TECHNOLOGY AS THE CHANGING FORCE IN THE MUSIC INDUSTRY

FINIAN REILLY
FINAL YEAR INDUSTRIAL DESIGN

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INTRODUCTION

The music industry has been one of fastest growing and constantly changing business in the world. In the last two decades these changes have been immense. The seventies and eighties have also been the decades where electronic technology came of age and had worldwide effects not least on the music industry, with which it has great links. From Edison's phonograph invention to the advent of compact disc , the industry has answered to and grown with technoligical development, to the extent that 'popular music ' has been dictated and shaped through the years. To investigate and finally prove this , the thesis begins with the music machine before Edison- and subsequently procedes to Edison's and Berliner's phonographs with their cylinder and disc mechanisms.

Chapter two traces the creation of the first recording companies by the phonograph inventors. Tracing their metamorphosis into the modern world known companies, and the events which hearalded such changes. This entails a sometimes detailed look into the technical and electronic discoveries and their creative repercussions, and in some cases a look at actual releases and the technology that made them both possible and inevitable.

Chapter three is an analysis of the development of the instruments which have had a hand in changing the course of musical history. Tracing their indivudal histories it comes to the eightees and the development of high-tech quality digital systems like samplers and sequencers. The resultant music is also discussed taking into account again its actual physical production and finally it's effect on the industry as a whole. Such as the controversies concerning the use of sampling and remixing to create new material and the eventual acceptance of such metheods as artistically sound.

All this investigation and discussion will lead to a conclusion speaking of the immearsurable links between technology, especially electronic, and the music industry.

Man, for centuries, has tried to capture the sound in an attempt to communicate it to others. Mans effort to do so came in two main forms ; the first being by symbols the second by mechanical means. For years symbols were the only means of recording musical pieces. The mechanical metheod '...had to await the emergence of technology for it's development.'(Marcus 1970:691) The earliest inventions to play a piece of music were of the barrel-and-pin type. A cylinder rotated ,by either hand or clockwork, which was embedded

with pins which would strike a pin of a comb causing a sound. The pins on the cylinder were arranged to play tunes, as it rotated, on the comb.Some machines, instead of a comb, had bells or hammers which hit piano strings. Some of the most respected composers in history have written especially for such mechanical devices. Hayden and Mozart wrote for mechanical organs. Beethoven wrote his 'Wellington Victory' (or Battle Symphony) for the 'pan harmonican'; a full mechanical orchestra invented by Johann Nepomuk Maezel.

Next came two inventions which superseeded the barrel-and-pin mechanism. The first of these, the Player Piano, used a perforated cardbord cylinder which controlled a flow of air which activated the piano hammers. Many piano composers used this to record their pieces for future playback. Some composed especially for the system creating pieces which played up unto thirty notes at once, an impossibility for one pair of hands, but readily possible for a piano player.The second of these great, late 19th centuary, inventions is the 'phonograph', an object which was to make obsolete all previous mechanisms.

The first recordings of sounds that could be played back was in 1877. Thomas A. Edison had invented the phonograph. His recording was in the form of a sheet of tin foil wrapped around a rotating cylinder. A`diaphram, which vibrated with sound , was attached to a stylus which then produced an indentation on the cylinder , which moved axially- thus leaving a helical groove. The sounds were played back by again running the stylus through the groove resulting in the vibration of the diaphram, therefore creating sound.

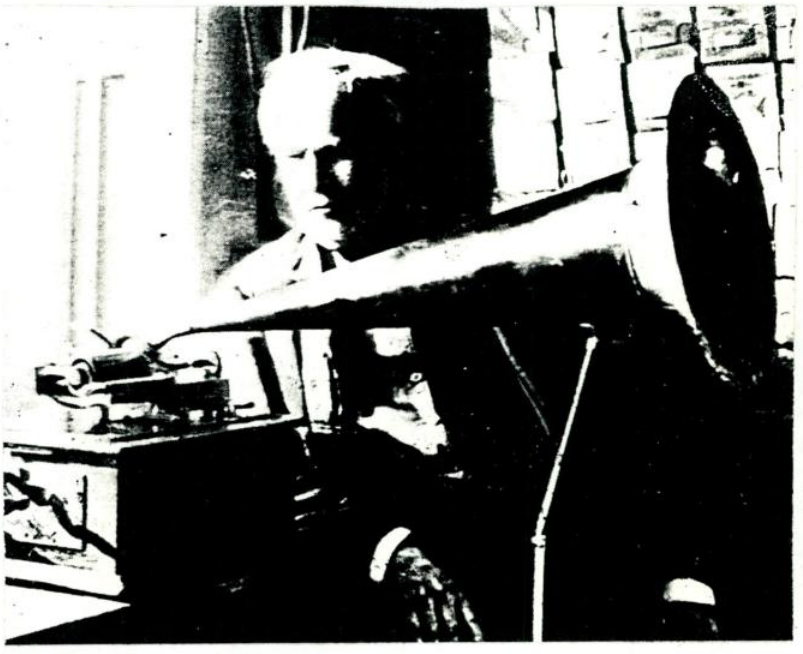


FIG. 1 Thomas Edison

Several years later in 1885 two men, Chicester A. Bell and Charles Sumer Tarter, pioneered a new recording metheod. It was quite similar to Edison's, but the changes made alot of difference in sound quality. This new machine, which both men patented, was different to Edison's because it used wax covered, instead of a tin foil covered, cylinder -which gave alot better sound reproduction. The first recording on a flat disc came soon

after.

German born Emile Berliner was responsible. Instead of on a cylinder, he used the stylus to mark out a spiral on a flat disc. The zinc disc was covered in a fatty substance which protected the zinc from acid except where the stylus had scraped it's wavy line. Therefore after an acid bath Berliner was left with a recording to be played back on appropriately designed equipment.Berliner's great system did not end here. This original zinc recording was not to be actually played, but was to be used to mould a negative. This negative was then used to produce many thermoplastic copys of the original. This whole procedure subsequently became standard.Berliners discs were far superior to any cylindrical recordings. They were more durable and produced a louder volume of sound. Another great advantage was, with the ease of flat moulding, the groove was deep enough to carry across the stylus itself ; thus doing away with a need for an auxillary feed screw. Berliner soon became rich by producing and selling his gramophone.

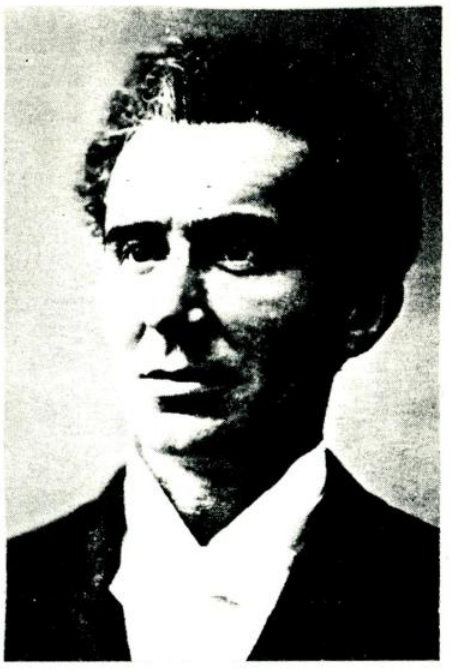


FIG 3. Emile Berliner

The record industry had been born.

FIG 2. Edison's Phonograph

FIG. 4 Berliner's Phonograph

CHAPTER I

TECHNOLOGY AND THE MUSIC INDUSTRY.

After inventing the phonograph in 1877, Edison began immediately to make recordings to answer the great demand from the interested public. He produced a lot of novelty and simple non-celebrity cylinder recordings from 1888 to 1894. His first celebrity recording came in 1892 when he brought Polish pianist Josef Hofmann (then a 12 year old prodigy) over to America especially. In 1894, Charles and Emily Pathé started the Pathé recording studios in Paris. They recorded such famous stars as Mary Gaden, within a decade they had over 12,000 recordings and Pathé became synonymous with cylinder phonograph in Europe.

