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The audio format war

Derek Cronin

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Introduction

Recently, two new music carriers have made their way on to the market, both vying to replace the common cassette tape which has been in use for thirty years. These new formats are Philips/Matsushita's digital compact cassette (DCC) and Sony's mini disc (MD). Both companies have invested large sums of money into the development and marketing of these products. Both are aiming their product at the same market, wanting their format to be a companion to the recently established compact disc (CD), the accepted standard playback medium. The new formats would be its more compact, recordable, robust cousin, convenient but of a slightly lower sound quality than CD yet better than the analogue tape it would hope to replace.

This report aims to explain the differences in audio formats, to show how the 1993 audio format war reflected a ruthlessness in the music industry, and to question the consumer need for these formats.

History of music carriers

From the invention of the phonograph in 1877 to 1963, domestic sound storage systems remained reasonably unchanged. With the exception of Edison's early wax and foil cylinders (which differed in shape and not concept from their more successful counterparts) sound was stored on a flat shellac or vinyl disc. In 1963, the compact cassette made its way into our homes. The advantages of magnetic tape over vinyl are obvious. Firstly, it is recordable. Secondly, it is more robust. Thirdly, in the form of compact cassette, tape is smaller and easier to manage than bulky 12" LPs.

It soon became clear that these little boxes carried with them a whole new market. With the compact cassette one could listen to music in new places: on the beach or in the park, or later in the 1980s, on personal stereos or in the car. Furthermore, it opened up a market for 'blank tapes' which never existed before. The compact cassette complemented the LP rather than threatened it. The release of the compact cassette signalled the origins of a two-sided music carrier market. The existence of two markets formed the basis of the 'dual carriers theory' (Bauldie, 1992b: 101). This theory is supported by both players in the current war. It claims that the market is split into two strata: the high carrier (CD and previously LP) is bought for home use only while the low carrier (analogue tape) is bought for 'on the move' applications such as car and personal stereos. Both of the new formats are competing for the 'low carrier' market; both aim to replace the analogue cassette.

There are three reasons for interest in the low carrier market after thirty years of dominance by the common cassette. Firstly, tape sales have dropped over the past three years as the CD has become more popular (Christman and Rosen, 1992: 87). This has been due partly to the drop in hardware prices and the development of the personal compact disc player. Both Sony and Philips/Matsushita believe that audio formats generally last about thirty years before the consumer tires of them. This view is based upon the amount of time which lapsed between the development of the LP in the early 1950s and the development of the CD in the early '80s (Bauldie; 1992b: 101).

Secondly, the 'low carrier' is recordable. This generates a market for blank tapes and discs. Every year, 1.6 billion blank tapes are sold, outselling the amount of prerecorded tapes by sixty per cent (Harris; 1992: 5). Sales of prerecorded software on the low carrier, although decreasing, are still very high. In the US, which is the biggest market for prerecorded software in the world, fifty five per cent of all prerecorded software is still

bought on tape (Christman and Rosen, 1992: 87). Overall, the low carrier market is worth approximately \$1.5b per annum in software (Croft, 1991: 19). Both companies involved in these new formats want a bigger share of this important market.

Finally, to date there are 120 million CDs in the world (Bauldie; 1992a: 100). However, every year 180 million tape players are sold (Harris, 1992: 5). That means that since the launch of the CD, fourteen times as many tape players as CD players have been sold (Bauldie, 1992a:100). In Europe, there are 5.7 tape players for every person (Svedberg; 1992: 18). If either of these formats do replace the tape, much of this hardware will have to be replaced, creating great moneymaking opportunities.

DCC and MD : what is the difference?

Sony's new carrier is a disc format (64mm in diameter), is fully recordable up to 1,000,000 times, and its tracks are instantly accessible. The latter is true for the CD with which it has much in common although the two formats are not currently compatible with each other. MD uses two different types of record and playback technology. Firstly, laser optical technology (similar to CD) is used to play prerecorded software. These discs are not recordable and they can only be used to play. Secondly, magneto optical (MO) technology enables the mini disc to be recordable. It is used to make blank mini discs. Both the laser optical and the magneto optical mini disc can be played on any mini disc machine.

Philips/Matsushita's digital compact disc is tape-based. Most importantly, it is 'backwards compatible'. This means that old analogue tapes can be played on a new DCC machine but new DCCs cannot be played on analogue machines. A DCC tape is the same size as an analogue compact cassette (see Appendix 1).

