

A COMPLETELY REVISED AND UPDATED EDITION
OF THE DEFINITIVE GUIDE TO 'MUSIC BUSINESS'

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EDITION

MUSIC BUSINESS

A MUSICIAN'S GUIDE TO THE AUSTRALIAN MUSIC INDUSTRY
BY TOP AUSTRALIAN LAWYER AND DEALMAKER

SHANE SIMPSON



This chapter is taken from the book *Music Business* by Shane Simpson

More information can be found at
<http://www.simpsons.com.au/musicbusinessinfo.htm>

TECHNOLOGY AND MUSIC: EVOLUTION TO REVOLUTION

WITH DEVELOPMENTS IN TECHNOLOGY WE ARE SEEING NEW FORMS OF COMMERCIAL EXPLOITATION, NEW RIGHTS BEING CREATED AND NEW CONTRACTUAL PROVISIONS AND STRATEGIES BEING INTRODUCED TO DEAL WITH THOSE NEW SITUATIONS. IN UNDERSTANDING LEGAL AND COMMERCIAL DEVELOPMENTS, IT IS IMPORTANT TO HAVE AN UNDERSTANDING OF THE TECHNOLOGICAL BACKGROUND.

Performers now can have international reputations without having to leave their shores. What is more, audiences can enjoy those performances without even leaving their bedrooms. Technology has changed the nature of the music experience from one of personal presence and public participation to one of imagined presence and personal fantasy.

During the past two centuries there has been a great change in the way music is made available. This in turn has affected how, where and when music is used or enjoyed. It also affects what music is available and to whom.

Even though this book is about the music industry as it is today, there is a lot to be learned by taking a look at the past. If you were to wander back through history, you would see that the industry has already resisted, weathered and adopted many technological advances. Each has demonstrated the awkward tension that exists between the proponents of new technologies and the copyright owners that have grown attached to (and financially reliant on) existing technologies. Each has shown that new technologies open new markets and commercial opportunities, but also challenge the existing market structures and distribution networks. Innovations challenge the status quo of the day and then become part of it themselves.

Educated guesses about the future can help too. It can help you anticipate and prepare for change. All survivors in this business must realise that the

industry is in the early stages of a revolution: we have moved out of the mechanical and electric ages that have stolidly shaped our last two centuries and into a globally networked digital age, the ultimate effect of which we can only surmise. Whether you like it or not, the music business is part of this revolution. It will affect both your personal lives and your professional lives. The only choice you have is whether you will be leading the tumbrel or be a passenger on it.

THE MECHANICAL AGE

Delivering music to the public has always been dependent upon the technology available at the time. Before sounds could be recorded and stored, written notation was the only way of keeping music for later use. Music had to be 'live', played by skilled musicians. But once sounds could be recorded and stored (and played later, over and over) it was only a matter of time before the performance of music became independent of the musicians. What an extraordinary concept! What a recent one!

EARLY RECORDINGS

The first means by which the sound of music could be mechanically mass-produced was the music box. Much of the philosophy regarding copyright and the international protection of music, and many of the conventions and practices still applicable to the industry, were developed when music boxes were hi-tech. We now think of music boxes as quaint historical oddities: hardly the stuff of which marketing managers' dreams are made. But in their day they were important; they were very fashionable; they were at the cutting edge.

The fact that many of these practices and theories have survived to the present day (though adapted to suit changing conditions and new technologies) seems to confirm the basic soundness of these early approaches.

Then in the mid-19th century, the piano roll became the most popular form of mechanical reproduction of music for home entertainment. In a way, it was an early form of karaoke. Even people who couldn't actually play the piano could still pedal out the accompaniment to a sing-along around the Pianola. Piano rolls sold in their millions and were a useful source of mechanical copyright income to many of the great popular composers of the 1930s such as Cole Porter and Irving Berlin. Piano rolls had quite a long life in terms of popularity, although by the 1950s they were reduced to being a curiosity, having been superseded by new media and interests.

What was the significance of the piano roll? For the first time, technology permitted the public to experience superior performances by performers

whom they had never met (and who would certainly never want to meet them!) in the cosiness of their own home. Music was still essentially a personal medium but, for the first time, live performance had become a creature of mass-reproduction technology.

In 1877, that archetypal inventor, Thomas Edison, recorded and played 'Mary Had A Little Lamb' on a fragile tinfoil cylinder. It was a monumental moment, albeit a bizarre choice of music, but the physical problems of reproducing large numbers of cylinders or rolls could not be overcome. In most cases, each cylinder was an original recording, a 'direct-to-disc' recording which was a unique performance. Indeed, it would be another eleven years before the sound recording moved from a scientific curiosity to a robust commercial reality.

The first mass-produced music cylinders emerged on the United States market in 1888. This attempt to mass-produce rolls was not especially successful either but in 1889 The Columbia Phonograph Co, the world's first record company, published a one-page list of music cylinder titles. It was the first record catalogue.

The following years saw a format war between manufacturers of different types of cylinders and discs. Consumers were caught in the crossfire, uncertain as to which format to support. One thing was certain; as the technology developed, durable sound recordings allowed consumers to listen to their favourite musicians perform in the comfort of their own homes. It was a luxury that people were prepared to pay for.