In 1887, Emily Berliner invented the flat disc phonograph and began to make records, what was to be the future of the industry until its recent sharp competition from compact disc digital technology. Berliner immediately began to record performances from the next door theatre, but these professionals asked a lot of money for their talents. Not being able to afford this, Berliner sent out a Mr. Fred Gaisberg to find cheaper performers. Gaisberg, the music industry's first real 'talent scout', 'scoured the beer cellars of Washington for promising amateurs' (Lowe 1982:20). Berliner even recorded himself singing 'The Lord's Prayer' in his stiff German accent. Finally his financial problems were solved by a Philadelphia company who invested £25,000. It wasn't much but 'The Berliner Gramophone Company' was set up to manufacture record players and discs on a large scale. Initial sales were disappointing due to the fact that the players were hand driven. Hand winding was a nuisance and almost impossible to keep at the correct speed (the manual recommended 78 revolutions per minute). In 1896 'Eldridge Johnson' designed and constructed a spring motor especially for gramophones which was cheap, quiet and reliable. With this discovery both Johnson's and Berliner's companies grew month by month.

In October 1896, Berliner appointed Frank Seaman as exclusive sales agent for the gramophone in the United States. Seaman founded 'The National Gramophone Company'. By Christmas that year the demand was so great that sales of the player were only limited

by Johnson's ability to supply the motors. Gramophone recording studios were opened in Philadelphia and New York to enable constant supply of new discs to the ever increasing market. In July 1897, Berliner sent William Barry Owen to Britain to sell the idea. By the end of the next year Owen and other Berliner men set up 'The Gramophone Company' (London), 'Deutsche Gramaphon' (Berlin) and the 'Compagnie Francais du Granaphone' in Paris. As most of the European recording industry was pioneered by Berliner's representitives, his own U.S. branch grew into the 'Victor Company'. Equipment was also sold to companies who set up studios in Germany, Spain and even Russia and Australia by the beginning of the next century.

Before 1900, the quality of talent on the recordings didn't matter much - the recordings were simply novelty noise played on jukeboxes. Victor aimed to change this with the Red Seal (Red Label in Europe) Series which began in 1900. An example of their quality talent is the Italian tenor, Enrico Caruso, by 1910 eighty five per cent of all Victor's releases were classical. Victor furthered their world domination in 1901 by beginning the Russian Red Label.

In 1902, came the joining of patents by Victor and Columbia in America. In an aim, as they said, to help and develop the new industry. Columbia had previously discovered wax records and the patent join made it possible for Victor to use the far superior format. Quality recordings on wax (both in sound and talent) then became Victors' best sellers. Such recordings as Caruso helped change the image of the phonograph to a respected cultural phenomenon. Within a year Victor had earned an upper class name for their recordings and had also introduced the ten inch, three and a half minute disc. The world began to embrace the technology and the music; people who would never otherwise have gone to theatres were exposed for the first time to such talent. From 1914 to 1919 phonograph sales grew five fold. By 1910 Columbia had made an effort to come up to the quality level of Victor by releasing recordings from Europe,which were on double sided discs, and continued to do so until 1923.

Then came a great advance for the industry. Up to 1920 the recording artists gathered closely around recording horns, and sound boxes had to be fitted to instruments. The emergence of the microphone and the electrical recording recording process put an end to

this. Artists could now record comfortably and to a greater level of quality. This led to Tidbits and Orchestra excerpts giving way to uncut symphonies, sonatas and concertos, as the advancing technology in 1925 raised the sound quality. 'The music itself came to mean as much as its star performers, and the electrical recording process from 1925 on raised the quality of recording also.(Marcus 1978:695)

Unfortunately the mid twenties rise in radio (free music) and the thirties depression caused the industry to fall into decline. In 1929, the Radio Corporation of America bought Victor. In 1931, the English Columbia Gramophone Company and its US branch joined with the US Gramophone Company to form EMI. These two companies now owned all the recording industry in Europe except DGG and its export label Polydor. (DGG - Deutsche Gramaphon Gesellschaft, formed during World War I, due to a break in Victor's Deutsche Gramaphon Co.). The American Columbia Company was saved by its purchase by Columbia Broadcasting System (C.B.S.). During the thirties all companies relied on jukebox sales (mostly dance music) but in 1931 H.M.V. (previously The Gramophone Company) started their subscribe in advance 'Sosiety' records most of which were classical. Their example was followed by serious releases by Columbia and Decca, a new British Company.

In 1946, Decca introduced 'Full Frequency Range Recording' (ffrr). People were amazed by the result and the prospect of Hi Fidelity (Hi-Fi) recordings. In the late '40's came radical changes in the industry, the ingredients of all these changes were magnetic recording and the long play (LP) record combined with the new ffrr technology. 1948 brought Columbia's 12 inch twenty five minute (per side) vinyl disc which revolved at 33 1/3 revolutions per minute as opposed to the usual 78. This had great advantages - the vinyl was quieter and for the first time you could fit a complete piece without breaks on one record. In 1950 after Victor released the seven inch, forty five revs. per minute disc a complete pattern for recording was set:

twelve inch LP for classical work or popular albums

seven inch for individual popular songs

The advent of the LP created a new market and the 78 rev./min. disappeared forever.

The forties had brought tape and caused a great impact. 'Anyone with a good recorder and microphone could become a record producer'. (Marcus1980:695) This made it possible

for small companies to record areas of music previously ignored by the giants. Due to the development of the tape recorder such music as Baroque, chamber music and little known symphonies and operas were recorded for the first time. These releases in the forties brought on a Baroque revival. By the mid fifties practically the entire worthwhile musical output of Western civilisation - and much from Asia and Africa - had been made available to the average home .

Stereophonic tapes became available in 1956 and stereo records in 1958, by the end of 1958 every US company was issuing stereo recordings. These recordings showed off the stereophonic possibilities and the public were amazed at the spectacular effects. Decca released Wagner's 'Rheingold' in stereo and the music buying public warmed to the new technology. By the late sixties, there were no more mono releases except historical re-issues. The fifties brought another international phenomenon. It wasn't of technical development but what emerged was a recognition of the youth market and the birth of a music style aimed at the youth and their disposable income. Rock 'n' Roll was pioneered by Elvis Presley.

FIG. 5 Elvis Presley

> The arrival of Elvis Presley on the music scene totally changed the record business. Whereas before a few hundred thousand records represented a major hit, Presley's records sold in such huge numbers that the entire industry had to re-think and adjust the dimensions, a process which led to both undreamed prosperity and wealth for performers and record companies alike. (Lowe 1982:242)

Presley is also an example of the link between the music and film industries. His acting career also boosted his chart success by releasing film sound tracks.:A record selling idea that continues to the present.The British teen idols of the sixties also used films to boost sales; 'The Beatles' again broke all records. Classical records no longer held the large

percentage of sales, rock and the young buying public were the target for the record companies.

During the mid sixties the greatest extent of the minimal sales of classical music was on the new medium of tape. Two formats of tape emerged; the continuous loop cartridge and the two reel cassette. The continuous loop type was introduced mainly for the car accessory market with play back units only. The cassette could be recorded on by an inexpensive player recorder and became the more popular of the two.

The advent of television made the record companies look at visual possibilities and video technology. Early expeditions into the visual world were by conductor Leonard Bernstein who recorded the Verdi 'Requiem' for video and the Italian film director Franco Zeffirelli who directed a production of Beethoven's 'Missa Solemnis' at St. Peter's in Rome. The first rock/pop video appeared in 1975 and was shot specially for the British popular music programme 'Top of the Pops'. 'Bohemian Rhapsody' by Queen showed that 'the music video could serve over and above radio air play, advertising, guest appearances on television and the like in promoting sales' (Hayward 1990:128).In 1985, the American MTV (Music Television) came to light as major force in the business. Record companies were almost forced into making a video for each single released. It was worth their while; the air play on MTV was a sure road to large record sales. Image more than ever became so important. In some cases the music took a back seat and the video image of a band sold more records than the old fashioned radio air play (which relied solely on the music) could ever have sold. Videos became more and more attention grabbing with the use of the new video technology (animation, graphics, video editing and matting).

