in personal computers (augmented later with good-quality audio speakers) the music listening habits of many white-collar workers, students and others who use personal computers on a daily basis have undergone significant change. In addition to the obvious ways in which music can become part of a computing-oriented working day, the overlay of computer sounds on top of music ('You've got mail', or various beeps and burps from the software and hardware in sync with the latest from Oasis, for instance) portends potential for a new and different sonic environment and experience. The connection of the personal computer to the Internet also brings potential for connection to a wide variety of music, broadening the scope of listening possibilities, but also potentially overwhelming the listener with choice. The ways in which consumers make decisions about what music to listen to or to buy, as well as the affective investments made in music, can be fruitful areas of inquiry.

Music distributing

The issue that has been uppermost on the music industry's agenda in regard to music distribution and new technologies has been the disintermediation and concomitant disruption of routinised business practices and processes that have accreted over nearly a century, since the very industrialisation of music itself. The issues are most clear in regard to the sales of physical products online, via mail-order services like *cdnow.com*, *Amazon.com* and the like.

But many other important issues exist. For example, attempts are being made to merge traditional business practices with Internet commerce, as illustrated by efforts at cross-marketing between online and offline music purchasing. Tower Records, for instance, provides free access to a song online with purchase of something in-store.

Research, in terms of practices of marketing and data-mining, is being used by major labels in cooperation with multinational, primarily media, organisations, to discover means by which electronic commerce can provide new opportunities for marketing and advertising. New intermediaries are being put in place, too, in the form of search engines, agents and bots, and services like *Priceline.com* that match sellers and buyers.

It is important to keep in mind that the capitalisation and market power of major labels may significantly affect the degree of disintermediation and its consequences as well as the development of online media and tools themselves. As Janson and Mansell noted in the context of the European music industry:

... disintermediation (cutting out the middle layers of certain distribution channels) in the extreme would result in the collapse of the record business of today. However it is an ideal that may never fully be realised. It disregards the possible actions that the key players in the multi-million ECU record business may take to re-position themselves in order to acquire a competitive edge in the changing conditions of the new Internet economy. (Janson and Mansell 1998, p. 2)

Janson's and Mansell's point is important because it reminds us that in some ways new media are not unlike the old, if only in terms of economics. For example, the ability of an individual to procure sufficient software, hardware and bandwidth to deliver music for download or streaming is quite limited, and so matters of supply and demand are still foremost even when it would seem supply, in the sense of material goods ('records' or 'songs') is unlimited. In much the same way that an independent record label with a hit song almost invariably contracts with a major label for pressing and distribution, an artist with a hit mp3 would likely need to contract with a major label, Internet service provider, etc., to assure enough bandwidth and computing power to satisfy demand. And, as Hawkins, Mansell and Steinmueller noted, 'a more likely scenario than outright disintermediation would be for various kinds of value to be transferred via alternative delivery mechanisms. This would be a process of 'reintermediation', in which the control of different elements in the value chain could move to different players.' (Hawkins, Mansell and Steinmueller 1998, p. 10)

Foldback: relationships between production, consumption, distribution

A variety of issues do not easily fit the tripartite division proposed, and for good reason: few technological transitions have had as much across-the-board impact on

cultural, business and industrial processes as development of the Internet into a global commercial medium.

So, for instance, it is important to consider the many means whereby music may be distributed online (via RealAudio, Liquid Audio, .wav files, MPEG files, MIDI, etc.) in relation to issues of industrial control, legal control, recording and fandom. The routinisation of work is another important area of analysis that crosses over these divisions. For example, in music production, the Neve studio recording console and its 'standardisation' of the control surface enabled engineers and producers to 'jump' from one studio to another without need of specialised knowledge of each studio's console, as did tape format standardization, which led to development of a cadre of freelance engineers and producers, as well as use of studios for nontechnical reasons (acoustics, geography, etc.). Another example, in music consumption, is the development of standard controls and symbols (▶ for 'play', || for 'pause', ◀◀ for 'rewind', and so on) for operation of consumer audio equipment. Network technologies pose the likelihood of additional changes to these processes, enabling performers to be virtually linked. Res Rocket and DRGN (Distributed Real-time Groove Network) are examples of networked computer systems that:

