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**“NEW TECHNOLOGY AND MUSIC:  
EVOLUTION TO REVOLUTION”**

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The mass communication of music is dependent upon technology. 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 means by which music is made available and this in turn has affected the way in which we use music and by which we have music used upon us.

If you are in the business of reaching youth, communicating with them, influencing them, music is obviously one of the powerful media available to you. If you are to use it successfully, you must realise that we are in the early stages of a revolution: we have moved out of the mechanical age that has stolidly shaped our last two centuries, out of the electric age and into a digital age, the effect of which we can only surmise.

As with all earlier technological revolutions, we are about to experience cultural revolution.

You will be part of this revolution whether you like it or not. 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.

I am one of those people who believe that history can contain lessons for us. I believe that the people who best cope with new technologies and maximise their benefits are those who keep aware of the latest developments and actively contemplate how they can use them for their own benefit.

I want to spend time this afternoon considering just some of the technological developments in the last century, briefly indicating the effect that they had. You are in the communication business; just imagine that you had been one of the early industry leaders who had recognised the importance of any one of these inventions. Just think what you would have done!

## **PUBLIC TO PRIVATE ENTERTAINMENT**

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.

In the mid-19th Century, piano rolls became the most popular form of mechanical reproduction of music for home entertainment. Piano rolls sold in their millions and had quite a long life in terms of popularity, but by the 1950's, after virtually a century, they were superseded by new media and reduced to being a curiosity.

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 contentedness 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.

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 from the musicians. What an extraordinary concept! What a recent one!

Forget the 1877 Edison invention of cylinder records. These were not at all suitable for mass-reproduction. But in 1888, Berliner gave the first public demonstration of the flat phonograph record. This 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 cheap copies of any recording. Mass production began around 1892. 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 unlimited by number, social class or political boundary.

These 78 r.p.m. shellac discs were eventually superseded by long play (“33 r.p.m. microgroove”) records. Introduced in 1948, they amounted to another leap of huge cultural influence: It was largely responsible for a rebirth of 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!) that they previously needed if they wanted to play a complete opera or symphony. Virtually anyone could own a complete opera - and play it in their own home.

Similarly the long-playing record also 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 ‘30s were played at a fast tempo because of this technical problem.)

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 greatest practitioners in the world.

None of this would have been possible without the invention of magnetic tape. Developed in Germany in the 30’s, magnetic tape 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 which until then, had to be re-recorded.

What is the significance of all this? Enormous. Recording technology allowed the public to listen to music without the presence of the musician. What the public listened to in private, where they listened to it, how often they could listen to it. It made the music of the privileged, available to almost everyone.

If you could have seen the way in which the recording industry would evolve, how would that have affected the way that you implemented your communication strategies?

## **PUBLIC ENTERTAINMENT AND MASS INFLUENCE**

The first known radio broadcast to the public occurred on Christmas Eve, 1906. It is not known how large the audience was that night. It's unlikely anyone who happened to hear it could have anticipated the industry that eventually developed 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 music, radio gave music to the masses. 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.

## **MUSIC ON THE MOVE**

The development of the transistor has had a more fundamental role in re-shaping the music and record industry than is generally recognised. Invented in 1947 in Bell Laboratories, 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.

Before transistorisation, 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 sound-track of background music, just like a Hollywood movie.

The "Compact Cassette" format (the cassette format in your car and most home stereos) was released by Phillips in the '60s. 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.

Now the public could record their favourite pieces from their records and take them with 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.

Then there came digital recording of sound. The compact disc was cutting-edge technology when it was conceived in the 70's. 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 digital recording, all combined to record sounds and images. What was science fiction, is now in your lounge room.

More importantly, for you whose job it is to communicate with youth, CD is not the technology of the future. It is merely the dominant technology of the present. In saying that, we are admitting that the end of its period of dominance is already foreseeable.

The digital revolution did more than bring us the compact disc. It provided new methods of recording, storing, reproducing and exploiting records. Now, audio and visual recordings can be manipulated and stored in the same way as any other computer data. The traditional lines have become blurred as music and other data are combined in the same media. It created the possibility of multi-media.

In this brief selection of technologies I have illustrated how technology has influenced music and how music technology has influenced who listens to what and where. Such lessons of the past give an indication as to how we might embrace the foreseeable technologies in our quest to better communicate with youth.

Given that youth will be the first and perhaps primary users of new formats, how will that influence your communication strategies? Will you still be thinking “piano roll” when they are in their bedrooms with a wind up gramophone”?

### **NEW DELIVERY FORMATS**

Now, the “new technologies” in record formats to watch out for are as follows:

- (i) Phillips’ new Digital Compact Cassette (“DCC”) format, which is a digital recording system using a stationary record/play-back head, so it can also read ordinary analogue cassettes. Its future does not look fabulous as the Australian Record Industry Association figures for the last six months disclose that only one DCC tape was sold during that period;
- (ii) Sony’s new 3 inch diameter MiniDisc, which looks like a small version of the usual 5 inch compact disc, but which uses a very different method of encoding and replaying the signal. Users will be able to record their own MiniDiscs which is an advantage for those who want to use disc technology in the same way as they used to use cassettes. The problem is that compression technology is not yet sufficiently advanced to allow the MiniDiscs to match the reproduction quality of the normal CD. Fine for Aerosmith but inadequate for Wagner;
- (iii) Nimbus Records’ new method for recording and encoding data on a conventional compact disc, which will enable whole movies to be stored on a single disc and played back from a conventional player with an adaptor between the player and the amplifier;

- (iv) The larger diameter Laser Discs (which can hold movies or hours and hours of recorded music);
- (v) Compact discs which can be recorded and re-recorded over and over (“Write & Read CD”);
- (vi) Interactive compact disc (“CDI”) which contains audio-visual material which can be manipulated by the user, with the help of a mini-computer. It appears to have huge potential outside the traditional music market (such as education);
- (vii) Very large integrated circuit memory cards and “smart” cards (which resemble ordinary credit cards, but which store data).