The technology of the eighties came together to form a new concept for the record companies, they signed performers like Samantha Fox (a page three model) with whom the producers and the recording technology set to work. The video sold the record which was produced quite easily using electronic technology that made it possible for it to sound as if Miss Fox could actually sing. The producer then made the music tracks also. Yet the video, the packaging, and the related press releases featured only pictures of the 'talented' Samantha Fox.

In the early eighties it was considered a great feat if the singer could sing the whole song in one take. It was possible for lines, words and even half words to be mixed

together to attain the finished track. Some bands didn't even sing at all - the real singers were just session singers who weren't good looking enough to appear on covers and videos. Milli Vanilli had to return their 1989 Grammy Award for Best Newcomer when it was discovered they didn't even sing on their LP. They claim their manager/producer would not let them allthough they felt they were quite capable.

So as the audio and video technology brought the industry into the seventies and the eighties the role of the producer became very powerfull. The recording procedure was no longer simply 'recording' but an actual in dept manipulation and rearrangement of the primary sound recordings, 'involving the recording engineer [producer] in complex manipulations of the raw materials provided by the musicians'(Durant 1990:179).

Many producers are as famous as artists and sometimes release their own records. Producers Don Was and David Was have released material under the name 'Was (Not Was)'. They have produced albums for many renowned artists who simply desire their sound. Don Was recently won a Grammy Award for album of the year for producing Bonnie Raitts' last, top selling, album. He has also recently worked with 'The B52s' and Bob Dylan. The Was brothers have been called the 'most sought after producers in America'(Gill 1990:18) in Q magazine in an article titled 'The Hitmen'.

In another music journal , Melody Maker, the producers of Morrisseys' new solo album; Clive Langer and Alan Winstanley, explain their production metheods. Clive Langer states in the article that:

Because we're a team, we're covering quite alot of different areas, from the engineering side to more of the songwriting side. We can say y'know, this song's brilliant but this bit here's boring, and imagine if we had such and such on this bit. They go with the idea most times,and normally they're pleasantly suprised with the results...'(Doyle1991:49)

These producers have as large an effect on the final sound of the recordingas the artist. This is because of his neccessary talent in the studio -his/her ability to control, to his/her and the artists specification,the equipment in the studio and thus what the final recording sounds like. They may work simply mixing indivudal instrument volumes during recording or as Clive Langer said above actually songwriting by advising the artist for example to 'add a guitar solo here'.

A similar situation ,the question of creative responsibility, comes to light in remixing. The eightees brought a wave of sixties and seventies re-releases which became huge hits. Films such as 'Dirty Dancing' brought many 'oldies' into the charts while television commercials like the 'Levi 501s' advertisements brought long lasting number ones such as 'StandBy Me' by Ben E. King. There were also single re-releases from compilation albums, some of which were changed slightly for their re-release.'The Police' released a re-worked version of an older hit , re-titled 'Dont Stand So Close To Me 86',to coincide with their compilation album release. The David Bowie compilation was released in 1990 along with a re-release of his 'Fame' single renamed 'Fame 90'.These songs had simply been remixed. The original recordings of these songs (on multi-track recorders) still exist. Many of the tracks (ie. drums , bass, guitar etc.) would be on seperate tapes thus allowing, via the new technology, the sounds to be again manipulated, added to and finally remixed. This ,ofcourse, does not involve the artist, just the technical talents of a remixer. The artist can ofcourse do so themselves, if capable,but usually only advise the engineer, and 'okay' the final product.

The eightees also brought the twelve inch single. Released with a seven inch single the twelve inch format included the 'A' and 'B' side tracks and a bonus track- sometimes an extended remix of the 'A' side. This remixing cost little more and in the eyes of the buyer it represented another song .Yet to the record company it represented a means to release it on a larger format, thus attracting the above customer and making larger profits. The twelve inch thus became a large new market. In 1987 Paul Hardcastle had a lasting number one hit with his song '19'. Hardcastle, more a producer than an actual artist, released three twelve inch versions of the song; Extended Mix, The Destruction Mix and The Final Story. 'Frankie Goes To Hollywood'(FGTH) released four twelve inch versions of their 'Two Tribes' single. The FGTH releases included band interviews. In one of these interviews the band are asked what they really do,-are they musicians? They reply no in unison, but claim they are the energy of FGTH; stating they are the hammer that knocks the nail in. When FGTH broke up in 1988 Trevor Horn (their producer) took the band to court claiming all the money saying the band had no actual creative input. Horn won the case except in the case of Holly Johnson who ,it would seem, did actually sing (he now has a solo career).The other four band members, however, seemingly never even played the original recordings

The material was totally produced by Horn, who used 'session musicians' when needed: Trevor Horn was 'Frankie Goes To Hollywood'. He never appeared ,at any stage in the bands life, on record covers or on television,he simply got recognition on the record sleeve as 'producer'.

FIG 6. Frankie Goes to Hollywood

This is a perfect example of how the technology has made it possibe for records to be sold with a certain falseness behind them. The media proytrayal of a band/act can be very important. FGTH were trouble makers,exciting and thus appealed to the youth who were subsequently led to buy their records. Their 'devil may care ' atitude sold alot more records than the thirty year old Trevor Horn could ever have on his own. Please note ; the fact that the music was allmost all done by Horn, does not goto say that it was of any artistic substandard. These singles, and their remixes, were some of the best releases of the eightees. The issue is that the technology has made it possible for them to be created and built, yet also made it possible for them to be sold on false pretence.The false pretence without which they might not (in their time) have become such great hits. At the present this is not such a taboo-the public know about it and respect the music it creates. Trevor Horn has just produced a number one hit in Feburary 1991 with a singer named Seal. Seal did write and sing the song but it is obvious ,as producer, Horn has constructed the rest of the record in the studio using sequencers and samplers. Both Seal and the single have been widely acclaimed in the music press, showing that such ventures are now artistically sound.

Samplers and sequencers used with computers serve both as a means of recording and as instruments. When they first appeared their ease of use and relativly cheap cost, led to a lot of bedroom productions where as little as one skilled operator could create and manipulate, with the aid of instruments (sythesisers and guitars), sounds to create a finished track. Kurt Ralske released an LP in 1989 under the name of 'Ultra Vivid Scene'. This highly acclaimed album was totally played and produced by him. The way in which sequencers and samplers work in detail is investigated later in Chapter II where they are looked upon as instruments - the predessesors of sythesisers and drum machines. There

also, MIDI, the system which made it possible for all instruments to inter-communicate, also receives attention.

Widespread acceptance of remixing has led to many releases. Even such long standing, well respected, rock bands as 'The Cure' have adventured to release remixes.1990 brought their album entitled 'Mixed Up' on which eight of their best known songs, from the last decade ,were remixed by assorted 'mixers'. One such mixer is Paul Okenfold who has earned a well respected position in the buisness as a greatly talented remixer and producer.

The acceptance of remixing and sampling metheods for creating new material,allthough made physically possible by the electronic technology, gained such acceptance due to the rise of the new dance craze especially in Britan. An article in Q magazine titled 'F*** Art, Lets Dance', lists almost twenty bands (these being the more famous) who have been born from such a 'techno dance' climate. The article is subtitled, 'You record a dance single but you need a group to promote it . Who do you ask along ? The singer and composer? The producer? Someone your manager met at a club? A friend of the bloke next door's cousin who's quite usefull as he's got a driving licence?...' (Doyle 1990:12): An indication of the real situation- the people with the right image are fronting music made by others. One of the groups mentioned in the article are 'Jive Bunny'. 'Jive Bunny' have had many number one hits in Britan within the last two years by simply mixing sixties and seventies songs medleys; this it would seem is the down side of the genre. The future of this area of the buisness seems set to create many such dance records. If only a small percentage of these releases are genuinely fresh in their own postmodernist way they will be good for the youth (who want to listen and dance to tham) and for the music industry(in opening even more unopened doors).