(offer) a free public-access area to amateur musicians worldwide. Using the site's software and improvisational skill, a blues pianist in Chicago, a bass player in Greece, and a drum programmer in London can play together live, 24 hours a day. Bands and commercial production teams lay MIDI tracks in the site's private recording areas, which rent for U.S. \$500 a year. The site plans to upgrade to digital audio by early 1999. (Berry 1998)

Much of the narrative surrounding discussions of cyberspace generally (Jones 1997A) can be found in relation to online music. One performer noted that jamming online 'gives you an advantage over your own prejudices . . . you won't know if you're playing with someone who's eleven years old or severely disabled, so it won't affect the music you make with one another. It's about music quarantined from image bias.' (Shepherd 1998) Popular music scholars have become more attentive to these narratives offline, and should apply a similar critical awareness to studies of online music making.

An interesting case that has tested these waters is that of the 1998 online release of *Crystal Ball* by The Artist Formerly Known as Prince. Though the album sold nearly 100,000 units (enough to reach the limit that the Artist said he needed to reach before making the album available via traditional retail channels), it sold far less than his past recordings. Granted, part of the reason for that may have been a rather high price tag as it was a four-CD set, that it was largely a collection of rare tracks and B-sides, and that it received little to no airplay. However, what this case may illustrate is that disintermediation may be possible in one realm (the movement of music from artist to consumer); but unless accompanied by mediation and/or disintermediation in other related realms (such as promotion), the consumption of music may be affected. As one writer put it, 'for an artist accustomed to being treated like royalty, the prospect of getting your name out through the digital grapevine is daunting indeed' (Cavanaugh 1998). It is important to consider that distribution is not only about products, goods, but about services. In addition to making music available, information about it must be available, too. Whether that information is directed toward consumers in the same ways it is now, by means structured by the media of mass communication, or narrowly targeted, or sought

out by the consumer proper, it remains necessary to have ways to bring music to the public's attention. The commercial processes of the music industry require it to create audiences and markets, a process itself one of distribution.

Also, one must, no matter the aversion to buzzwords, attend to media convergence. Even if it were not a reality, it would be important to understand it as a discourse within the industry. In its ongoing research and consulting work for the entertainment industry, Jupiter Communications continually stresses that 'the Internet is a blender that will shatter and enmesh the compartmentalised mini-industry that is dominated by traditional, typecast players' (Kuester 1997). Or, as another industry press release put it, 'The music industry must shed its insular methods and actively work with other industries or risk losing its market share and power base to competing interests.' It is essential that the music industry work more closely with computer and telecommunications interests, as well as with other entertainment industries, says Thomas Roli, publisher of Webnoize. 'Forward-thinkers are taking advantage of cross-media, cross-market opportunities that provide alternative ways of selling, promoting and distributing music', he adds (Brigham 1998). Certainly much of the discourse is self-serving hype, intended to promote particular people and services. But even the hype is worthy of attention, insofar as it at least gives a clue to the potentialities under discussion within the industry. And, in reality, convergence does exist. For example, TCI Cablevision is building the @Home network for cable-modem Internet access, and has partnered with DMX (Direct Music Express) and Paradigm Music for content. At present, convergence exists in terms of the intermedia connections between music and computer games, CD-ROMs, the ongoing use of music across media (film, TV, VR simulations) and the cross-collateralisation of music, the recombination/reuse of existing music for these media and for new music, and in the business arrangements and patterns of ownership of vertically and horizontally integrated multinational corporations.

