

DIGITAL TELEVISION (DTV): AN OVERVIEW OF DEVELOPMENTS IN AUSTRALIA, US AND THE UK

Mark Balnaves

Professor of New Media

School of Communications and Multimedia, Edith Cowan University

Lucas Walsh

Post-Doctoral Research Fellow

School of Communications and Multimedia, Edith Cowan University

Duane Varan

Professor of New Media

Interactive Television Research Institute, Murdoch University

Abstract

Australia is in a unique position because it sits between the US and UK markets in the diffusion and adoption of digital television (DTV). Australia has adopted HDTV like the US but it has also adopted DVB like the UK. In this paper the authors will provide an overview of diffusion of digital television and the strategies of broadcasters. The paper will outline the trends emerging in the US and UK contexts and explore their implications for Australia for audiences, policy makers and content providers.

Introduction

The launch of a subscription digital service in Australia and the Free Trade Agreement this year represent significant milestones in the Australian television industry. Opening up new possibilities for content providers and the way Australians view television, these events represent in particular significant ramifications for the development of interactive television in Australia – an industry that is firmly established in the UK and rapidly evolving in the US.

Broadcasting a digital signal enables more information to be transmitted. While all five free-to-air networks in Australia have been broadcasting a digital signal along with their analogue signal for the last three years, pay TV providers have started to integrate interactive content in their digital signal. Free-to-air providers have, on the other hand, have primarily promoted the use of this signal to deliver enhanced picture-quality and sound.

According to Digital Broadcasting Australia (DBA), around 250,000 homes receive digital free-to-air television services in Australia.¹ Sales of digital TV receivers at the end of 2003 quarter, accounted for over 72,000 units sold to retailers by suppliers. This is four and a half times the number sold during the same three months in 2002 reflecting the possibility that consumer adoption may be on the rise. As more

¹ Note that this is a commercial estimate only. Because of the comparative newness of digital television in Australia, comparative statistics are difficult to obtain at present.

transmitters are established in regional markets and metropolitan coverage is extended, it is estimated that this number could double. (DBA 2004)

The marketing strategy of subscription-based services explicitly targets the expansion of end-user choice rather than enhanced picture and sound quality. (Patrick Delaney, cited in ABC 2004a) Foxtel Digital, for example, is promoting the idea that digital television “will completely revolutionise the way you use your television set. You have a hugely expanded range of channels, watch sport like you've never seen it before, watch the news when you want to, play games in between movies. It really does change your whole television world.” (Patrick Delaney, cited on ABC 2004a) It is already developing services for news on demand and an Enhanced / Interactive Program Guide (EPG / IPG) across all channels. It is argued that “the experience, not just in the UK, but also across Europe and now in America, has shown that more choice and especially more control over your television experience are valuable.” (Kiff Newby, cited in ABC 2004a)

So far, digital legislation has favoured free-to-air high definition television by making it difficult for any new service providers to enter the market. The Australian Government's recent free trade agreement with the US may reduce the amount of Australian programming produced and broadcast in Australia and exported abroad. The introduction of multi-channeling may saturate the market with high-end overseas programs (mainly from the US and UK), which are relatively inexpensive to buy in relation to locally produced content. For example, overseas content can be purchased for as little as a fifth of the cost to make Australian-made first-run content. (ABC 2004b) The regulations for the amount of Australian content that must be broadcast differs according to whether content is delivered via a subscription service or is free-to-air. According to current government regulations, 55 per cent of free-to-air television has to be Australian made. Subscription based providers, on the other hand, are only required to allocate 10 per cent of their overall budget to Australian content, which can mean broadcasting as little as four hours a week. Free-to-air providers may consequently pressure the Government to reduce quotas on Australian content to remain commercially competitive with subscription-based television providers. Critical decisions are currently being made which affect four overlapping areas: (1) the production of content for television in Australia, (2) the cultural nature of content viewed on Australian television, (3) the distribution of this content (to and from foreign providers, such as the US and UK); and (4) the architecture in which it is viewed (such as the use of set-top boxes and interactive controls).