With digital technology in recording studio becoming the norm and causing large controversies, the next step was to present it to the public. Compact disc was released to the public in 1982 by both Phillips and Sony. CD quality is crystal clear as there is no contact involved in playing a disc, (ie. as in the stylus to vinyl contact on records or as in the tape head to magnetic tape contact in tape playing) what resulted is a 'hiss' and 'crackle' free sound reproduction. A lazer simply reads the digital information from the disc and converts it into sound.From 1982 to 1987, 600,000 players were sold and allmost

8.5 million discs. Cassettes sold less than a tenth of that in their first three years. Compact Disc '...looks set to overtake vinyl comfortably as a choice of new medium before 1990.(Garrett 1987:40) ,

The cost of both the players and the discs have caused the CD market to be primiarly in the older ages who can afford such costs.This is exactly as the companys wanted. With the decrease in the youth market they had to try and win back the attention of the married,working consumer. CD was their vechicle:

> ...older customers are kept away from the record shops by the youth orientated enviorment, and ... compact disc, with it's emphasis on quality and durability, is the vehicle to bring these older listeners back to the music-buying fold'.
>
> (Garrett 1987:40)

In releasing all 'The Beatles' catalogue on CD , EMI cornered this market. A sure way to bring back the lapsed fans; presenting them ,on a quality medium, classic releases from their youth ('The Doors','The Rolling Stones','Jimi Hendrix'). Another great attraction to the older consumer were 'Classical' CD releases, never heard before with such great quality.

Yet, as the cost of the hardware and the CD releases came slowly down, the market extended to the youth- if only the richer of them for the beginning. Compact Disc has slowly, but sureley, began to take over. Tape is surviving because of it's ease of use and inexpensive hardware (the birth and love of the "Walkman' has also helped), yet vinyl is slowly dying. Marketing magazine described 'The Beatles' releases as ' another shot in the arm for music's fastest growing format, and yet one more nail in coffin of it's old mainstay, vinyl.' (Redmond 1987:28)

On the heels of CD, Digital Audio Tape (DAT) has appeared. The DAT system, like CD, is laser based, but the great difference is that DAT can be recorded onto- it is possible to record your favourite CD onto DAT and subsequent playing in DAT equipment will give CD quality:'...recordings made in this way would be allmost indistinguishable from those emaniting from the studio.' (Garrett 1987:40)

This could cut the feet from under the only now developing CD buisness.This is causing large dissagreements throughout the industry. The DAT medium has been retailing in America since early 1990, yet none of the record companies have released any original recordings on the medium . The arguements continue.

These electronic breakthroughs are set, yet again, to reshape the industry.The buisness was born out of Edison's and Berliner's inventions and continues to answer to the electronic developments of the new decade.

CHAPTER II

MUSICAL INSTRUMENTS AND TECHNOLOGY

In 1895, Thaddeus Cahill assembled a collection of generators and telephone receivers to convert electrical signals into sound. The instrument, a telharmonium is the ansestor of the present day synthisizer. Thaddeus Cahill was a visionary who lived two generations ahead of his time. In 1913, Luigi Russolo, an Italian futurist, stated that 'All existing music should be destroyed and that new instruments reflecting current technology be built to perform a music expressive of the industrilaised present' (Hiller 1878:673). Russolo himself went on to design and build 'Intorarmori' (noise instruments) which simply grated, hissed and scratched. These instruments and the music which he wrote for them disappeared during the second world war.

During the twenties there was a great interest in building a variety of novel electronic musical instruments. The most of these are monophonic (i.e. can play only one melodic line at a time) and survived because of their practicality and the fact that some important music has been score for them. The best known one of these is the Theremin, invented in 1920 by Leon Theremin. Others are the Ondes Martenot by Maurice Martenot in 1928 and the Trautonium by German Fredrich Trautwein in 1930.

The Theremin consists of a beat frequency audio oscillator with two condensors which protrude from the wooden cabinet as antennae. These antannae respond to the presence of nearby objects, therefore the pitch and amplitude at the output signal can be controlled by placing your hand (or whatever) in its vacinity. It is possible for a skilled performer to play even the musical scales on this instrument. Since the twenties it has been featured and written for by many performers. A theremin can be heard on the Beach Boys' hit 'Good Vibrations'.

The Ondes Martenot, a touch sensitive keyboard has also been used extensively. Especially by several French composers and to the greater extent by Oliver Messiaem.

Like the Ondes Martenot, the Trautonium used a 'saw tooth' generator and a keyboard. An example of the music especially composed for it is the 'Concertino for Trautonium and Strings' (1931) by the German compser Paul Hindermith. There were many pieces written, especially by German composers, for this and its polyphonic successor (capable of playing

several melodic lines similtaneously). which was developed by a student of the original inventor; Oskar Sala in 1950. These three and many other extraordinary instruments were the spark that created many revolutionary pieces of music of their time. This music would never, or could never, have existed only for the technical developments by these inventors.

Between the wars there were alot of technical advances in the music industry. Breakthroughs such as circuit technology , amplifiers and loudspeakers, brought the replacement of acoustical recording by the microphone and electrical recording in the twenties. Another main technical advance concerning the industry was the development of electrinic musical instruments designed to synthesise existing musical instruments; in particular the invention of the electronic organ. The men who pioneered the development of the electronic organ did not intend to invent novel new instruments, but simply to simulate and replace the pipe organ. The most famous result of these developments and research was patended by Laurens Hammond in 1934; The Hammond Organ. The German composer Karlheinz Stockhausen (in 'Momente' 1962) and Arne Nordheim the Norweigan composer (in 'Colorizone 1968) are only two of many who scored specially for the Hammond. 'The Hammond organ can be considered a forerunner to the additive synthesiszer.' (Crombie 1982:85)

Also from the Hammond factory came the Novachord and the Solovox. The Novachord was very advanced; '...less an organ... more an ancestor to today's polyphonic synths' (Crombie 1982:85). The Solovox was a small monophonic keyboard designed to fit under the right hand side of a piano servicing as an alternative sourse for melody or solo line of sound.

As many inventors worked hard to combine new technology with music,two French inventors Messres Couplet and Giuelet introduced their breakthrough. At the 1929 Paris exhbition, they introduce the 'Automatically operated musical instrument of the electric oscillation type'. This used a paper tape reader to control a set of four sounds. But not only were the notes dicated by the tape but also the amplitude, artriculation, modulation and timbre for each sound - all the characteristsics that a modern synthesiser shapes when producing a sound. The instrument did not take off, yet it set the ball rolling for other information storage machines. Such machines as the Kent Music Box and more importantly the RCA Music Synthesiser.

In 1954, the RCA Synthesiser showed the real possibiliteies of electronic technology in

music. Initially designed by Dr. Harry F. Olson and Herbert Blair, it was later re-designed as the RCA MkII. The RCA MkII was capable of a 36 track capacity (you could manipilate tracks and replay them together in a complicated tape recording system). Yet the RCA MkII had its problems; monophonic limitations and a cost of £60,000 (at 1955 prices). The RCA Synthesiser gave great possibiliteies in recording at the Colimbia Studios where it was installed. Milton Babbitt composed many pieces for the RCA and became well known because of them. Examples of his work are 'Composition for Synthesiser' (1961) and 'Ensemble for Synthesiser' (1963). When he became aware of the synthesiser, he was anxious to use it because it gave him the oppertunity to realise his music precisely rather than approximately as had hitherto been the case.' (Hiller 1970: 676) It made it possible for Babbitt to create the sound he wanted, but previously couldn't because it simply wasn't possible.