The most interesting of convergences involve the activities of companies outside the entertainment industry. For instance, IBM, Intel, Microsoft, Apple, Matsushita, AT&T, WorldCom, Motorola and other computer, consumer electronics and telecommunication industry companies (titans or start-ups) have in 1998 and 1999 entered into agreements (or bought outright) music-oriented companies. In some cases agreements have been made with 'traditional' music business entities, like record labels (e.g. AT&T and Matsushita teamed up with Bertelsmann and Universal, AT&T teamed up with MTV). In other cases, agreements have been made with Internet-based music delivery services (e.g. Sony teamed up with Digital-on-Demand to permit Sony artists' music to be downloaded directly into retail outlets). More interesting still are those cases in which Internet firms join forces with other Internet firms to create broadcast and distribution channels parallel to existing offline ones. America Online's purchase of Spinner.com, for instance, along with its purchase of Nullsoft Inc. (makers of WinAmp software for playing mp3 files) positions America Online alongside Sony, MTV and scores of other media companies.

It is important to note, then, the convergence between the divisions I have constructed between these categories, and important to attend to the ways in which technologies, and technical processes, cause them to overlap and fold back on one another. Indeed, a fourth category could well be argued for, one that would call for the assessment of the means by which music making, music consuming and music distributing are intertwined, and have become more so over time.

Opportunities for future research

Given that technological processes are broadly spread throughout a variety of practices (some more centrally related to music than others), how might we study the relationships between music and network technologies? Most scholarly work on network technologies is attempting to address the social issues related to the Internet, or addressing particularly technological concerns. Little is directed toward the study of electronic commerce (unless one considers market research), even less to distribution and disintermediation, and still less to popular music. The music industry itself is in need of scholarship if scholars can approach the Internet as simultaneously a social space, medium of distribution, and engine of social and commercial change: as a space of interrelated practices rather than a text to be critiqued, or a technology in need of assessment and control.

To provide some flavour of the dimensions along which future research may proceed, I examine some of the issues with which the music industry is preoccupied and with which scholars are grappling. This effort is not an attempt to produce an exhaustive list of items for future research, but rather to set the agenda for the trajectories along which research might be directed.

The music industry and the Internet

The music industry is preoccupied with several pressing issues requiring research from external sources such as Jupiter Communications, a privately held new media research firm based in New York City and London. In its recent reports, Jupiter has 'urged record labels to embrace the online world as a marketing tool, as a means of combating piracy, as a way to earn more revenue by cutting out retailers, and as a less expensive distribution model' (Broersma 1998). It noted too that:

the business model for a new digital distribution system – where consumers download music directly from the Web – has yet to be constructed, and numerous strategic and structural obstacles remain. Although a viable distribution model is still far from being established, development continues and online music industry players are slowly wresting the rights away from the traditional distribution dominance of the major record labels. (Jupiter Communications 1998)

The strategic and structural obstacles are precisely what the music industry is focusing on. In reaction, it has shown interest in the following issues, according to reports in trade periodicals and industry executives:

- (1) *Retail practices and venues.* Competition between online and offline retailers for hardware sales and online sales of music are estimated to account for anywhere from US \$2 billion to US \$5 billion by the year 2002. The early adoption of online retail sites for purchase of CDs has positioned CDNow (recently merged with Music Blvd), Amazon.com and other online retail sites as a parallel and alternative to 'bricks-and-mortar' retail venues. It should be noted that it is not only large music retailers that are affected (Tower, Virgin, Best Buy, etc.) but also smaller 'speciality' stores that had once themselves provided an alternative to the corporately owned stores. Systems are being put in place in stores to allow music (be it entire albums or individual songs) to be downloaded and burned to CD, DVD or minidisc. Sony, for instance, is making nearly 4,000 titles from its back catalogue available in this fashion, including many out-of-print titles. Moreover, due to flourishing sales on online auction sites and on Usenet and listserves, even used record stores now have an online analogue.
- (2) *Sales.* 'Traditional' point-of-sale practices versus online ones have resulted in price differences, cost differences, altered expectations on the part of consumers, 'price wars'

between retailers and online-only sellers, and are altering pricing and promotion practices offline. One may expect changes in budgets (and, hence, charge-backs to artists) based on costs of maintaining traditional point-of-sale practices and instituting online ones.