FLAT RECORDS

On 16 May 1888, Emil Berliner gave the first public demonstration of the flat phonograph record (which was based on the work of a French painter, Leon Scott de Martinville who, in 1857, had invented a way of recording sound on paper). Berliner's invention was critical for the development of the modern record industry.

Unlike the cylinder and the piano roll, the flat disc could be produced in automated presses, so it became possible to manufacture many cheap copies of any recording. Mass production began around 1892. In 1894, the United States Gramophone Company sold 1,000 gramophones that played flat hard rubber discs. It sold 25,000 discs that year, effectively competing with Edison and Columbia's cylinders.

In 1900, Thomas Lambert developed a method for the mass duplication of 'indestructible' cylinders of celluloid. His method would substantially lower the cost of the cylinders and threatened to drive Edison out of business. Lambert sought legal protection for his invention and applied for a patent.

Edison challenged the application. Although, Lambert's patent was eventually upheld by the courts, Edison effectively used costly lawsuits to drive Lambert's company and his cylinders out of business. This was not the last time lawsuits were used to drive out competitors.

Edison's victory was, however, short lived. Developments in new material technologies saw Edison admit defeat in 1913 and give up on cylinder technology in favour of the flat shellac and then plastic records that reigned supreme for over 75 years. Think of its significance: it was the invention that gave birth to the record industry. It made superior performers available for mass domestic performances that were not limited by number, social class or political boundary.

THE ELECTRONIC AGE

The electric microphone was the breakthrough which allowed sound to be recorded electronically. The electric microphone was developed in 1925 by Bell Laboratories in the United States, by a team headed by Joe Maxfield. Physical recordings could finally be superseded by electrical recordings. The sound quality improved enormously.

In 1933, the first stereo master recordings were made by Electric & Music Industries – which later became known as EMI – in England. EMI pioneered the shellac record, which became the basis for the industry for many years.

The long-playing record meant that popular songs did not have to finish within 3 minutes, or be played at breakneck speed so as to finish before the side ran out. (Most jazz recordings of the 1930s were played at a fast tempo because of this technical problem.) Long-play records and compact discs freed artists and composers from the tyranny of the three-minute song, though it has still not disappeared. Just listen to commercial radio for proof!

ELECTRICITY

The first known radio broadcast to the public occurred on Christmas Eve, 1906 in Massachusetts. It is not known how large the audience was that night but it's unlikely anyone who happened to hear it could have anticipated the industry that would eventually develop from that half-hour session.

No longer was mass influence dependent upon getting pieces of paper to a target market. The means of production and delivery were cheap and the new science called 'programming' permitted the message to be designed for maximum pleasure and thus influence. From the beginning of the radio age, music has been a fundamental component of this medium.

Just as the disc had revolutionised individual access to and choice of music, radio made music available as a community experience. It also

changed the way that music and its performers could be promoted. It was the basis of the use of music as mass culture and thus mass communication. Indeed, perhaps it changed music itself.

In 1937, Alan Reeves patented his ideas for digital recording, but found that vacuum tube technology was an insurmountable obstacle to the idea being put into practice. The sheer computing power needed to manipulate digital data was beyond the room-filling computers of the day. Besides, they were so primitive that they would have taken a month to decipher a few seconds of music, even if they could have been programmed to do it. They could calculate the ballistics of cannon shells (their main task during the Second World War), but not a lot more.

In 1948, the early 78 rpm shellac discs were superseded by plastic long-play (33 rpm microgroove) records. Using technology developed during the Second World War, the new materials meant that faster record presses could be used, which helped the industry meet demand. As a result, records became cheaper, in real terms, when compared with the cost of other basic consumer items. It also resulted in another leap of huge cultural influence: It was largely responsible for a rebirth in the popularity of opera and many of the major symphonic works. At last, home listeners could dispense with the huge piles of records (being changed every 3 minutes!), previously needed to play a complete opera or symphony. Now, virtually anyone could own a complete opera – and play it in their own home.

HI-FI

Simultaneously, advances in reproduction technology, inspired at least in part by the anticipation of increased demand for records, created hi-fi (this name was an abbreviation of ‘high fidelity’ – so named because of its true-to-life character). In 1948, RCA issued the first microgroove record, followed closely by the more successful CBS version, invented by Peter Goldmark.

Stereo records were released in 1958, when Pye and Decca and Audio Fidelity first released records which used theories largely developed in 1933 by an EMI employee, Alan Blumlein, who had patented the idea for stereo recordings back in 1931. EMI extended the patent to 1952, but the patent expired just before the first stereo recording was released. That’s show biz.

In 1958, with the first commercial release of stereo records we were no longer fascinated by mere availability, we started the search for realism. How close could we get to the concert experience without leaving our lounge room? It didn’t change music but it certainly changed the way that we appreciated it. It meant that musicians who dared to perform live, could and would, unfairly but inevitably, be compared to the recordings of the greatest performers in the world.

THE TRANSISTOR – MUSIC ON THE MOVE

The development of the transistor had a more fundamental role in re-shaping the music and record industry than is generally recognised. Invented in 1947 by John Bardeen and Walter Brattain and others in the team at Bell Laboratories, transistors were the successor to delicate vacuum tubes and were a classic case of a solution looking for problems to solve. Two Japanese electrical engineers purchased the patent rights for a pittance (virtually no one else saw the potential) and went home to make a portable tape recorder. Their enterprise grew into the giant electrical company, Sony.