Overview of architecture

Diffusion of digital television

Five countries (China, Russia, India, Japan, Brazil) all of which will be outside western Europe and North America will in 2010 account for 53% of global digital terrestrial television (DTT). Table 1 provides an overview of current diffusion of digital television, in different delivery platforms. Table 2 provides a projection to 2010 of DTT as a percentage of overall television households. Table 3 shows DTT as a percentage of non-terrestrial delivery platforms (satellite, microwave, etc). Table 4 gives data on the growth of DTT in non-North American households.

Table 1 - *Number of digital TV homes (m)*

	Satellite	Cable	-Terrestrial	DSL	video
2001	34.02	19.26	2.27	0.11	
2002	38.31	24.88	2.19	0.33	
2003	41.47	31.38	2.97	1.04	
2004	67.22	50.14	8.21	10.43	

Source: Informa Media Group

Table 2 - *DTT homes as percentage of TV homes*

	2000	2005	2010
Asia Pacific	1.4	15.5	32.2
Europe	1.7	27.5	44.3
Latin America	0.6	21.6	36.5
Middle East	0	21.6	35.3

Source: Baskerville Communications Corp.

Table 3 - *DTT homes as a % of total non-cable & digital DTH (direct to home)*

	Households							
	1998	1999	2000	2001	2002	2003	2004	2005
Latin America								
Argentina	0.0	0.0	2.5	10.0	20.0	30.0	40.0	50.0
Brazil	0.0	0.0	0.0	3.0	10.0	20.0	25.0	30.0
Chile	0.0	0.0	0.0	0.0	0.0	2.5	10.0	20.0
Colombia	0.0	0.0	0.0	0.0	0.0	0.0	5.0	10.0
Mexico	0.0	0.0	2.5	10.0	20.0	30.0	35.0	40.0
Puerto Rico	0.0	0.0	0.0	2.5	10.0	20.0	30.0	35.0
Venezuela	0.0	0.0	0.0	0.0	0.0	0.0	5.0	10.0
Middle East								
Israel	0.0	0.0	0.0	0.0	3.0	10.0	20.0	30.0
Turkey	0.0	0.0	0.0	0.0	3.0	10.0	20.0	30.0
North America								
Canada	0.0	0.0	7.0	15.0	20.0	25.0	30.0	35.0
US	0.0	0.4	7.0	15.0	20.0	25.0	30.0	35.0

Note: All figures refer to year-end.

Source: Baskerville Communications Corp.

Table 4 - *Total non-North American DTT homes*

2000	2,137
2001	6,370
2002	12,124
2003	19,450

2004 25,385
2005 31,134

Source: Baskerville Communications Corp.

Based on the statistical evidence, Italy, Greece and Australia will have the highest penetration of DTT as a proportion of TV households, by 2010, as Table 5 shows. These data do not tell us, of course, the nature of the systems in place, degree of interactivity, and so on. However, they do indicate the nature of diffusion by 2010. In the context of this paper, obvious questions arise about who will emerge as the major content providers for these extensive networks and markets. On current trends, Australia will not be a major provider.

Table 5 - *Global DTT homes as a % of TV households in 2010*

1 Italy	73.9%
2 Greece	66.8%
3 Australia	64.9%
4 South Korea	57.8%
5 New Zealand	57.8%
6 France	57.5%
7 Hong Kong	56.9%
8 Singapore	54.1%
9 Russia	53.6%
10 Spain	53.3%

While penetration of digital television in China will not be as high as that of other industrialized countries by 2010, as Table 6 demonstrates, China represents a key market, globally. It is not surprising therefore that News Corporation has invested significantly in delivering content to the Chinese and Asian television markets.

Table 6 - *Global DTT homes rankings in 2010 (000's)*

1 China	100,064
2 Russia	28,569
3 India	22,294
4 Japan	19,314
5 Brazil	17,637
6 Italy	15,806
7 Indonesia	13,226
8 France	13,144
9 UK	12,449
10 USA	12,447

Source: Baskerville Communications Corp.