In 1963 Herb Deutsch (an electronic composer and lecturer at Hofstra University) met with Robert Moog. They set about developing a small solid state instrument that would offer some some of the RCA MkII facilities to a smaller recording studio which couldn't afford an RCA. By the end of 1964 the research into the use of voltage to define the baisic elements of sound (;pitch, timbre and loudness) bore fruit. In 1965 the hand production of their Moog Synthesiser changed to mass production as the demand grew. Yet it wasn't untill Walter Carlos recorded an album 'Switched on Bach' ,which featured the Moog strongly, that they began to gain specail attention. The album was to become the biggest selling classical record of all time and Moogs' electronic synthesiser was firmly established.

FIG 7. The Mini Moog

Demand grew for a small performance orientated instrument so Moog produced the Minimoog for the 1971 AES convention. 'The Mini-moogs success, which was to last ten years, was a result of it being a true musical instrument that musicians could get to grips with, and not just a box of electronic circuitry' (Crombie 1982: 88) . At the same time as the Moog's came the 'APR 25000', the 'APR 26000' and eventually the 'Odyssey' by a company owned by Alan R. Pearlman; '... he wanted to turn the inventions of engineers into instruments that could be played by musicians who didn't possess electronics degrees'. (Crombie 1982: 89). The Moogs

and the APRs of this era differ little from the majority of todays monophonic synthesisers.

With these synthesisers in the late sixties and seventies came the emergence of bands which used the organ/synthesiser sound. Bands such as 'The Doors' and 'The Animals' used keyboards which become a large part of their style. Ray Manzerak a member of 'The Doors' played to the normal keyboard and bass keyboard simultaneously. These bands have recorded songs that are now classics which could not have been written played or recorded but for the technology.

The next major hurdle for the synthesiser was the monophonic aspects. Towards the end of the 70's Moog released the Poly Moog (containing separate filters and generators for each key). At the same time companies such as Yamaha and Oberheim were developing their polyphonic systems.

The eighties brought the advent of digital computer based systems. Companies such as Casio and Yamaha brought out small, cheap yet quite high performance units which widened the inner group and the understanding of the instrument. These easy to use synthesisers had masses of sounds (almost every conceivable instrument) and an array of percussion styles. Some contained programming possiblities onto which you could lay down different layers of sound to construct a complete band sound. The playing and recording possibilities became endless.

Their cheap and computer compatible synths spanned a great interest and many "new wave" electro pop bands emerged. Band such as 'The Human League': and 'Depeche Mode'

FIG 8. 'Depeche Mode' with Moog Synthesiser

were simply keyboards bands. Depeche Mode started off using guitar, bass and drummachine 'by this time they were doing the rounds of local parties both 'Vince and Gore had traded in their guitars for synthesisers. 'Vince would proudly announced we have just gone electronic.' (Anon 1990:2)

In a Melody Maker supplement featuring a history of Depeche Mode the author looks into why they became electronic: 'By the start of 1980 Synth. bands were beginning to edge into the mainstream. It was cheap, convenient and (best of all) relatively easy to play. The ultimate D.I.Y. instrument.' (Anon 1990: 2)

While the synthesiser came of age and develop into the instrument to simulate all others, a lot of the others (the classical instruments) were getting their share of electronic technology. The most important changes are of course to the guitar, double bass and drums. But these were not the only ones meddled with, others included brass instruments such as saxaphones and flutes.

The guitar got its first taste of electronics via the "magnetic pick up" in the thirties. (Although the Gibson Guitar Company had experimented with the system as early as 1920). The Rowe-De Armond company pick-up was simply designed to clip into the sound hole of the guitar.

FIG 9. Charlie Christian

The pick-up consisted of individual electro magnetic fields for each string which responded to the vibratiion of the string. In 1935 Gibson released the ES-105 "Electric Spanish Guitar". This was the first guitar to come fitted with a pick-up, and was used by Charlie Christian, the first revolutionary electric guitar player. It was followed by more releases from Gibson, each one an advance in pick-up techology.

'During the 1950s and 1960s, many famous guitarists endorsed Gibson electric acoustics' (Denyer 1982:54). Yet due to the feedback problem involved in hollow body electronics (the vibrating and minor movements of the pick-up caused extra unwanted

sounds). Gibson set about to solving this in the late 1950s. They were called semi-solid guitars to distinguish them from thicker normal electric acoustic guitars. They were still hollow yet were thinner and had a solid block of wood down the centre of the body (to hold the pick-up steady). These also proved very successful.

The birth of the truly electric guitar (i.e. a totally solid body with no sound box) came in 1931 when Adolf Rickenbaker and two pick-up pioneers George Beauchamp and Paul Barth joined to form a company called 'Electric String Company' and subsequently released the first electric Hawaiian guitars. Their success owed a lot to the popularity of Hawaiin music in America during the twenties and thirties and prompted other makers (Gibson and National/Dobro) to start production of similar instruments.

In 1944 Leo Fender and an ex employee of Rickenbaker; 'Doc' Kauffman formed the K&F Company. They built the solid body guitar just to simply demonstrate a new smaller type of pick-up they had developed. 'Though only intended to demonstrate the pick-up the guitar was soon in demand with local country musicians. In fact it became so popular that there was a waiting list of people wanting to hire it.' (Denyer 1982:55)

When the two men parted, Leo Fender opened his own Fender electric instrument company and within two years introduced the famous 'Fender Broadcaster' (1948). These guitars were the fore fathers of every development since. Japan again came up with the cheap, acceptable quality, equivalents and the electric guitar became within every school kid and prospective rock stars budget. The guitar continued in to the 80s. Roland Guitar Co. were leaders in the manufacture of guitar synthesisers. This is a unit with all the sound possibilities of a normal synthesiser but it is controlled via the guitar instead of via the normal keyboard . 'Several noteworthy musicians (Andy Summers and Jimmy Page) [The Police and Led Zeppelin] used Roland guitar synthesisers both on stage and for recording' (Denyer 1982:64).

FIG 10. Fender Broadcaster Electric Guitar

The guitar fused with synth technology to spawn many guitar shaped 'over the shoulder strap' synthesisers. Yet these were a bit more fashionable than actually technically

advantageous.

In the early eighties came instruments such as the Synthaxe. A guitar which was 'a high technology product which plugs not into the guitar amp. but directly into the most sophiscated synth on the market.' (Myerson1984:50) Many musicians were consulted in the development and now form 'a lengthy queue of potential customers in Britain and the U.S.A. including such guitar nobles as Peter Framptom, Steve Howe and Hank Marvin'. (Myerson 1984:51).