The first integrated circuit was made in about 1958. The following year, Professor Okamura patented his ideas for putting large amounts of data on magnetic tape. Unfortunately, the patent expired in 1973, too soon for him to benefit from the developments in home video and digital formats.

Before transistors were generally available, radios and amplifiers relied upon valves. They were expensive to manufacture and limited to mains power supplies, so they could never be truly portable. Transistorised amplifiers and radios could follow their owners out of the house. Car radios and cassette players became standard items after transistorised units became cheap and robust. By 1957, there were 30 million transistors being produced annually. Youth, music and transistor radios seemed almost synonymous terms! Music became a part of everyday life. Life acquired a soundtrack of background music, just like a Hollywood movie.

AUDIO AND VIDEO TAPE

Magnetic tape was developed in Germany in the 1930s. Its development was critical for technological and artistic developments in the recording process. It affected the artistic direction by finally allowing time-shifting of performances and permitting editing of performances that until then, had to be re-recorded if flawed performances were to be corrected.

The significance of all this was enormous: Recording technology allowed the public to listen to music without the presence of the musician. It also changed what the public listened to in private, where they could listen to music and how often they could listen to it. It made the music of the privileged, available to almost everyone.

In 1956, AMPEX developed videotape, to help television stations in the United States overcome the problems of broadcasting over four time zones. Videotape technology created a whole new industry and revolutionised television programming.

The 'compact cassette' format was released by Philips in the 1960s. It was a development from the first magnetic tape system that had been developed by AEG Telefunken and I.G. Farben in 1935. The cassette was intended to be

a dictation system for offices. There was no thought of it becoming a format for recorded music because magnetic tape formulations were simply not capable of the required performance. They were too noisy and could not record the high frequencies needed for realistic music reproduction. Yet, in only a few years, the quality of cassettes was improved and noise reduction systems developed to the point that they were regarded as true hi-fi items.

Of the noise reduction systems, one invented by Ray Dolby was particularly successful. He was very astute in the way he sold his Dolby Noise Reduction System to the tape-machine manufacturers and thereby made it the industry standard.

Now the public could record their favourite pieces from their records and take them with them to the beach and in the car. Gone was the restraint of having to keep the playing surface flat and stable. Youth wanted to move and cassette music allowed them to move with their personal choice of music – without the physical restrictions of record players or the content restrictions of radio.

PORTABLE RECORDING

Portable recording methods meant that recording in remote areas and capturing the ancient music and sounds of Africa, Asia, South America and, yes, Australia, became a technically simple activity. Technology not only provided the means by which western music would encroach upon and overwhelm less technologically sophisticated cultures, it would provide the means by which the indigenous music of those endangered cultures might be captured, retained and perhaps fight back (remember ‘Deep Forest’? No?).

DIGITAL TECHNOLOGY

Digital recording of sound (and of course, vision) has opened up amazing possibilities for new media. Digital recording is the basis for virtually all the new ‘record’ formats. Now, sound recordings can be manipulated and stored in the same way as any other computer data. The traditional lines have become blurred as data and music are combined in the same medium. Digital encoding enables even old (analogue) recordings to be modified and the vocals removed. Abracadabra – Karaoke!

The compact disc was cutting-edge technology when it was conceived in the 1970s. The science was formidable. New materials (such as polycarbonate – the same stuff used in many crash helmets), lasers (which are a direct result of the Theory of Relativity and were another example of a solution looking for a problem) and digital recording, all combined to record sounds and images. What was science fiction, is now in your lounge room.

Making the science work in the real world was hard work. Philips and Sony spent many millions of dollars developing the medium. Then they had to spend millions more selling the medium to the general public to make sure that it sold lots and lots of discs and players.

It was 1982 and, in many ways, compact disc was the right technology at the right time. The world's economy was booming. Conspicuous consumption was not a dirty concept. The public had spare money and was feeling optimistic. The product looked fabulous. The public took to it immediately and switched to the new format, buying the new hardware and replacing their records with compact discs.

The vinyl record rapidly ceased to be an economically viable format. There is no doubt that vinyl records had been developed to a quite astounding degree, and hi-fi enthusiasts mourned (and still mourn) its passing, but people wanted something they could handle easily. Few were prepared to buy a \$2,000 turntable when a compact disc gave pretty impressive performance for a lot less and the discs didn't wear out. Old recordings were re-released and repackaged, the music industry boomed and the vinyl format finally crept off into the woods, to die alone.

Although the vinyl record re-emerged as an integral part of the hip hop and dance music culture it never came back to life as a mass consumer product. Perhaps it metamorphosed: In the hands of the skilled DJ, vinyl has become an instrument rather than a medium.

It was digital technology that enabled the CD to deliver its superior audio quality. Sounds were translated into a computer code, a complex combination of 1s and 0s where a certain string of 1s and 0s would represent a certain sound. The code was compressed and finely etched into a disc that could then be read by a laser, decoded and played by a hi-fi system as a virtually exact replica of the music it represented. Each CD of a particular performance was exactly the same as the master digital recording (and here lies one of the foundations of the digital revolution). Unlike its analogue predecessors, digital copies suffer no degradation in quality. When, the millionth copy is indistinguishable from the first, a pirate copy sounds just as good as the legitimate.