Overview of strategies of production

The US market

The United States is a fragmented digital market. It is not only fragmented between MSO (multiple service operators) because there is not only one kind of player but even within those operators the systems are fragmented. The historical reason for this is because cable television has been built up city by city, with different franchises and consolidations. A service operator owns a system but across the system there will be different technical configurations. There have been systems that have run across different platforms. The cable company WINK is an example., It laid its infrastructure across a wide variety of cable and satellite systems. But for the most part fragmentation is the rule in the United States.

The more significant problem in the United States market comes down to business models. The United States market has not understood what is required of a business model associated with interactivity. Businesses lost significant money in investments in interactivity (QUBE, FSN Time Warner, WebTV (Microsoft)). Consequently, there is not a high degree of interactivity in households. As a result, the American market is characterized by systems that are digitized but with significant capabilities that are not used. This is largely a defensive posture – businesses are not going to roll out services that cost them money without a guaranteed return.

The UK market

In the United Kingdom, the digital television market is almost exclusively SKY. The UK market, in terms of interactivity, is proactive, whereas the US market is competitive. The Australian market does not have the same type of competitive tension, because Pay TV is still in the early stages of its evolution (little over 20% is not seen as a huge threat to the advertising dollar). Competition policy in the US has been important because it has shaped DirecTV's acquisition by News Corporation (the US did not allow ECOStar to take over DirecTV). DirecTV is a digital television provider.

The indications are that Rupert Murdoch will use his experience in the UK to shape what he does in the US. Interactivity will be a central feature that differentiates the DirecTV acquisition from the rest of cable and satellite offerings. The strategy is now paying off towards interactivity, because of subsidies in the UK for set top boxes. As a result News is starting to see dividends. Reduction of churn, going on and off a service, has also been linked to the interactive service. People who use interactive services are more likely to stay on that service.

If News's strategy works, then the market in the US will respond by trying to minimize that particular advantage by having similar services, rather than take a defensive posture. The US market will not be like the UK market, where interactivity went through a clear evolutionary pattern. A frenzy of unfolding in response to News Corporation's strategies is more likely to be the result.

The Australian market

The other side of the digital television story is terrestrial. Terrestrial is about spectrum shortage. As more and more wireless technologies deploy the need for access to spectrum becomes harder because spectrum is scarce. This is much less of an issue in Australia, but clearly an issue for the UK and a significant issue for the US. The US has reached the stage where it cannot deploy advanced mobile phone applications because it does not have the spectrum for it. The UK spectrum is almost used up. In Australia there is spectrum, but with shortages in key markets like Sydney.

The problem is that there is a need for spectrum. Digitisation offers enormous gains in the Australian television market. The reason is not because digital is compressed; it is because digital eliminates the need that analogue television has for duplication.

Let us say that there is a hill in Sydney, and you want channel 7 to be seen by people who live over the hill. At present, with analogue the broadcaster sends a normal signal over channel A and duplicates the signal over channel B. If you transmit it over A, then some would be receiving it over A and B (a massive ghosting problem). In Single Frequency Networks (SFN) in digital, you no longer need to receive the signal from multiple sources, because the tuner can tune out the weaker signal. A broadcaster no longer needs to have 26 frequencies taken up, each of which is taking up the equivalent of 100,000 analogue phone lines.

This is why analogue TV is massively inefficient. The biggest signal gain that can be made in acquiring spectrum is to move it from analogue to digital and this is the reason that governments have an imperative to promote digital TV. In Australia, Foxtel is not a part of that equation (whether they get spectrum or not does not solve the core problem of whether terrestrial TV is getting taken up). In the US market the spectrum problem is so acute that the FCC (Federal Communications Commission) has mandated that all TV sets will have digital tuners by 2007. Gradually they are looking to phase out analogue. Australia has the intent of phasing out analogue by 2008, but this is not a hard deadline.