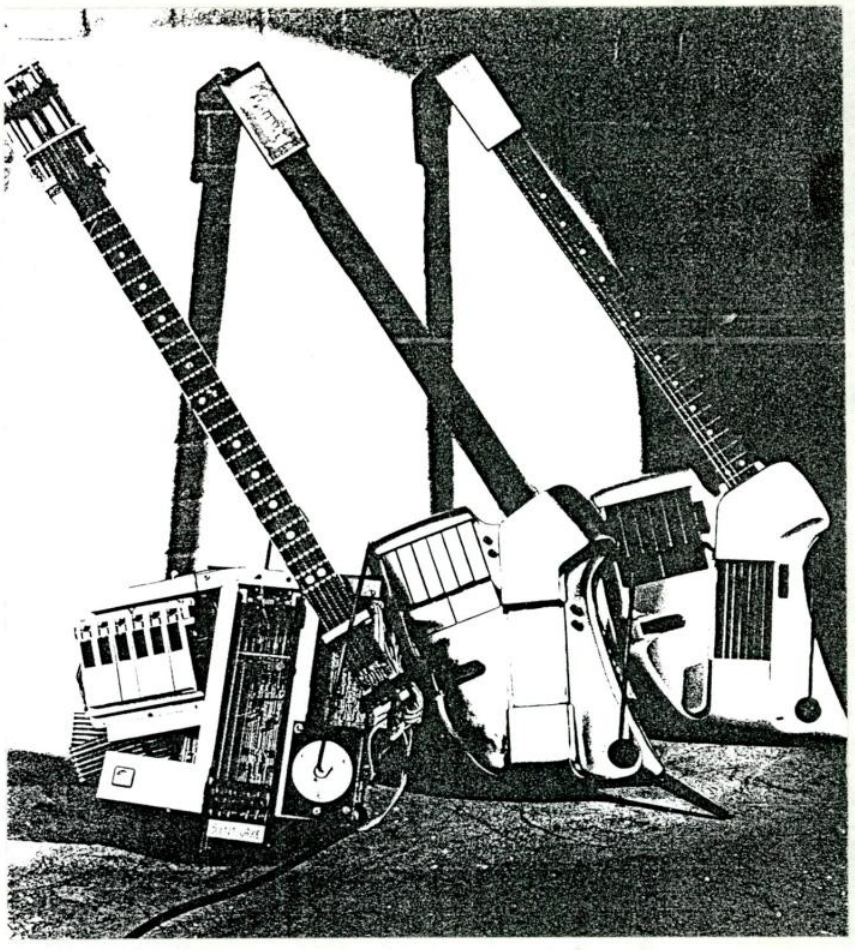


FIG 12. The Syntaxe

The bass guitar also received the electronic treatment. The 1940s trend towards louder, easier recorded music with amplifiers, PAs and pick-ups made it necessary to enhance the bass ound. So as with the guitar, bass players - limited to their upright double bass - fitted pick-ups and put them through adapted amplifiers.

Again it was Leo Fender in 1950 who came up with the solution. Realising the problems that bass players were facing and feeling certain that they would prefer a less cumbersome, easier to manage instrument, he came up with the proto-type. He changed the instrument from the normal upright design to the idea of a bass guitar supported as a normal guitar over the shoulder via a strap. The

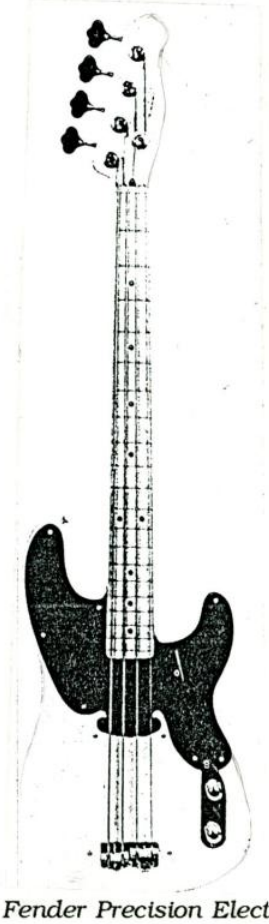


FIG 11. Fender Precision Electric Bass Guitar

Fender Precision went into production in 1951 to great acclaim. It was called 'Precision' because it had frets ont the finger board unlike the frettless double bass allowing precision note playing. There are now many other bass guitars by many companies yet 'the precision still continues to provide the pulse of most rock music' (Denyer 1982:62). Gibson's answer to the precision came in the form of the EB1 in 1953. This famous violin shaped bodied bass was used by Paul McCartney in the early days of the Beatles.

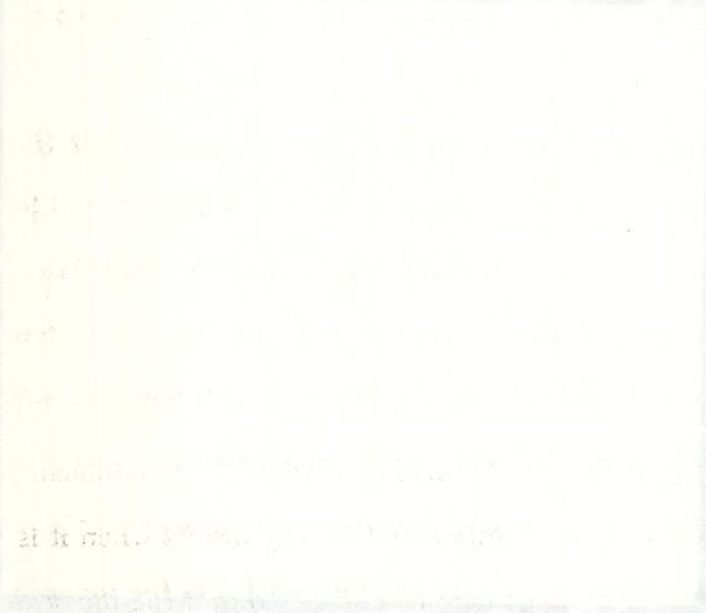
Towards the end of the seventies Linn started the digital drum machine revolution. These like synthesisers are simply programmed to the desired extent and can be played back, to be played over even in live situations.As with the aforementioned Depeche Mode who, before using synthesisers, had the usual bass and guitar setup but preferred the drum machine to the problems of a normal drummer.

'People dont want to play prehistoric instruments' (Myerson 84:49) said the director of Simmons Electronics, Geoff Howorth. In 1982 Simmons Electronics 'Revolutionised the drumming industry by launching the world's first professional, fully electronic drum kit' (Myerson 84:49).Dave Simmons came up with the concept in 1981 when he envisaged a electronic kit to be played like a normal kit yet the beating of the pads gave electronic signals which would control a synthesiser.The distinctive hexagon shaped drum pads (much imitated since their launch) became a regular sight in the 80s because new bands such as Spandau Ballet and Ultravox used them on such broadcasts as the BBC's 'Top of the Pops'. Because of this exposure the demand rose dramatically and 'in one memorable week seven out of ten chart hits featured the Simmons sound' (Myerson 1984:50). The electronic drum kit has of course come along way in the last decade with all the fast advances in electronics.

FIG 13. The Simmons Electric Drum Kit

After two years of trouble Simmons finally released the 'Simmons Huggers' in 1991.

These electronic drums are made so they can be placed on the top edge of your acoustic drumkit and are to be attached to any drum machine (via MIDI/to be mentioned later in



greater detail) synthesiser or sampler. Its Melody Maker review claims it will 'definitely help acoustic drummers to include electric nuances into their sound.' (Horkins 1990:50).

This manipulation and writing of sounds is not restricted to the studio or the owner of a drum machine. With a sequencer one can create complete musical pieces. This is done by laying down the score into a sequencer (by staff or numerical means) and afterwards assigning the desired instrument sound to each part: As used by producers mentioned in Chapter 1. Playback will result in the desired multi instrumental score. Alternatively it can be used by playing with real instruments into the unit, after which you can manipulate the digital information.

'Samplers', another new development, are a combination of a keyboard and a simple digital recorder which records and then replays excerpts of the sounds, manipulated via the keyboard. Yet, these sounds on a sampler or a sequencer can actually be manipulated by any instrument via the MIDI database.

'Recent changes in music technology relate primarily to a general system for the encoding, storage and manipulation of musical signals (digital rather than analog), and to the standardisation of a system language or set of musical protocols.... '(Durant 1990:181). The system is basically a standard language which all instruments and equipment can understand which allows them intercommunication.The musical information, for example, within a sampler or sequencer (possibly placed there by conventional instuments via the MIDI communication system) can then be manipulated by any means when it is again connected via MIDI. For example, a computer may be connected and the musical information may be processed and programmed to do anything; like any digital information. Alternatively you again can connect any instrument, via the system, and control the sounds by the instruments' playing technique: A guitarist could control, by his talented guitar playing, a whole orchestra.

> .... a musician can pick whatever she or he finds the most comfortable type of MIDI controller [instrument], based on earlier musical experience and aptitude.... a windwood player can in principle simulate an orchestra of sounds (Durant 1990:184).