Company versus consumer

Support from record companies is the most important aspect of establishing a music carrier. Their reluctance to accept new formats is evidenced by slow software support of tape in 1963, CDs in 1983, and most notably the excellent format digital audio tape (DAT), which many believe to be the ultimate consumer format. However, the quality of the format or being on the market first has little to do with a record company's support. Politics plays an even bigger role. Ninety three per cent of all music sales are controlled by six major groups. Three of these are directly related to developers of the new formats: Sony Music is owned by Sony Electronics, PolyGram is eighty per cent owned by Philips, and MCA is owned by Matsushita, Philips' partner on the DCC project. The format war is affected by this vertical integration; Sony have the support of four of the six majors while MCA and PolyGram, the DCC related companies, have only their own support (see Appendix 2).

The three companies not involved in format development are not being victimized by their hardware colleagues. All are extremely powerful not only in music but in other media activities such as film and video. Many have interests in other fields: theme parks and arms manufacture. It is difficult, however, to know if noninvolvement will be disadvantageous. Christian Jorg, Head of BMG, New York, claims that his company and others like EMI and Warner will lose out because 'any sales lost to increased home taping on the software side of the business might be compensated by additional hardware sales and royalty income from patents, if the format they support wins out' (Jorg, 1993: 6). On the other hand, Philip Rowley, Executive Vice President of EMI Music, believes the opposite 'that with things like the launch of Mini Disc and DCC, we can stand back and look at the format objectively to see which one is going to work the best. I don't think I would like to be in the situation where I would have to be supporting a particular piece of technology just because we are part of the same company' (Redmond, 1993: 10).

One thing is certain: the music industry is dependent on the whims of six major companies three of which are owned by hardware manufacturers involved in the format war. Each can practically sign, record, promote, distribute and even retail a music (or film or video) product in-house. Record companies which are the exclusive signatory of an artist have supreme control over music sales which is why three of them are owned by the players in this format war. Sony Music, and Sony Electronics bought CBS in November 1987 to gain power at the record company level for its new DAT format – Matsushita had DCC in mind when they bought MCA at the end of 1990. Marc Eliot sums up Sony's \$2b buyout of CBS: 'In the time honoured tradition of Western capitalism, Sony sought to financially absorb the competition and turn the problem into the solution (Eliot, 1990: 196).'

While the hardware-related record companies fight it out in the market, and the non-hardware companies 'sit on the fence', the consumer is in the middle. A number of factors have led the the consumer to choose neither rather than either. The consumer will almost certainly have to put up with a price rise. It will become almost as expensive to record an album as it is to buy one. The price of a blank tape or disc will at least triple; people will be able to buy less music while hardware and record companies will make the same money.

In this regard, the 'dual carrier theory' is unconvincing. The CD, the modern 'high carrier', is small in size. Even the 'robustness' factor does not deter CD; it is far more robust than an LP though possibly not quite as dust, mud or sweat-proof as either the MD or the DCC. As for recording, many think that 'the whole business of recording music at home is greatly exaggerated' (Frost, 1992). Moreover, many people like to buy the actual product. At £5 to £7 per blank, people are likely going to think twice about recording an album on to MD or DCC even if the quality is excellent. Even if the importance of home recording is not exaggerated, CD could shortly have all the recording capabilities of MD and DCC. If recordable/erasable CD (CD-E) becomes available it could wipe out all the other formats. Two carriers, one for the home and the other for on the move, would no longer be necessary. CD would do it all.

Mini disc technology works on a combination of CD (laser optical) and magneto optical technology. Prerecorded discs use CD technology while the blanks use magneto optical technology. It would necessitate a recordable CD player but just as both types of MDs can be played on an MD machine so the recordable CD machines could be 'backwards compatible' as is DCC. In this scenario, the dual carrier theory goes up in smoke. If the public demanded a smaller disc, Sony claim that the MD could be compatible with CD in the future (Colloms, 1993: 22). It would then be possible to have a single machine to play mini discs, new recordable/erasable CDs and normal CDs.

Philips have suggested the possibility of the CD-E by 1996 (Frost, 1992: 19; Snow, 1992: 87). In fact, erasable CDs have already been displayed at audio shows (Gold, 1992: 24). What is currently preventing full production of the CD-E is hardware and record company pressure. As an ultimate format, CD-E is seen as a 'pirate's charter' (Frost, 1992: 19). The record industry may resist recordable digital carriers for as long as possible because of fear of pirate taping.