Copyright (and, consequently, competition and profit). Issues related to the unauthorized distribution of music via computer networks and computer data storage media are uppermost in industry discussions of music and the Internet. In addition to the kinds of copyright lawsuits one might expect (e.g. infringement, fair use, etc.), one can witness suits brought against software and hardware makers. For example, PlayMedia, developers of mp3 playback software code, have sued Nullsoft for using part of its code. The Recording Industry Association of America has sued hardware maker Diamond Multimedia over its Rio portable mp3 player. The situation is not unlike that at the time of the introduction of Digital Audio Tape (DAT) when various copy-protection schemes were being introduced to thwart digital-to-digital copying, and similar copy-protection systems are under development. Indeed, Diamond Multimedia itself is planning to incorporate copyright protection software into the Rio. The Secure Digital Music Initiative (SDMI), a coalition of entertainment, consumer electronics, computer, Internet, music and telecommunications firms, is seeking to standardise a protection scheme, but, first, is attempting to simply secure cooperation from those who may be involved in digital music distribution.

Promotion. Use of online media has caused competition for offline retail sales. As a result, offline retailers have attempted to not only create for themselves an online presence, but have participated in promotional tie-ins with online firms, provided free downloads to consumers who purchase at a store, etc. However, it is important also to think about how one might go about promoting music differently once distribution is less a practice only of major labels. Though overstating the case, Jimmy Buffett pointed out at the expiration of his contract with Island Records that, 'All you need is distribution. You don't need marketing. You don't need promotional budgets. You don't need to be in the vying with the money they have to allocate to 20 or 30 other acts. Why should I pay the rent on that?' (Graff 1999) In Buffett's case, through development of direct marketing channels it is indeed possible to reach an established fan base without traditional industry marketing efforts. The question that arises is whether or not it will be necessary for either artist or industry to engage in in-store appearances, making videos, advertising, etc., as those have been deployed to reach people via mass media.

Outright loss of sales. The Recording Industry Association of America (RIAA) is bemoaning the industry's first downturn in fifteen years (Holland 1998), and blaming some of it on Internet and CD piracy.⁷ Unlike the case with bootleg CDs, it is far more difficult to estimate potential lost revenue from downloading of music files. Neither the RIAA nor the International Federation of the Phonographic Industry (IFPI) have provided estimates of potential financial losses from illegal distribution of music online.

Competitiveness. Which online sites will be the HMVs, Virgins and Towers of online retail? CDNow and N2K (the latter now partnering with MTV) each raised over \$60 million in an initial public offering of stock with shares now trading at twenty times expected earnings. a2b music has partnered with AT&T. Amazon.com now sell music in addition to books and operates an auction site. Importantly, all of the major online retail music efforts are global in reach, though they are primarily western in origin, which is to say that they operate in terms of content much as a major record label would. However, record companies themselves are slow to get involved in online retailing thus far, at most partnering with online retailers or Internet companies.

Presentation. How will music be presented on a computer screen? Compaq Computer is building a PC with push-button access to WorldWideWeb sites, a paradigm uncannily like radio. Will images be included? Text? Will music be 'searchable' through use of online search engines? Will it be 'scannable' as it is on a car radio? Will sheet music accompany it? What will happen to traditional packaging, marketing, and visual dimensions of popular music product design and placement?

Licensing. Will music be licensed in a traditional fashion, by associations of composers and publishers like ASCAP, BMI, SESAC, or will other means and institutions be found for gathering royalties, such as micro-payments, or online credit/debit arrangements? An agreement reached between National Public Radio (NPR) in the US and BMI and

ASCAP states that new licenses cover the performing music rights for Webcasting by NPR member stations on their own Web sites of all radio programming broadcast by them' (Jackson 1999). However, the licenses do not cover broadcasts of music that are not first broadcast as part of an 'on-air' radio programme and later made available on the web: 'The licenses only cover the programming broadcast by public radio stations through the "ether", but as that function is translated into the closed world of the Internet.' (Jackson 1999) BMI requires a minimum fee of \$500 (US) to license a Web site for music, and, as is the case with ASCAP, continues to refine its licensing methods with respect to the Internet.