THE BIRTH OF THE © BLUES

We all too often forget that technology has no value in itself. Its value as well as its dangers, are the results of human imposition. Accordingly, it is precisely in times of boom that we often make the mistakes that will later cost us dearly.

The 80s and 90s was a period of marketing and retail heaven. No one spent time thinking about the consequences of what they were doing. To do so was negative; just get out and sell; make budget; make bonus! Record

companies sold millions of sound recordings to consumers around the world in high-quality digital file format. The files were not encrypted or encoded with markings to identify their source or deliver other rights management information. In so doing, it was the record companies themselves who eagerly and unwittingly handed over the same digital files that would later be used by music pirates – both corporate and domestic.

OTHER DIGITAL FORMATS

The last ten years has been a time of expensive trial and error in the attempt to develop and market a digital recording technology to replace the dying analogue cassette. Although the DAT cassette format was more successful than some earlier attempts to improve the cassette format (remember eight track cartridges and Elcassettes? No?) it never cracked the domestic market. When it was first introduced, though, DAT was thought to present a huge threat to the record industry because its reproduction quality was so high. The industry was so worried that it embarked on an international campaign to have spoiler circuits installed in all domestic machines to stop second generation copies sounding as good as the first. Professional machines didn't have these circuits but were a lot more expensive than domestic machines. The campaign was successful and the format never took off in the way that its creators had no doubt hoped. It lasted for a while in studios but never became a feature of suburban lounge rooms. Perhaps consumers were already wary of anything tape based.

Philips' Digital Compact Cassette (DCC) format, was a digital recording system using a stationary record/play-back head so it could also read ordinary analogue cassettes. It had little success and never really had a chance to make its mark when everyone was throwing out their cassettes and replacing them with CDs. Right product, wrong time.

Sony's three-inch (75 mm) diameter MiniDisc looks like a small version of the usual five-inch (125 mm) compact disc, but uses a very different method of encoding and replaying the signal. Most importantly, users were able to record their own MiniDiscs. This format looked fabulous but took a long time to get any market acceptance. The problem was that compression technology does not allow the MiniDisc to match the reproduction quality of the normal CD. Fine for Aerosmith but inadequate for Wagner. It is still used for semi-pro recording (which the MP3 market is yet to address) but never achieved significant market penetration.

CD ROMs too, had their moment in the sun during the 1990s. For a moment, everyone thought that they would be the next wonder product. People not only wanted to migrate from audio entertainment to audiovisual; they wanted to inter-act with the material and the artist. The assumption that

audiences wished to move from linear to non-linear entertainments and from passive to active involvement, was never proved by the sales figures. While useful for educational purposes, software delivery, games and maybe porn, CD ROM never became a significant technology in the music business.

Laser Discs? Another loser. They were bigger and more expensive than DVD and suffered lower horizontal resolution but as VHS proved over Beta, the absence of quality is not fatal. The killer of laser disc was the PC: No-one ever made a PC with a Laserdisc burner.

DVD was the killer technology that all the hardware companies had been looking for. It allows the recording and encoding of massive amounts of data and enables albums to provide visual as well as audio content. DVD has taken off because it is the natural replacement for videotape and most Australian homes are replacing their video machine with a DVD player – or keeping the latter to time-shift. The figures have been extraordinary. There were just 45,000 DVD players sold in 1999 (average price \$1,005) for a total value of \$45.1 million. 1.4 million were sold in 2003 (average price \$223), for a total value of \$312 million (see <http://www.afc.gov.au/gtp/wvanalysis.html>). The proportion of metropolitan households with DVD players has risen from 43 per cent in 2003 to 62 per cent in 2004. They are eloquent figures.

Re-writable DVD is one of those winner technologies that is simple to use, cheap when mass-produced and takes on a familiar technology (tape) and does it better. Already there are a large number of DVDs in the music catalogue. These are, so far, mostly recordings of 'live' performances or a compilation of music videos put onto disc format. That won't last. Given the massive capacity of DVDs, it will not take long before musicians start to find more creative applications for the technology.

Recordable CD (CD-R) has had a big effect in recent years. Its effect continues to grow. The threat that this technology poses is analogous to that posed by cassettes when they were first introduced. CD-R can record from other CDs but it can also record on-line downloads. Providing 700 megabyte capacity, they can contain 74 minutes of music – although this is nothing in comparison to the even newer re-writable DVDs which hold up to 8.4 gigabytes! The total number of DVD-R/RW machines sold in 2002 was 205 million. In 2004 it increased to 1,935 million, worldwide (see <http://www.recordingmedia.org/news/stat-recordable-worldwide.html>). Storage capacity has increased from 40GB to hundreds of gigabytes.

Whilst perhaps the majority of these were bought for data storage, the technology is just as relevant for music applications (see <http://mmislueck.com/WhatsNews.htm>). All of this ignores the fact that many PCs now have internal DVD burners and most entertainment users don't need a separate piece of hardware to achieve their purposes.