Future audio carriers

1. CD: Most experts agree that neither format, even if they survive, will threaten the CD's position (Snape, 1992: 20). CD has established itself as the standard high quality playback medium. It has also gained recognition as a multimedia carrier. Since a CD can carry large amounts of digital information of any sort, it can be used to store computer data, books, audio and even video (see Frost, 1993: 15). Currently, CD 'has no fewer than nine different applications' (Bauldie, 1993b: 132). This, along with the future possibility of CD-E, should keep CD as the primary format for quite a while to come.

2. Other formats: Other carriers are in the pipeline. Digital audio broadcasting (DAB) is capable of broadcasting up to 160 digital radio channels by satellite or cable. These channels would have no disc jockey; instead a digital readout on the remote control would tell the name of the artist and song being played (Bauldie, 1993a: 108).

As compression techniques become more advanced, formats can become even smaller. Sony have recently developed the MicroDAT or 'Scoopman', a digital cassette the size of a large stamp (Fox, 1992: 19). Within years, 'the technology will certainly be available to put our seventy four minute CD on a credit card size solid state memory, with no moving parts!' (Comeau, 1992: 73).

With the possibilities of CD-E, credit card music, and music distributed by cable and satellite only around the corner, it is little wonder the consumer is hesitant to buy DCC and MD. Ed Bicknell, manager of Dire Straits, sums it up: 'One of the key reasons there's public resistance to all this stuff is the sneaking suspicion that no sooner have you bought X, then Y is going to come along and make X redundant, so people tend to do nothing.'

Some experts believe in the possibility of 'a regionalized evolution where, for example MD will take off in the CD mature market of Japan, while in the rest of South East Asia, where the cassette is king, DCC will flourish' (Stuart Watson, senior Vice President of MCA Records in Swan et al., 1993: 12). Another possibility is that both formats will barely survive in any market causing money, at all levels, to be spread across four or five rather than just two or three formats. Another likelihood is that none of these new formats will survive. The factors of price, new CD developments, the possibilities of better formats around the corner, and confusion caused by both formats arriving simultaneously have conspired to create public resistance.

Conclusion

The 'dual carrier theory', which has been proposed as the rationale for the existence of two formats, is questionable. There is little actual reason for the consumer to need two different carriers in the twenty first century. The development of the mini disc shows that recordable/erasable CD (CD-E) is a possibility which could be the ultimate all-around format. The audio format war reflects a new ruthlessness in the music industry caused by lagging sales and profits. In turn, the consumer has become more cynical since the failure of digital audio technology (DAT) and with the knowledge that better formats will arrive in the near future.

Note: This article is an abridged version of a dissertation submitted in part fulfilment of the BSc. in Communications, Dublin Institute of Technology.

Appendix 1

THE FORMATS

DCC	MD
Philips (With Matsushita)	Sony
Digital Compact Cassette	MiniDisc
Tape format	Disc format
Recordable/Erasable	Recordable/Erasable
Digital	Digital
'Backwards compatible' with analogue tapes.	Completely new format

Appendix 2

THE BIG 6

PARENT CO.	PHILIPS	MATSUSHITA	SONY	TIME-WARNER	THORN-EMI	BERTELSMAN
HARDWARE OWNERSHIP	SIEMENS MARANTZ	JVC PANASONIC TECHNICS QUASAR	AIWA			
SOFTWARE PARENT CO.	POLYGRAM	MCA	SONY	WEA	EMI	BMG
RECORD LABELS OWNED	DECCA POLYDOR PHONOGRAM A&M MOTOWN TALKIN' LOUD	ATLANTIC Geffen ISLAND GRP NOTHING	COLUMBIA CBS EPIC EAST/WEST	WARNER ELECTRA SIRE CAPITOL	PARLOPHONE VIRGIN CHRYSALIS TELSTAR	RCA ARIOLA ARISTA K-TEL
RELATED FORMAT	DCC		MD	UNRELATED		
OTHER INTERESTS	FILM, VIDEO, ARMS MANUFACTURE, LIGHTING.	TELEVISION, FILM, THEATRE, NATIONAL PARKS, RETAIL.	TELEVISION, VIDEO, THEME PARKS,	TELEVISION, FILM, PUBLISHING, THEME PARKS.	TELEVISION, RETAIL, ARMS MANUFACTURE, LIGHTING.	TELEVISION, PUBLISHING.

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