- (9) *Enforcement.* BMI has developed a 'MusicBot' that searches the Web to monitor use of music files for which fees should be paid. Other efforts are under development that may pose interesting challenges to traditional copyright and licensing arrangements, including ones that will affect the doctrine of Fair Use. As I have tried to note in my work on copyright issues, copyright holders do not entirely want to restrict use of the works in which they hold a stake; they want to ensure they are paid for their use. Copyright legislation can be understood both as a response to a threat and as a means of structuring opportunities for profit (Jones, 1997b).
- (10) *Internet broadcasting.* 'Streaming' audio and video (RealAudio, QAudio, Liquid Audio, Streamworks, etc.) have enabled broadcast-quality sounds and images to be transmitted via the Internet. Licensing is an issue in this domain, as well, for it will be necessary to determine how to assess, collect and enforce royalty payments. It is time to analyse the potential effects those technologies may have on the consumption, distribution and production of music, and on musical practices generally. What might the relationships be between older media (radio, MTV, etc.) and Internet broadcasting? Particularly given the emergence of high-speed Internet hook-ups in the home (cable modems, DSL, and the like), it is increasingly the case that traditional media and telecommunications firms are participating in bringing music into the home. In her book, *When Old Technologies Were New*, Carolyn Marvin (1988) describes the initial use of the telephone in Hungary for what one would now consider radio programming. In the late 1990s it has again become possible, if not even likely, that telephone wires will carry the same content as they did in late-nineteenth century Budapest. As importantly, digital radio promises to deliver nationwide, even worldwide, programming and represents a next step in the creation of a radio 'network'. One might drive across the US, for example, and hear the same radio station throughout the journey. What might be the consequences for local musics, local programming, local news?
- (11) *'Home delivery' of music.* Will this mean traditional mail order, or download to a device in the home? In many instances in the late 1990s it means download into a 'bricks-and-mortar' retail store. Sony Music's agreement with Digital-on-Demand to provide a 'recording station' in the store that will create an on-demand CD, DVD or minidisc of music from Sony's catalogue selected by the consumer keeps the traditional retail intermediary in the industrial loop. But for how long? Such technology can clearly be shifted to the home or other locations.
- (12) *Personalisation.* The Internet seems to be a mixture of mass and personal media, and electronic commerce and marketing efforts are focusing on personalisation (at the expense, some argue, of privacy). Efforts are under way to examine means of reaching individual consumers and garnering as much information as possible about them (via web browser 'cookies', for example), which will likely lead to changes in advertising and promotion, as well as cross-promotion with new and existing corporate partners. One interesting already-public facet of this effort is the 'recommendation' some online retailers provide, based on past purchases of music.
- (13) *Recording and storage.* What will be the meaningful connections between network technologies and other digital media, such as CD-Recordable (CD-R)? If music will be downloaded in the home, some means is needed of bringing permanence to an ephemeral medium. The minidisc, for instance, may find renewed interest from consumers, since it can be operated in a fashion similar to a cassette tape recorder. Most CD-R recorders require a computer for operation. And, minidisks can be rerecorded. Developments in DVD bear watching, as does the ongoing development of RAM-based devices such as the Rio and Sony's MemoryStick.
- (14) *Customisation.* In conjunction with points 12/13 above, the very nature of an 'album'

may change as companies create 'customised' CDs. Volatile Media, launched on 5 January 1998, for example, provides samples on a Web site, and lets users compile CDs from those songs. The individual CDs are pressed and shipped to the consumer. Sony's agreement with Digital-on-Demand provides a means by which entire albums or individual songs can be downloaded and burned onto a 'custom' CD for the consumer in a retail store. We may witness a change in development of albums, as a result, and potentially a resurgence in the notion of a 'single', insofar as consumers may choose to purchase individual songs on a 'custom' mix CD of their own making.

- 15) Finally, in stark similarity to the 'Beta vs VHS' video format wars, emergent standards for software and compression threaten to splinter the music market. In the late 1990s, mp3 clearly seems the frontrunner, but other means of compressing music for easy digital delivery, like LiquidAudio and RealAudio, have significant corporate resources and alliances supporting them.