True audiophile recordings, in the form of SACD and DVD-Audio pressings, have failed, at least to date, to arouse much enthusiasm from anyone anywhere. Despite their potential, according to the latest data, (as of August 20 2004), there were only 324 titles available in the DVD-Audio format and 1,314 titles in SACD (see <http://www.mmislueck.com/Archives/090104.htm>). One would think that the audiophile segment of the music-buying public would have welcomed these improved digital formats with open arms, but they have not. Although the music industry insists it is spending more time and money on promoting these two beleaguered formats, there is growing feeling in the industry that they will never gain general acceptance and will probably disappear altogether from the market place over the next three or four years. However, all of this may change now that the five Majors have all agreed to introduce “DualDiscs”, in which a specific album is reproduced in standard CD on one side of the disc, and in DVD-Audio on the other.

A large percentage of all CD-listening today is done using portable players and earphones, and the quality of sound reproduction is anything but “high fidelity”. Moreover, in America alone, there are now more than 20 online services, similar to Apple’s “iTunes”, that offer recorded music for purchase and downloading, and millions of tunes are still being downloaded illegally each day over peer-to-peer Internet connections. Most of this music will be heard either on a PC or a portable device (with earphones), and again, the quality of the music reproduced could never be called “high fidelity”. As of April 2005, Apple had sold 3 million iPods and by February 2006, one billion legitimate downloads: Digital music on the move; convenience over fidelity.

One of the other successful technological developments of the past decade has been the development of smart card technology. (Smart cards resemble ordinary credit cards, but store data). Smart cards have already taken over the personal finance industry and as our personal technology becomes increasingly smaller, more mobile and more intelligent, smart cards that interface with other technologies such as mobile phones, personal computers, internet-banking systems and sound delivery systems will just become part of the wallpaper. Combine smart cards with mobile telephone and you have a very serious new music product.

If iPod caused a stir, the iPod phone is the next evolution. The idea is beautifully simple: Put two popular technologies into one. Already it is not uncommon for phones to have hard drives, to play MP3s (and these also take SD memory cards, so you can have up to 2GB – 24 hours – of music), to play videos, show television, and which connect to the Internet. There are very few parts of the business model to be coloured in before we simply expect the mobile phone to be our integrated communications and entertainment mobile device. We may still call it a phone but it is already much more.

PERSONAL COMPUTERS

Through the 1990s, personal computers spread like honey across the world. No longer the lonely domain of tech heads, they became an integral part of daily school and office life and overflowed into the home. Spurred by new techniques for the mass production of silicon chips and plummeting production costs, PCs became cheaper and more powerful. The average laptop now has more computing power than the supercomputers that were revered a decade ago.

Coupled with increasingly complex software packages, the PC fast became capable of processing large amounts of data, be it text, images or sound. With the advent of the CD-ROM drive that enabled PCs to access data on compact discs, it was not long before they were adapted to play music CDs. Software soon became available that empowered the user to easily access the music tracks on CD, copy it to the computer's hard drive and modify the track in just about any way imaginable. It was easy and the sound quality remained virtually indistinguishable from the CD.

Beyond accessing and manipulating existing audio files, computers and audio software packages forever changed the way in which music was created. 'Desktop studios' emerged, powerful computers linked to racks of synthesisers and other instruments and MIDI (Musical Instrument Digital Interface) conveying the musical notation between them all. The music created was already in digital form; there was no need for it to be converted from analogue.

It is interesting to note that personal computers could have been manufactured so as to hinder the copying of music from CDs. Other devices were. Take, for example, the digital audiotape. Like the CD, DAT carried digital music, but, unlike the CD player, the DAT player could also record digital music – each copy a perfect reproduction of the master. While DAT never caught on in the consumer market due to the high cost of DAT players, the record industry saw the proliferation of an unlimited number of perfect copies as a major threat. In the United States, consumer electronics manufacturers and the record industry lobbied for legislation to limit digital recording of copyright music. The legislation required manufacturers to design digital recording devices that would recognise and obey copy protection information embedded into a CD. For example, a CD could be coded with a "copy once" direction whereby the device could make one copy but that copy would then contain a "copy no more" direction so that no further copies could be made.

Due to the heavy lobbying of the computer industry, however, the legislation did not apply to computers or computer peripheral devices. If the music industry had been more conscious of the inevitable direction of

delivery technologies, it is hard to imagine that it could not have marshalled a counter-balancing lobby force. But no, it was too busy selling CDs to put executive time into thinking about the long term. Had it been otherwise, we may never have seen the download phenomenon that now threatens the traditional record business.

THE INTERNET

Driven by the increasing use of computers in military communities, the United States developed a network of machines each capable of communicating with (or surviving the demise of) the others. The Advanced Research Projects Agency network (ARPAnet) began with only four computers. The computers were inter-connected but self-sufficient. The network concept spread from the military to the scientific and university communities and was the birth of the Internet, as we now know it. From isolated communities the network grew and continues to grow, joining communities and individuals together on a local, regional and global level. At the end of September 2004, total Internet subscribers in Australia numbered over 5.7 million (see <http://www.abs.gov.au/Ausstats/>). By any standards, this is a successful technology.