In summary, the UK is a driver, nationally and internationally, for innovation in the interactivity, digital television, market. Competitive pressure within the US, on the other hand, keeps interactivity out of the market. Australia is out-of-step in strategic terms. Its communication minister, Daryl Williams, for example, announced that it is not the role of a public broadcaster to drive innovation - unlike the UK where public broadcasting is a driver; and subscription TV. How will digitization take place? In UK subscription is the driver in payTV space (satellite) and the public broadcaster is the driver terrestrially. In the US, competitive market forces drive subscription and the FCC mandating digital.

In Australia there is no clear strategy. There is a small market in early stages of its evolution and with terrestrial television you have no clear driver because the regulations are about what you cannot do rather than what you can do (you cannot multichannel, datacast, etc).

In the early stages of digital television it is the platform that drives the early evolutionary stages (SKY introduced all the interactive applications). When a service acquires critical mass (enough people have the interactivity, about 1/3 audience) you

cross the critical threshold and then the channels have an interest in driving content. In the UK it is now the channels that drive interactivity. The primary drivers are no longer SKY but Nickeldone and the channels (Disney, etc).

If Australia lags behind the US and the UK markets, then what may happen is that Australia's capacity to export is undermined over time, because the country does not have that influence in its own market. Normally what happens is that Australian content producers supply to the Australian market and build on that to export, but what will happen is if the Australian market does not have interactivity as a key component of its content? Australia will increasingly find itself at a competitive disadvantage its capacity to export.

A cautionary tale

It was the intention of the Australian government that by 2008 Australian television will no longer be broadcast using an analogue signal. While this non-mandated deadline is unrealistic, digital television is opening up new possibilities for the development of an interactive television industry in Australia. However, there is a significant risk that a lack of clear policy for the regulation of content and distribution may result in the kind of missed opportunity that the Australian feature film industry suffered during its early development. Around this time last century, the Australian film industry was a small market in its early stages of evolution; however, a lack of clear drivers and regulations left the industry wide open to penetration and domination by UK and US industries. Australia's capacity to export films, though relatively strong (in 2002, Australia ranked 20 in the number of feature films produced (Screen Digest 2003)), was initially undermined by a lack of vision and nurturing of an important medium and Australian industry. The early development of Australian cinema serves as a reminder of the need to formulate a clear strategy in developing a nationally robust and internationally competitive interactive television industry. It is worthwhile reflecting on the development of the Australian film industry as a limited, but useful, basis for comparison.

Australian cinema entered its 'Golden Era' just over a century ago, with over fifty-two films made between 1911 and 1913. During the 1920s, the film industry provided over twenty thousand people with jobs related to film production. From 1918 onwards, however, the growing US film-industry began to exert a potent influence over film production, exhibition and distribution in Australia. Hollywood's influence over the form, content and distribution of films in Australia was deliberate and systematic (Bordwell, Staiger and Thompson, 1985, p. xiv).

The Hollywood-style production system was adopted in Australia, involving less location work and expenditure, a more hierarchical organisation of production, and consequently, less innovation. This mass production system, oriented towards huge profit margins, replaced existing small "cottage-style" production houses. (Moran and O'Regan, 1985, p. 24-26) The American Rank Company, in particular, owned a large proportion of Australian film production.

American corporate interests also dominated distribution, to detrimental effect, such as the purchase of Hoyts by Fox in 1930. (Shirley and Adams, 1989, p. 173) Australia

became a dumping ground for American films, especially since the World War had diminished the UK and French markets. (Moran and O' Regan, 1985, p. 28) As Australia became the second market for American feature films, the huge film-going audience saw mainly American films, which were often about the United States (Moran and O'Regan, 1985, p. 31, Dermody and Jacka, 1988, p. 11-13).