The first seeds of the system were in 1977 when the first synth with a built in micro computer became available. This enabled the connection of various synthesisers together so one can drive another. At the 1981 'Audio Engineering Society', companies came together to form a system standard - a universal language for their machines: MIDI. Broader US

negotiation followed and led to agreement with the Japanese manufacurers. In 1983 the 'protocols' were updated to MIDI 1.0. This spawned a whole new range of samplers sequencers and drum machines which grew into composing , performing computers.

The advent of MIDI brought new styles and new methods and a 'D.I.Y. (do it yourself) attitude to music production' (Durant 90:186). Acid House and Hi-energy dance music evolved. Using the technology, musicians/producers began to form musical collages which use samples as in easy method of acquiring instrument sounds (as mentioned in detail in Chapter 1). The resulting composition may be not totally original, but is new and different. In 1988 the British pop group 'M/A/R/R/S' enjoyed a huge hit with 'Pump Up The Volume'. The song contain pieces of almost thirty other songs. This brought up the complicated issue of music rights: Can one take apart, and use, the pieces of any existing song? The recording company 'Stock Aitken and Waterman' sought compensation from M/A/R/R/S as one of their songs 'Roadblock' (1988) had been borrowed from for their number one hit.

As well as the legal matters, the new technological abilities have brought up other questions. Questions such as talent (does it take 'musical talent' to create such a recording) and the actual acknowledgment for such recordings. Should the recording be credited (ie.e even to the extent their name and picture on the cover) to the group who maybe just sing the lyric over the music or to the producer (like Trevor Horan) who creates, via his equipments the actual sounds. This question also comes to light in the case of remixing as in Chapter 1. The moral issue of music has never been so controversial and if the pace of technical and electronic development continues into the future at the speed it has been doing for the last two decades, the industry will continue to drown itself in controversy.

CONCLUSION

The music industry was born with, and grew alongside technical advance. As in most areas, like in television where the first stations were set up by the manufacturers, the inventors of the phonograph were the first to present the consumer with the recordings to play on their machines. This may not have seemed commercially viable to begin with , but as the technology became reliable and cheaper many people bought phonographs thus creating an immence market on which the industry was built.

The spread of the buisness worldwide led to mass production , because of the prospective large sales, and artists became stars and celebreties. With such sales possibilities and the new means of electronic recording, the twenties saw the business growing to new heights. Surviving through the depression, with unprecedented buyouts and take overs, the buisness advanced to the fifties to confront another stepping stone. Yet not before discovering new technical and electronic possibilities in all areas of the buisness; from instruments to multi-track tape recording.

The recording of such stars as Chuck Berry and Elvis Prestley, as mentioned in chapter one , changed the buisness forever. With the young Rock'n'Roll market buying their idols records, sales figures soared as the companies worked hard to answer the demand ;not just for particular recordings but also for a constant supply of new releases from their favourite star. The sixties brought 'The Beatles' in Britan and the screaming teenagers bought amazing numbers or records and went to countless concerts. 'Sargent Peppers' Lonely Hearts Club Band' was released by the beatles in 1967 and remains to this day one of the largest selling albums of all time. The industry had become one of the most profitable in the world; for both artist and record companies.

> On 'Sgt Pepper.' The Beatles' had played with technology a great deal. 'We plastered vast amounts of echo onto vocals, and sent them through the circuitry of the revolving Leslie speaker inside a Hammond organ, We used giant promitive oscillators to speed of instruments and vocals, and we had tapes chopped to pieces and stuck togther upside down and the wrong way around.' (Martin 1987:1)

The Beatles had experimented with everything they had got. In their 1969 album 'Abbey Road' they first used a synthesiser. In the seventies came the begining for 'new wave' electronic music with bands such as 'Kraft Werk' and composers such as Jean Michelle Jarre

beginning to ,for the first time, use all the electronics for the first time to it's fullest capacity. 'Electro-pop' began here and hasn't stopped in over twenty years, fuelled by constant innovation from the electronics industry.

Again technology dictated to the industry in the seventies with the advent of video technology and the record companies embraced such innovation in an attempt to yet again boost sales: One of the earliest examples of dishonesty that technology brought to the buisness. Talented producers discovered they could, using the combined video and digital audio technology, manufacture bands. Like the Frankie Goes To Hollywood' farce many bands emerged and continue to do so to this day ; modern examples being Kylie Minogue and America's 'New Kids On The Block'. Video did, of course, do alot of good for the buisness, for example Michael Jackson's 'Thriller' video (1984) which cost in excess of a million dollars brought multimillion dollar sales of the album, one of the largest selling albums of all time.

The electronic technology of the sixties and seventies had developed at an amazing speed and by the eightees the popular music chart showed this all too clearly. The eighties brought 'acid-house' and 'techno-pop' music and dance crazes. The technology of samplers, sequencers and the MIDI interface made music production easy.

> The combination of lifelike samples plus even more sophisticated and detailed means of control ,all at affordable prices, have given many thousands of musicians a new range of options for writing, arranging and their demos at home. It's been of rapidly expanding possibilities-and the nintees look set to continue the trend.
>
> (Horkins 1990:36)

Yet such production possibilities caused much controversy. The lies that became evident in the early eightees were followed by arguements over music rights and questions over actual 'finished material' responsibilities. (The Cure's 'Mixed Up LP is credited to the band yet the band had nothing to do with it's production - except the choosing of remixers for each track) All these controversies, arguements and court cases, yet great pieces of music were all caused by the coming togther of all the modern electronic technology (in recording and instruments) which have created endless possibilities.

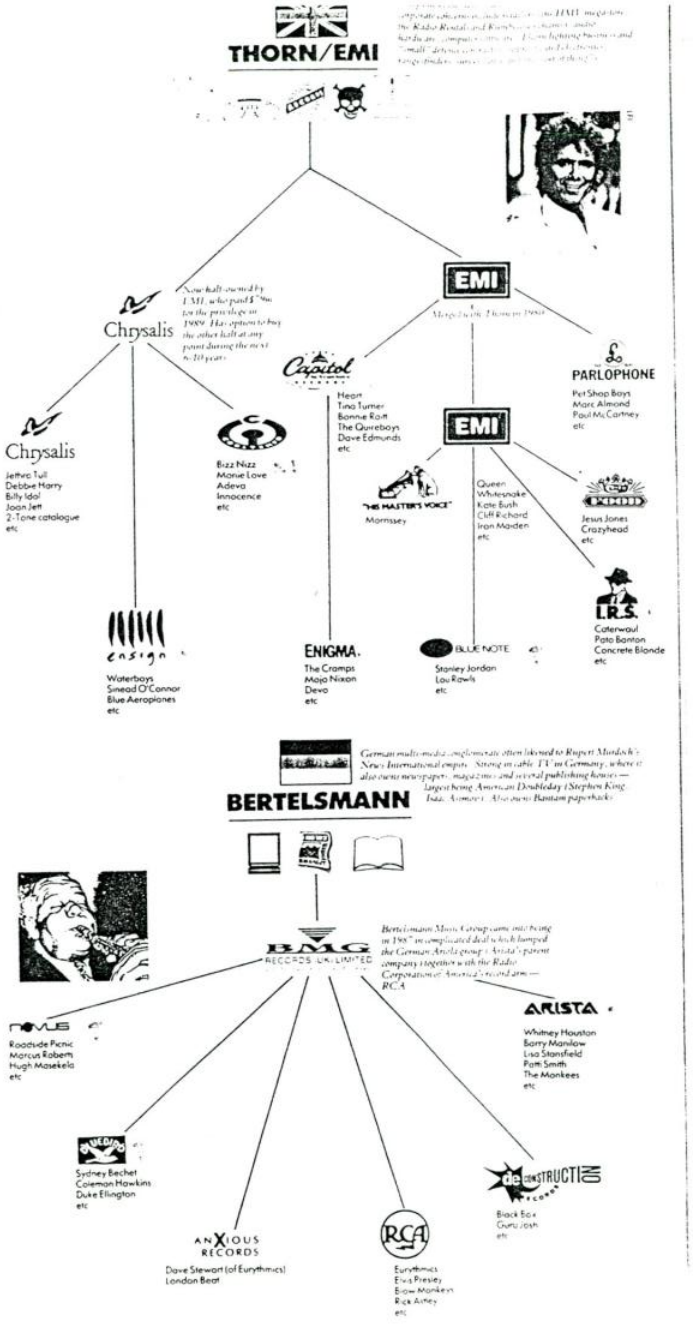
As the consumer was exposed to all this, digitally made possible, music he/she also recieved the technology at home. Compact disc served both as a new top quality medium and as a merketing vehicle to regain the older buying public. Compact disc did of course cause