Without clear national boundaries and a uniform application of law, the Internet has fostered unique cultures. It has melded previously disparate social and geographical groups into new communities with common interests, etiquette and values. Ironically, given its military history, the most prolific beliefs have been based on the utopian notion of freedom: freedom of speech and freedom of access to information (or more sourly, anarchy and stealing). This has been particularly so within many of the early 'cyber' communities. However, as the Internet slowly has become more commercialised, regulated and governed by national interests, such cultures have become less dominant. Nevertheless, early Internet culture has shaped its development and many people's expectations about what should be freely available.

Clearly, a culture based on freedom of access to information does not sit well with any industry based on notions of individual ownership and economic rights. For better or for worse, this has been one of the challenges to the commercialisation of the Internet.

Most countries recognise the value of proprietary information and have entrenched its protection in their intellectual property laws. Copyright, confidential information, trademarks, designs and patents all provide for limited protection for the owners and creators of information. Such laws confer on the owners an exclusive or monopolistic right to stop others from using their material. While such laws are well established and widely accepted

in most countries, the Internet challenged their application to what was seen as a borderless, ephemeral on-line world.

For many, the Internet was a refuge from an over-commercialised society governed by multinational corporations, where money not only talks but also introduces itself with a smirk at dinner parties. Cries of 'copyright is dead, long live the Internet' echoed around chat-rooms as intellectual property laws were flaunted and copyright works were copied and distributed around the world with a lone finger raised in the general direction of the owners. A subversive culture of an elite and technically savvy minority grew, fostering hacking and piracy in this mild, mild west.

ON-LINE DELIVERY

Without the development of digital technology, we could not have had the personal computer or the Internet. Without the personal computer becoming a pervasive business and domestic technology, the Internet could never have become so significant. Without the confluence of each of these, on-line distribution could not have been born.

The phenomenal success (from a technological point of view) of downloaded music illustrates that the on-line delivery of music is no longer news. Whether it is legal or illegal, good or bad, the fact is irrefutable: On-line delivery of music has already become one of the principal sources by which consumers access music. There are now many companies (not just Telstra) that are providing legal, licensed, music to the on-line market. With the development of digital radio, the legitimate download market will be enhanced because one of the services that will eventually be provided by the digital radio service will be the ability to buy, down-load and own the music that the listener has just heard and enjoyed.

Australia already has one of the most extensive and developed optical fibre networks in the world. A single optical fibre can carry 117 television channels and many times more radio channels, but a single strand of the new 'dark fibre' can in theory carry 2.5 thousand million radio channels! These will revolutionise on-line services that, until recently, were reliant on ordinary copper wires that can only carry a few channels at a time. When compared to the cost of setting up a radio station, the cost of becoming a program provider to a diffusion network is comparatively low, because there is no need for an expensive transmitter. The program provider just connects into the network.

Such services have the potential to make 'records' largely redundant, at least for the mainstream of popular music. Instead of buying a record, through a simple-to-operate home computer, the public simply order it to be delivered by the program provider. It is instantly delivered in glorious digital signal, ideal for recording onto compact disc, DCC, CDV, DVD or whatever

– for those who feel the need to keep a copy at home.

On-line services are unlikely to completely supersede other sound carriers, but records are likely to be a smaller part of the total music market. Records (in whatever format) will probably remain, but are likely to be more important to the non-mainstream areas of music.

For further discussion see Chapter 15, “**Download Delivery – Evolution in Technology: Revolution in Business**”.

MP3

One of the initial hurdles to on-line music distribution was the physical difficulty of sending large music files through the old telephone lines that make up a large proportion of the Internet. When digital audio is created the resultant sound files are generally large and not easily transferred.

Technically speaking, such files are typically created by taking 16-bit (digital) binary samples of an analogue sound signal. Since this signal is typically spread out over a spectrum from twenty to twenty thousand cycles per second (kHz), and each cycle needs to be sampled a minimum of twice for accurate reproduction, samples must be taken at a rate of at least 40 kHz. In fact, CD quality audio is sampled at 44.1 kHz. This means that one second of CD quality sound requires 1.4 million bits of data (or 175 kilobytes whereas the typical text e-mail is about 2 kilobytes).

Rather than convince the telephone companies to change the phone lines to push through larger bits of information, software developers worked on a system that would compress those files into more manageable sizes. This was done by encoding the file using mathematical algorithms.

At the time of writing, MP3 (gratefully short for Motion Picture Experts Group-1 Audio Layer-3) was the most powerful of these algorithms. It was developed in association with the Motion Picture Experts Group (MPEG) and formalised by the International Organisation for Standardisation. The MP3 compression algorithm cleverly deletes data (a lot of the bass) from the sound files. In doing so, it compresses sound sequences into a much smaller file (about one-twelfth the size of the original file) while preserving a reasonable level of sound quality when it is played.

MP3 files have become a household name. It was postulated in 2000, that MP3 had become the most searched-for ‘word’ on the Internet, surpassing the other adolescent boys looking for ‘sex’.

MP3 files are widely available and require software capable of recognising and playing the file. Most computers are sold with built-in MP3 compatibility. Alternatively, players can be downloaded from any number of MP3 sites.