As the nature of production changed, the cultural content of films viewed by Australians began to change, not only because of the sheer volume of American and British movies penetrating the Australian market, but also because of the US industry's profound influence on the production and content of Australian films. Influential Australian filmmakers like Ken Hall² adopted much of Hollywood's production and promotion strategies. (Brisbane, 1991, p. 220-221; Shirley and Adams, 1989, p. 116-119) The effective colonisation of the Australian film industry was a major factor in the near total collapse of local feature film production by the 1950s. (Shirley and Adams, 1989, p. 174)

For decades, the extensive foreign ownership of film exhibition in Australia meant that profits and investments went directly to American studios. It was only under the financing of the wealthy USA producers, such as Columbia, that allowed the production of films with Australian content, such as Ken Hall's *Smithy* (1946), to be made at all. (Brisbane, 1991, p. 220-221; see also Shirley and Adams, 1989, p. 170) On the other hand, American productions made in Australia such as *On The Beach* (1956) viewed Australia as little more than an exotic background.

By the 1950s, the production of feature films in Australia was forced into co-production with the USA. In his annual report of 1952/3, the president of the Motion Picture Association of America viewed Australia as "a good stable market for American pictures," the local industry looked forward to production at "subsistence level" with regular production of feature films, "a dead issue by the mid-1950s," and a non-event by 1954. (Shirley and Adams, 1989, p. 185-186) Australian distributors preferred US films as they were cheap by comparison to increasing costs in Australian production. Furthermore, these American prints could be screened over longer periods as there were multiple prints distributed after the American market was saturated. Driven by financial conservatism, support for the Australian film industry was to dwindle more than at any other time previously. (Dermody and Jacka 1988) This period saw a drain of Australian creative talent with actors and writers leaving in droves for England and America. The Australian film industry was forced into a diminishing and defensive posture as a result. Compared to the tens of thousands involved in Australian film making during 1930s, by the late 1980s that number had severely diminished. While the Australian feature film industry has witnessed something of a resurgence in recent years, the capacity of the industry to thrive and maintain national cohesion in international markets has suffered the long-term effects of a lack of careful planning and regulation during its critical years of development.

Conclusion

² For his film *The Squatter's Daughter* (1933), Hall adopted the Hollywood strategy of using easy to remember titles and climactic narratives for impact. As was the case with most major Hollywood films, publicity for Hall's hugely profitable works began weeks in advance.

As the nature of television and its commercial “playing field” change, the next ten years will be a crucial time for Australia to consolidate its position in developing the architecture, content, production and distribution of interactive television services. The possibility of Australia competing with the international market is limited by the need to develop a huge economy of scale required to produce and distribute content, as well as to implement the technological architecture required to effectively use interactive television. Nevertheless, Australia will not be able to compete with the influx of foreign content unless it seizes control of the local interactive television market.

References

ABC 2004a, Mondo Thingo – “Digital TV is here!”, ABC, Episode 6 Broadcast 9:30 pm 17 March 2004 <http://www.abc.net.au/thingo/txt/s1068783.htm> Accessed 18 March 2004

ABC 2004b, Mondo Thingo – “Australian Content on TV” ABC, Episode 11 Broadcast 9:30 pm 22 April 2004, at <http://www.abc.net.au/thingo/txt/s1092836.htm> Accessed 23 April 2004

Bordwell, D., Staiger, J. and Thompson K. 1985: *The Classical Hollywood Cinema: Film Style and Mode of Production to 1960*, NY: Columbia University Press.

Brisbane, K. (ed.) 1991: *Entertaining Australia: An Illustrated History*, Australia: Currency Press.

Digital Broadcasting Australia (DBA) 2004: Digital TV and widescreen sales boom, 27 January 2004, at <http://www.dba.org.au>, accessed 11 May 2004

Dermody, S. and Jacka, L. 1988: *The Screening of Australia, Anatomy of a National Cinema*, Vols. 1 and 2, Australia: Currency Press.

Moran, A. and O’ Regan, T. (eds) 1989: *The Australian Screen*, Australia: Penguin.

Moran, A. and O’ Regan, T. (eds) 1985: *An Australian Film Reader*, Australia: Currency Press.

Screen Digest, June 2000 and July 2003; Nielsen EDI.

Shirley, G. and Adams, B. 1989: *The Australian Cinema: The First 80 Years*, Australia: Angus and Robertson and Currency Press.