trouble as it began to kill off vinyl, yet the fact that companies who pioneered its launch in 1982; Sony and Phillips, own a large percentage of the world record label companies, nothing could be done to save vinyl and slow the CD advance.(See record company ownership details in the Appendix). In this way also it is evident the technology developed by these multi-nationals will have a direct rippling effect on the indivudal company's home label releases.Some of these companies , Sony for instance, in buying film companies have gained endless power. Sony paid $3.4 billion for Columbia Pictures in 1988. Sony, may now make a film packing the soundtrack with music it produces ,or already has rights for (Thorn EMI owns allmost all rights to ' Beatles' and ' Pink Floyd' material),release such a soundtrack on their latest medium- to be played on their players. Eventually, also, the film may be released on Sony home video (to be played on a Sony video recorder). As you can see the multi-national has entered the music industry and finally, without a doubt, joins within the one company- both music and electronic industries. With DAT now a reality and Video Discs (; compact video disc containing both audio and video material), soon to be refined, the future of the buisness is again set to change.The industry is effected, so much, by technology; from playing to recording; from producing to actual audio/video release. As it has since Edison, the buisness will continue to change with the times: The times as dictated by electronic innovation.

THE END.

Who Owns Who?

In the last two years the music business has been caught up in a frenzy of take-overs. Formerly independent companies — such as Chrysalis, Island, A&M and, most recently, Geffen — have been bought *lock, stock and roster* by giant corporations with an intriguing variety of business interests, from computer software to washing machines to defence systems . . . So where does the buck stop for the jobbing rock musician?
Robert Sandall investigates.



Who? owns Who? (Cont.)

MCA

MCA Corporation of America. Not detected as such because it does not own a record pressing and distribution facility. Owns the Universal film studio and sells its music in the U.S. The records division has grown, claiming to be, since Lucille Motown left in 1988, the world's most successful independent in the world — Music Weekly's words, not ours — valued at £445m.

MCA

Stevie Wonder
Diana Ross
Smokey Robinson
etc

MCA

Bobby Brown Jody Whatley
Tom Petty Adam Ant etc

MCA

U2

GEFFEN RECORDS

Guns N' Roses
Robbie Robertson
Cher
Joni Mitchell
Aerosmith
etc

A&M

A&M

Suzanne Vega
Sting
Joan Armatrading
Del Amitr
etc

DECCA

Placido Domingo
Leonard Bernstein
Kathleen Battle
etc

DECCA

Tom Jones
Engelbert Humperdinck
etc

Moody Blues

FICTION

The Cure
Eat
etc

Delydor

Delydor

Lloyd Cole
Van Morrison
The Wonder Stuff
Jimi Hendrix
etc

BIG LIFE

Coldcut
Yazz
etc

PHILIPS

Like Thorn-Emi, Dutch-owned Philips has a range of electronic interests — from domestic hi-fi to washing machines to less homely sounding defence contracts. Has an 80 per cent controlling stake in the Polygram group.

POLYGRAM

Biggest record company in the world, with a long and tangled history. Formed when Phonogram and Polydor merged in the '70s, its unequalled size was enhanced last year by the purchase of both A&M and Island.

Independent labels within the Polygram group. 51% owned by private consortium. Biggest is Decca/American Label in the '50s and was relaunched in '81 as separate company.

Oyster Band
The Happy End
Davey Spillane
The Four Brothers
etc

Housemartins
Beautiful South
Billy Bragg
The LA's

Beat International

Fine Young Cannibals
Michelle Shocked
Lil Louis
Bananarama
Shakespear's Sister
Los Lobos
etc

Orbital
Salt n'Pepa
etc

Phonogram

PRECIOUS
Wet Wet Wet

House Of Love
Tears For Fears
The Lilac Time
Tom Verlaine
Pere Ubu
etc

Dire Straits
Bon Jovi
Electric Boys
etc

Kiss
Big Country
Dan Reed Network
etc

The Boo Yas TRIBE
Wil Downing
etc

ANTILLES NEW DIRECTIONS

Courtney Pine
Andy Sheppard
etc

ISLAND

U2
The Christians
Mica Paris
Marianne Faithfull
Bob Marley
etc

UB40

Mango

Ariel
Reggae Philharmonic Orchestra
etc

VIRGIN

Virgin

Nusrat Fateh Ali Khan
Peter Gabriel
etc

POINT BLANK

Adam Ant
The Kinsey Report
Lamy McKay

Mahlathini & The Mahotella Queens
Daniel Ortino
Misiani
etc

Gaudeir Palaminos
Cassie Webb
Michael Nyman
etc

Phil Collins
Public Image
Gary Moore
That Petrol Emotion
Bryan Ferry
etc

Associated Virgin Labels

AVL

T'Pau
Breeze
Les Dennis
etc

Soul II Soul
Inner City
Jermone Stewart
etc

CIRCA

Hue & Cry
Sydney Youngblood
Sarah Cherry

EG

Robert Fripp
Brian Eno
Roxy Music
etc

INDEPENDENTS

ZOMBA

North London-based company owning Zomba books imprint and two sharply distinct labels

Billy Ocean
Samantha Fox
Big Fun
Tom Jones
etc

Stone Roses
John Lee Hooker
JJ Cale
The Men They Couldn't Hang
etc

FACTORY

Tony Wilson's Manchester label, founded in '78. Has done well out of local bands and local clubs (The Hacienda and roguish watering-hole The Dry Bar)

Happy Mondays
New Order
etc

BEGGARS BANQUET

London record shop (like Rough Trade) which became label amid the DIY euphoria of new wave. Early signings included The Lurkers.

More substantial success came via Gary Numan

The Cult
Peter Murphy
Howard Devoto
etc

Cocteau Twins
The Pixies
Throwing Muses
Pale Saints
etc

PWL

Peter Waterman Limited. Formerly a recording studio and production company. Became a label in '88 to release Kylie Minogue's I Should Be So Lucky which had been turned down by everybody else

Kylie Minogue
Jason Donovan
Hazell Dean
etc

MUTE

Daniel Miller's West London-based company. Has taken off over past decade — first with Depeche Mode, more recently with success of dance subsidiary, Rhythm King

Erasure
Depeche Mode
Nick Cave
Renegade Soundwave
etc

Inspiral Carpets

The Beatmasters
Les Negresses Vertes
S'Express
Baby Ford
Bomb The Bass
etc

ROUGH TRADE

Provided blueprint for modern "indie" labels when it began issuing punk and post-punk singles in 1977 (The Human League, Scritti Politti and The Monochrome Set were among its early releases). More recently achieved substantial success with The Smiths

The Sundays
Band of Holy Joy
Shelleyan Orphan
etc

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FIG. 1 - 5	The Incredible Music Machine Quartet Books Ltd 1982
FIG. 6	Liverpool LP Cover ZCIQ8 1986 'Zang Tuum Tumb'
FIG. 7	The Complete Synthesiser The Omnibus Press 1982
FIG. 8	Melody Maker September 22 1990
FIG. 9 - 11	The Guitar Wordbook Pan Books Ltd 1982
FIG. 12 - 13	Design 431 November 1984

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