Additional issues will undoubtedly arise that will further complicate the industry's traditional structures and practices. Current popular music scholarship, however, has thus far turned away from considering these issues, even though they have been visible on the horizon for quite some time. The most critical ones to which we should turn our attention are those that have consequences for the movement of music within and through different (and sometimes altogether new) spaces, such as changes in sales mechanisms, Internet broadcasting, the use of computers for producing, consuming and distributing music, and the personalisation of musical tastes and behaviours. And all of these issues have important implications for the ways we conceive of audiences and individuals.

Popular music studies and the Internet

Observation and analysis of shifts in practices and processes of music-making, music consuming and music distributing will be needed to best account for the shape (amorphous as it may be) that popular music is taking at the beginning of the twenty-first century. Clearly some of the same issues that occupy the music industry's research agenda are ones that should be of interest to popular music scholars, and I will not belabour the obvious connections, except to note that the most clearly shared issue concerns copyright, both in terms of research interest and practice and publication. A handful of other directions ought to be taken up by scholars as well, and as with my comments regarding issues facing the music industry, I will again only highlight some of the more prominent and important ones, to point out possible paths our research might follow.

- (1) *Personalization and individuation of experience.* In what ways will the experience of hearing and listening to music change as audiences are dispersed and diasporic, as markets are disaggregated (Jones 1998), and mass media become less mass and more personal? What might be possible outcomes for fandom and fan communities (witness Napster and Gnutella as communities)?
- (2) *Knowledge of music and musical knowledge.* What might the use of search engines that 'recommend' music based on one's buying or listening habits, or one's stated preferences, mean for the dispersion of knowledge about particular types and forms of music, for the evolution of tastes, and for exposure to music?
- (3) *Fandom and affect.* Given the nature of fandom in relation to music, the affective dimensions and loyalties associated with popular music practice may find new forms of expression through use of new technologies.
- (4) *Values and beliefs.* Music technology (from the electric guitar and synthesizer, to the CD player and computer), particularly in the late twentieth century, has affected the

discourses of authenticity that have gone on for decades, if not centuries. Network technologies promise to greatly modify that discourse by altering the very artefacts (like records, tapes, CDs, etc.) that 'transport' music to the listener, artefacts that are inextricably part of the symbolic processes surrounding music. In some instances those artefacts may vanish altogether, as music moves toward less tangible media. Scholarship that examines the place of music, musical tools and products, in relation to everyday experience, could help us understand that discourse at its point of origin in new media.

Above all, it is my belief that as scholars we will need to be reflexive, for at least three reasons, as I have argued in other work on Internet research (Jones 1998). First, because scholars are savvy media consumers, and members of fan communities themselves. Popular music is a personal area of research for nearly all popular music scholars. How might we research and write about the intersection of new media and popular music without being cynical, without being celebratory, and without second-guessing ourselves into a corner?

One way may be to reconceptualise the notion of 'audience' along lines proposed by Jensen and Pauly, who noted that, 'with each image (of the audience) come assumptions about who the researcher is in relation to the audience – who are "we" in relation to "them"?' (Jensen and Pauly 1997, p. 155). They request that scholars take audience research 'seriously as a democratic task', and that we be 'more modest about (our) theories and more respectful of vernacular accounts of experience' (Jensen and Pauly 1997, p. 167). If there is any one arena in which that request should be granted, it is in the study of new media, which itself makes experiential demands on users and scholars alike.⁵

Second, it would be fitting for us to take a similar approach to the study of the music industry. As Lovering pointed out, 'technological and organisational revolutions contrast with the incredibly conservative music strategies adopted by all the major companies' (Lovering 1998, p. 45). The industry has *its own vernacular accounts of fan, market and audience*, and it will be useful to attend to the manner in which industry participants and discourse reveal their understanding of industrial practice.