To create an MP3 file, a software program called a ‘ripper’ is used to move

a track from a CD onto the hard disk and another program called an 'encoder' to convert the selection to an MP3 file. Most people, however, simply download MP3s from someone's web site and play them, which takes us to Napster, P2P networks, Limewire, Kazaa, Grokster, Morpheus, Gnutella, BitTorrent. Unsurprisingly these have given rise to an enormous range of MP3 blogs and forums (for example see <http://tofuhut.blogspot.com/>; <http://www.livejournal.com/community/audiography/>; <http://jefitoblog.com/blog/index.php?cat=2>). This is viral marketing at its most basic. Because they are so idiosyncratic and personal, blogs are difficult to harness yet they are a new phenomenon in music marketing.

MP3 is a technology that is now more than ten years old. Its compression technology has meant that sound quality has never been of a similar standard as that of the pre-compressed recording. With MPEG4, that is changing. MPEG4 is the new multimedia standard that uses Advanced Audio Coding (AAC) and provides more efficient compression and thus better sound. It is an open system which means that it is inter-operable between rival companies' systems.

Already further developments are underway. MPEG-21 is going to include object-based coding and metadata that will facilitate the licensing and administration of content. It may well be that the technology that enabled the download revolution evolves into the product that delivers the music industry the solution that it so desperately seeks.

WEBCASTING

Webcasting is really just coming of age but its early manifestations proved illusory. Compression technology now permits live performances to be webcast and distributed to the screen of your PC or mobile phone. Various companies have based at least part of their business plan on the preparedness of their public to pay to see performances that they cannot attend, or similarly, pay to access the archive of performances that such companies are building. The digital distribution companies seem to be from one of two camps: those aligned with concert promoters and those aligned with clubs. For example, MCV.com is the exclusive digital music distributor of SFX Entertainment, the largest concert promoter in the United States.

One of the earliest club-based webcasters in the United States was The House of Blues (HOB); it is a webcaster and has a pay-per-view concert archive. But it is also much more than that. HOB also controls a large network of venues. Seven of these are HOB-branded clubs and restaurants; It has a record company (specialising in unsigned acts) which releases CDs and DVDs of the live performances that it records; a music publishing company; a merchandising operation and a TV syndication section. In brief, HOB is not

a company that sees webcasting itself as a business model. It is just part of a much larger model in which all forms of digital distribution of music are included.

Knitting Factory has gone for a different market: avant-garde jazz. It too has a record company (including the fabulously named JAM label (which stands for Jewish Alternative Music); has jazz clubs in New York and Los Angeles; a jazz festival division; video distribution; TV syndication; and webstreaming. In other words, Knitting Factory is not basing its success on one element of the digital music industry. It is merely one arrow in their strategic quiver.

In Australia, there were many brave companies that started webcasting. All of them struggled to find a sustaining business model. Advertisers were unwilling to spend the same sums advertising to the tiny audience attracted to webcasts and despite attempting a cocktail of advertisers, sponsors and investors, they all withered and died. The longest to survive was the Basement.com.au. This was an interesting venture because it combined a complete audiovisual delivery with live webcasts from the stage of The Basement (one of Australia's best known venues), and sold a range of CDs and DVDs of musicians who had performed on their webcasts. It also sold commercials but its main source of revenue was Telstra, which used it as a test bed and means of showcasing the possibilities of its broadband services. Eventually Telstra bought out the shareholders and turned it into an on-line production studio. It closed public access to its services in 2003 and with it, the last independent webcaster died.

One of the reasons that independent webcasters had a short life was that the existing media players all recognised the ability of the Internet to enrich their existing services. Now, every radio and television station offers its listeners a sophisticated menu of on-line fare and given that they are able to pay for it through their existing advertiser base, and are able to rely on their already existing administrative and program overheads, their on-line services are both content rich and financially viable.

RINGTONES

The downloadable ringtone market started in Finland in 1998, initiated by Vesa-Matti Paananen, the same gentleman who had written the first ringtone composer software for the new Nokia phones that allowed user programmable, monophonic ringtones. Shortly after the launch of the service in Finland, pirated ringtones, 15 seconds of carefully sequenced beeping, were available for \$10 in Hong Kong.

In 1999 in the UK, which would become the West's ground breaking market for ringtones and associated businesses, James Winsoar started the "My Nokia" website (later renamed "Phat Tonez", years before a mobile phone

could produce anything resembling bass) to sell bespoke ringtones to customers, later automating delivery, hiring composers and arrangers and creating a business model that would be heavily copied.

Instead of grinding to a halt at the turn of the millennium, 2000 saw mobile phones appearing with polyphonic sound ability. A few years later this was augmented by phone manufacturers adding more voices, adopting the MIDI standard to describe ringtones and embedding industry standard sample banks, allowing ringtone purveyors and composers to improve the quality, and thus the appeal, of ringtones.

2004 saw the introduction of phones capable of playing short samples and 2005 brought the “iPod” phones that would incorporate MP3 players and provide access to music download services. In 2005, all the technology is available: All that is necessary is for the hardware owners to conclude their deals with the content owners. If they leave it too long the urge will pass and the business model will not survive the universal availability of unlicensed music.

In tandem with ringtone technology improving, the ringtone business matured and gained respect, mostly due to the surprising size of the market – in 2003 ringtones accounted for approximately 10% of the \$32.2 billion in global music sales. Music publishers were taking their cut of every download, and with the introduction of sampled ringtones, the record labels got their hands in the honey jar as well. Even if revenue were not the gauge of success, you know you have arrived when Billboard devotes a chart to you: In October 2004 Billboard introduced the “Hot Ringtones” chart.