Most of these, I would suggest, are going to be temporary formats. It seems to me that neither DCC and MiniDisc are revolutionary, merely evolutionary. They don't open any new opportunities for self expression; they won't change music nor how, where or when we listen to it.

That is not to say that Compact Disc will remain the dominant sound carrier. I believe that in less than ten years, CD will be a minority medium. This is significant for all of us who are planning to use music to reach young people.

Everyone involved in the industry must be ready to adapt to radical new ways of delivering music to the public. One of the features of contemporary society and the emerging Digital Age, is that the discrimination of time, distance, national boundary, race and money has been affected, if not yet overcome, by mass access to mass communication technologies. This where evolution becomes revolution.

There are three technological strands to this revolution:

- (1) Our entry into the digital age permits us for the first time to merge visual images, literary works and music, on disc. What is more, for the first time, the audience can be an active participant in the process. This is “inter-active multi-media”.

Last month BMG released the first inter-active CD-Rom disc in Australia. Significantly, it featured an Australian group called “Girlfriend” - a group

whose demographic is probably the 10 to 16 age group. It contains songs, video clips, interviews with band members, film footage of concerts and so on. I say, “significantly” because this is the demographic most likely to be comfortable, playing with the new technology.

It is reported that last year, Apple sold 1.1 million CD-Rom drives, world-wide. It apparently plans to sell more than twice that this year. Sixty per cent of its computers sold, will come with CD-Rom as standard. This is already happening. It is not the future. Whether we have noticed it or not, it is our present.

You can imagine the consternation that this is causing in record companies - multi-million dollar companies that are almost completely geared to selling music in purely audio format. If they do not make radical changes to what they are doing and how they are doing it, they run the risk of becoming like the major companies that used to manufacture piano rolls. Of course most of them are already gearing up for change. If you are going to use music to reach youth, you must, too.

- (2) The second futuristic technology that is already of the present, is the Internet. It already gives you access to between 25 and 32 million users - most of them are young. Did you know that every student in the United States is given an Internet access number when he or she graduates? Did you know that the number of Internet users increased by 81% last year? What sort of market is that?

Only this year, Aerosmith, one of the biggest bands in the world, published a song exclusively through the Internet. Why would they do that when it means that they can't make royalties from record sales? You are the communication experts. Perhaps you can answer why!

Already the Internet provides information on most of the major artists, MIDI files of their music is available for down-loading; fan-clubs with thousands of members operate successfully through this cyber-link; listen to music in terrific digital sound. It is not a world that most parents even know exists, let alone would feel comfortable enough to wander around in, explore, chat, make friends. The young users of the 'Net no longer have to leave home to

make friends; nor are they any longer restricted to their local suburb. They can cruise the world.

If you don't take this into account when addressing the manner in which you use music to reach young people, you are only using technology that you are comfortable with instead of the technology with which your target market is comfortable.

- (3) The third part of the music technology revolution are the developments in broadcast and cable transmission.

Satellites are already an everyday part of the Australian communication system. Moreover, Australia already has one of the most extensive and developed optical fibre networks in the world. It is reported that a single optical fibre can carry 117 television channels and many times more radio channels. These will revolutionise diffusion services which until recently, were reliant on ordinary metal wires which could carry comparatively few channels at a time. When compared to the cost of setting up a radio or television 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.

Digital broadcasting also means that "pay radio" is feasible. In the United States, trials are already well advanced for the supply of 24 hour all-music channels that allow subscribers to get commercial free music of CD quality.

The technology is also already being implemented to permit record buyers the ability to determine the exact content of their CDs merely by ordering the track-listing from a huge menu of music and waiting at the counter while the massive computer down-loads the material from the data-banks and manufactures an individual, completely personalised disc.

Even this is likely to be quickly overtaken by a delivery system that might be described as broadcast-juke box whereby instead of buying a record, through a simple-to-operate home computer, a home subscriber will simply order any number of tracks to be delivered by the program provider. It will be instantly

delivered in glorious digital signal, ideal for recording onto compact disc, DCC, CDV or whatever - for those that can be bothered.

## CONCLUSION

Sell your shares in record shops and video rental shops. They will wither and become havens for collectors: the sort of people who still insist on calling radio - "wireless".

New digital encoding technology means it is perfectly possible to encode every digitised recording with the equivalent of a bar-code. Every recording will be identifiable. Every use will be able to be logged: what, where, when, whom. This will have an obvious impact on performance and licensing revenues. It will also provide marketing intelligence, the like of which the communications industry has never seen.

Whatever happens, there is no reason to think that the demand for music will decrease in any way. If anything, it is likely to increase. It will certainly become even easier to access. It is going to mean great changes in the way that publishers and record companies operate; it will change the way that performers and composers work and the sort of material they produce; it will change the legal relationships between the talent and the companies; it will change the exploitation media available to the companies; it will change the way you use music to communicate with your market.

We can look back and see how fast the future arrives, is overtaken and dismissed. If you are planning long term strategies for the effective use of music as a communication medium you must spend time keeping abreast of the digital revolution so that you will be better able to evaluate the various possibilities for change that technology will wring upon music and the effect that it will have on our lives.

To communicate to youth in the Digital Age, we will have to overcome the disadvantage of being creatures of an earlier Age. The old media tools and existing marketing paradigms will no longer necessarily be relevant. That is why I call it a revolution. We cannot know what the future will be, but we must acknowledge that

if we are to be effective communicators to youth, we must be part of the revolutionary force, not its subject.