Third, in regard to popular music's relation to the media of mass communication, we should ask: For whom are media made, for whom and to whom do media communicate, and what if the answer to those questions is, simply, 'Us'? Audiences have become visibly fragmented, the media of mass communication seem less and less like they are, in fact, 'mass'-oriented. But it may be as well that our logics are fragmented, or, to borrow from Jensen and Pauly, it is how we 'imagine the audience' that is at stake. Much like the comments Frith makes concerning nostalgia and music, that 'A nostalgic judgement is a historical judgement ... (and that) means constant shifts in how we hear the past' (Frith 1996, p. 3), we may consider that nostalgia extends well beyond the confines of the musical text itself, and encompasses place, audience, community and time. Our own embeddedness as scholars in the space and time we share with others, whether literally, figuratively, virtually, imaginatively, should cause us to be reflexive. How does music reach us, how do we locate ourselves within it, in relation to it, from it?

Research into these matters will not be easy. As Hawkins, Mansell and Steinmueller noted in relation to difficulties electronic commerce poses to traditional market research:

... a fundamental problem ... is that we have a very inadequate conceptual basis for designing the kinds of consumer-oriented studies – quantitative and qualitative – that will be

needed to manage and/or reduce levels of uncertainty about citizen/consumer preferences in a digitally intermediated commercial environment. In particular, there are questions about the transposition of social values, and, more importantly, the generation of new values through digital intermediation. (Whereas technology is everywhere, it is much more difficult than we suppose to get a secure empirical grip even on basic user behaviour with established services, much less assess user perceptions of the social and economic value of new Internet-based services. (Hawkins, Mansell and Steinmueller 1998, p. 6)

Research into the social and cultural phenomena related to the Internet is likewise made difficult, if only because we are still in the early stages of determining the value and applicability of existing methodology to studying online phenomena (Jones 1998).

Conclusion

Virtually all of the practices and processes discussed in this essay have, in some fashion or another, to do with the movement of music from one place to another: from performer to listener and audience, from recording studio to pressing plant to retail outlet to consumer, from radio station to receiver, or from any one place to any other by any variety of means.

It has ever been thus. Musicians have gone to greater lengths to seek audiences, by either taking themselves to an audience in the case of touring, or taking the music to the audience, in the case of recording (and, arguably, in the case of amplification). Seagram CEO Edgar Bronfman noted in his keynote speech at the 1998 Radio and Records conference in Los Angeles that, 'technology holds the promise of revolutionising the distribution of recorded music' (Hellweg 1998, p. 114). Of course it does, it has done so from the beginning, from the moment that technology enabled the recording of sound. What should be scrutinised, what has changed, been revolutionised, is not simply the technology, but the content that it has been created to accommodate. Instead of a technology that creates artefacts, goods, network technologies disrupt routine commercial practices, particularly ones of distribution, because they do away with artefacts, with goods that can be moved by means of physical transport. In this fashion they mirror for music production and music distribution what Berland identified in music consumption:

The increasing mobility of music technologies, and the seemingly paradoxical emphasis on identity that surrounds analysis of music consumption today, reveal how much the ongoing (re)shaping of listening habits is tied to our changing sense of location: where we are, where the music can take us, where we *belong*. (Berland 1998, p. 133, italics in the original)

We might, with good consequence, rephrase Berland's remarks toward production and distribution in light of networking technologies, and ask about where music is, where it is being taken (and by whom), and where it belongs.

The dispersion of music, audiences, markets and fans has important consequences for the music industry and for the study of popular music. In truth, music has always had a social element to it that binds inclusion and exclusion simultaneously. It can bring together a community of fans, or of musicians, but in so doing it must set that community apart from others, even if only temporarily. As Berland noted in the case of Canadian radio:

... privatisation, networking and intensified competition ... contribute to what Carey calls 'pervasive recentralisation', a general shift of the location of authority (represented here by

musical and technological decision-making and values) to "more distant, diffuse, and abstract centres". (Berland 1990, p. 191)