In 2005, the UK saw the peak of the “Crazy Frog” phenomenon, a sampled ringtone from Jamster that set the record for sales and marketing spend. If you are not aware of it, words are inadequate for capturing the high-pitched, frantic vocal rendition of a Formula 1 engine, or the accompanying mascot – a bug-eyed frog with vestigial genitals and an old-fashioned, leather driving helmet (perhaps conjuring up Toad of Toad Hall in the collective unconscious of the UK population). Despite this, or perhaps because of this, it was downloaded 11 million times at the behest of 36,382 TV spots across the UK (for perspective, McDonalds had 9,780 spots during the same period). Mixed together with “Axel F”, the 80s synth pop theme of “Beverly Hills Cop”, “Crazy Frog” had the honour of beating Cold Play to the number one spot on the UK singles chart and had ringtone purveyors staking out their claim in the commercial mainstream. With all these triumphs perhaps we could ignore Jamster’s troubles with regulators over not clearly informing downloaders they were signing up for a monthly subscription and not just a single ringtone.

Ringtones, and other phone downloads such as wallpapers and games, are being integrated into the income streams for artists. Robbie Williams is an

early adopter of this strategy. His “Greatest Hits” CD released in the UK in October 2004 had the WAP (Wireless Application Protocol, or, the internet from your phone) codes for 57 ringtones and 100 wallpapers printed on the inside cover of the CD. Some 300,000 registered fans also received an email from Robbie, encouraging them to buy these items.

In Australia the current ringtone market is valued at approximately \$50 million per year. Very little of the product available is locally sourced and we have not escaped the “Crazy Frog”. There is currently debate over whether or not the market has peaked, with some analysts saying that consumers are already moving onto phones that can play MP3s, while others suggest that since only 30% of people have phones that could play polyphonic ringtones there was plenty of room for growth as people upgraded.

Although ringtones seem too faddish and ephemeral to be an enduring source of music income, they have already been a phenomenon that few predicted. They might fade away or they might just become one of the standard sounds of life that people are prepared to pay for.

DIGITAL BROADCAST

Since the last edition, extensive trials of digital radio have been undertaken. It will provide higher quality of reproduction than either AM or FM and reception will be much more stable. It will also allow broadcasters to include more than audio-only material. After all, once the data is digitised, the potential for delivery of complex media, is enhanced. This comes at a price because consumers have to replace their existing analogue tuners with digital tuners but the UK experience certainly indicates that Australian consumer resistance will be low and uptake of the new technology will be rapid.

When digital radio is introduced we are perhaps unlikely to hear the same plaintive sounds that were heard from record companies when FM was introduced. They learned from that experience that good reception does not necessarily mean more piracy: It means more appreciation of the production and performance values in the recording and a greater likelihood that the listener will be interested in buying the recording. Indeed digital radio’s capacity to deliver text and other audiovisual content means that the owners of the music will be able to use the new technological capabilities to enhance their marketing of the broadcast recording. Digital radio is the best thing that has happened for a long time to the marketing directors in record companies. Those who think creatively and strategically will realise that this new platform means the radio stations have to rethink the way they relate to their audiences. They will need lots of additional material to make use of the data-rich format and the record companies, publishers and artists are going to be the best (and cheapest) source of this material.

Digital broadcasting means ‘pay radio’ is feasible. It would permit subscribers to select particular tracks and be charged per track: a kind of ‘broadcast juke box’. On the bright side, digital encoding means it is perfectly possible to encode every digitised recording with the equivalent of a bar-code. Every recording can be identified. Every use can be logged. This will have an obvious impact on performance and licensing revenues.

MOBILE PHONE

Mobile phones have been one of the most successful mass-market technologies of the last decade. For those old enough to remember the impact of the portable transistor radio and the thrill of, at last, being able to listen to your music on the move, it is easy to see that the mobile phone would be just as influential. If music of choice can be played through your mobile, all your music needs can just slip into your pocket.

In September 2000, Vivendi Universal, owner of the world’s largest record company UMG, launched Universal Music Mobile in France. It allowed WAP mobile phone subscribers to hear tracks from UMG artists and get news updates, buy CDs and concert tickets. The phone users could also download MP3 files (if the handset is MP3 enabled). When it went on trial in France, the monthly subscription fee was between US\$16.60 and \$41.78 and the 20-30 minute download time didn’t help either! All that changed quickly. By July 2005, Virgin Mobile was publicly musing whether they would have to introduce unlimited music access to mobile phone users. They estimated that consumers had spent \$1.5 billion in the last three years on buying songs for their phones with digital music players (see www.mobilemag.com/content/100/104/C4261/). This is also interesting because it provides an eloquent example of the inherent clash of interests between the record companies (that want to sell downloads) and phone companies that want to sell hardware and time. Still, in Australia, that delicious spat is some way off. Until 3G technology gets a grip and mobile broadband becomes widely adopted, most music consumers are going to have to put up with transferring MP3s from their PC to their mobile. Tedious.

The great news is that by the time you finish reading this Chapter, most of it will be out of date.