Technologies of Internetworking have an effect similar to that of network radio in the 1930s, in parallel with the effect they have had on processes of communication. Indeed, music is a communicative endeavour, and the changes in communication technology brought about by network technologies have affected social relations greatly. In *The Golden Web* (a strikingly current title, despite the fact it is a history of network radio), Erik Barnouw remarks on one of the most important social developments that took place in the US in the 1930s (and the rest of the world quickly thereafter); namely, the evolution of a mass audience created by instantaneous mass communication. It was a time, as Barnouw puts it, when 'transmitters in various parts of the country began broadcasting the same singer, the same speaker, the same comedian, the same drama' (Barnouw 1968, p. 3). Concomitantly, this was an important time of transformation for communication theory as well, as conceptions of the audience (and to some extent the field) are still haunted by the numbers; of people, of the vastness of the spaces they occupy, and the increasingly short measurements of time it takes information to reach them.

The connections and reconnections typically experienced in hearing and listening to music, along with the affective dimensions of that experience, have been reconfigured, and the kinds of questions Jensen and Pauly ask are increasingly relevant and important. The ability to join, participate, feel a member of, numerous communities simultaneously, is itself not new (Jones 1997A), but the variety of options available, and the potentials for affective investments and disinvestments, are part of a new social experience. Laing pointed out that rather than concern ourselves with:

(the) concept of 'formation', it seems more apt to speak of 'networks' in describing such musical phenomena as the European dance movement, particularly in discussing the flow of affinities across national and continental borders. . . Such networks might possibly be seen as contemporary examples of the *rhizomes* described by Deleuze and Guattari. (Laing 1997, p. 130)

Though he discusses technology of sound production and recording (and music distribution, briefly), Laing does not address the pivotal role technology plays in *formation* of the *networks* of which he speaks. It is of singular importance that the 'mobilities' Grossberg (1997) and Laing employ as a central concept in their examinations of the globalisation of culture and its relation to the local have been made most clearly visible by increased use of network technologies. The concomitant spread of the individual experience of globalisation and 'networking' (in Laing's terms) is due in greatest part on the one hand to individual use of the Internet and on the other hand to the reorganisation and convergence of modern media industries in preparation for a 'golden convergence' of technology and content.

This experience is only now beginning to be felt in the realm of popular music, though it has been a long time in the making (probably since the advent of radio). Will Straw's observation that 'the relationship of different local spaces of activity to each other takes the form of circuits, overlaid upon each other' (Straw 1991, p. 378) is particularly relevant to developments in music and Internetworking, especially in regard to his observation of the 'transhistoricity' of cultural spaces (Straw 1991 p. 379). It is time for scholars to stretch their imagination, to ask questions about music, place and space in relation to diaspora, community, technology and busi-

ness. What is at stake is an opportunity for popular music studies to add to our understanding of technology's intersection with social life and social being, just as connection is at stake for the musician who desires an audience, or for the fan who seeks others.

Endnotes

1. Moore's law, and corollaries to it, states that processing power and storage technologies will double in capacity each year.
2. For example, Atlantic Records, in late summer 1998, opened a recording studio for the express purpose of recording and streaming music onto the WorldWideWeb ... for the purpose of delivering artists and music live to the Internet' (Wetmore 1998, p. 5).
3. The reported loss of sales in 1997 as compared to 1996 may be due to reporting issues, as online sales were not included in the figures, which are traditionally compiled from 'Brick & Mortar' retail outlets. It may also be that the numbers reflect a strategic positioning of the industry *vis à vis* its lobbying efforts in trade and copyright legislative circles to reduce the threat from online retailers, as well as a strategic positioning in regard to the industry's consolidation of power against the encroachment of smaller companies, independent labels, etc., operating online. It is interesting to contrast the RIAA's claims with those of Sound-Scan, which collects sales data from the point of sale, and showed a slight increase in sales of recorded music from 1996 to 1997.
4. Sheet Music Direct offers printable sheet music online for \$3.95/song.
5. It will also be necessary to untangle fandom from marketing, for as one journalist has noted, 'the next time you visit a chat room dedicated to your favourite band don't be so sure the fans you're chatting with aren't actually shilling for the band's label' (Hellweg 1998a, p. 14). Even in less obvious ways, such as by wearing band t-shirts, fans serve, wittingly or not, as marketers.

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