The development of digital television in Great-Britain

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Introduction

The digital is the new technology that is invading and revolutionizing our Western societies. Nowadays there are digital cameras, digital phones, and, already in a few countries, digital television.

The United Kingdom was one the pioneers concerning digital television. In 1998, it became the first country in Europe to propose a digital terrestrial service. It was the achievement of almost ten years of work and research made by the Digital Video Broadcasting Project.

At the end of the 1980s, the idea of broadcasting digital pictures for the general public seemed very far in time, and researchers did not think that they could do it until a great number of years. Though, by the will of the British government and the advances made in a relatively short period of time, this was made possible before the end of the twentieth century.

The DVB Project centred its research on the compression of images and sound, and with the MPEG-2 system they obtained a very good quality for the viewers, much better than the analogue transmission, this was the first great step towards the extinction of the analogue.

The digital was introduced in British homes and it slowly gained ground, as other systems were found for the satellite and the cable network. The giants of the British television understood that there were great profits to be done for them : the BBC, BSkyB, Telewest and NTL launched their own digital services, with more or less success.

In spite of the difficulties some met during the development of the digital, they all

found their place on the market. Now they gain a great number of subscribers each year, and keep their existing ones.

Digital television brought new services to the viewers, like the Internet on their television screen, or the video-on-demand, all that interactivity permits : new kinds of programmes appeared, and the specator can now play games on line, having the possibility to order every fifteen minutes the same title of a movie, shopping from his/her home, or pause during a live-show.

Almost six years after its launching, what are the results of the digital TV in the UK ?

We will see the evolution of this new technology, from its beginning in the United States to its arrival in the United Kingdom, the technique it demands, the repercussions it has on the viewers' way of watching television with the interactive services, how it was welcomed by some viewers and rejected by others, as well as its expansion in the next coming years.

1. The digital vs. the analogue

a) Advantages of the digital

The digital is gradually replacing the analogue system in television, and in this chapter I will try to show the reasons why.

The word "digital" refers to the numbers. This is the main difference between the analogue and the digital systems. Indeed, when you want to make up a digital TV programme, the information needed is "coded" into a digital stream of ones and noughts, just like the way a computer works. The digital signal is compressed and converted into the binary language of computers through the digital decoder.

That is why I will first compare the digital and the analogue referring to the computers. According to the *Longman Dictionary of Contemporary English* 376, a digital computer "uses a binary system", while an analogue "calculates things by measuring changing quantities such as of Voltage rather than using a binary system of counting" (*Longman* 41).

Nowadays we are entering a digital era, and this is because this new technology permits many services that the analogue cannot offer. We can say that in comparison with the analogue, digital television is clearly the television of the future.

Technically speaking, digital television is the synonymous of quality, thanks to the new video and audio compression. More programmes are available, because the digital stream takes up much less capacity in the airwaves, so that "the space need in the past for just one analogue channel can now carry five, six or seven different programmes".

The digital gives as well the viewer access to Internet pages, through his/her television set, and to advanced interactive services.

In relation to the Internet, new technologies such as Wi-Fi are evolving rapidly, and may be associated with the digital television. Wi-Fi, or Wireless Fidelity, is a wireless Internet access. It is a wireless technology like a cell phone. It is already a big success in the United States, because in only four years, it "has evolved from for-geeks-only status to a feature that's included in most new laptops." The Wi-Fi standard is monitored by the Wi-Fi Alliance, a non profit organization. The Wi-Fi Alliance was created in August 1999 as the Wireless Elthernet Compatibility Alliance (WECA). It is composed of the leading manufacturers of wireless systems, and its board includes representatives of the most known companies in the world concerning technology, such as Cisco, Dell, Intel, Microsoft, Philips, Sony, Nokia, and so on. Its aim is "to certify interoperability of Wireless Local Area Network products based on IEEE 802.11 specification." The Wi-Fi technique uses radio waves that travel through the walls and floors, so that the user can have access to the Internet anywhere. This is a technology "that creates "clouds" of wireless internet access, of around 200m radius, operating at broadband speeds." The computer must be configured with a Wi-Fi CERTIFIED radio. The radio technologies are called IEEE 802.11b or 802.11a. The IEEE is the Institute of Electrical and Electronics Engineers, based in New York. This membership organization includes engineers, scientists and students in electronics, and it sets standards for computers and communications. The 802.11b is the international standard for wireless networking, it provides a throughput of up to 11 Mbps (Megabytes per second) and it operates in the 2.4 GHz frequency range (a very common frequency, used by microwaves ovens, cordless phones, or Bluetooth devices). The 802.11 is another specification of the IEEE, it operates in the 5 GHz frequency range, with a maximum 54 Mbps data transfer rate.

A Wi-Fi network can connect computers to each other, to the Internet, and to some wired networks. It can be used for example by many persons of the same family, living together :

A Wi-Fi network can connect a family's computers together to share such hardware and software resources as printers and the Internet. That means everyone in the family can share stored files, photos and documents and print them out on a single printer attached to one desktop computer -all without unsightly cables running throughout the home.

Wi-Fi can also be used in public places, and it is already present in airports, hotels, and coffee shops in many countries. The big interest is that it provides high-speed Internet : "it's several times faster than the fastest cable modem connection."

So Wi-Fi seems to be a revolutionary technology, but there is still a question of security which does not seem to be solved at the moment : "The need for end-to-end security and users' laziness are the key obstacles blocking widespread adoption of Wi-Fi wireless LAN technology - but they are being overcome.", according to Tony Hallett, journalist for Silicon.com, a website for IT and Business Decision makers. He adds that "an answer is to use encryption over the air", and that a VPN (Virtual Private Network) is "a must for corporate connectivity and even smaller client devices such as PDAs and ultra-thin laptops have enough processing power to support triple-DES encryption without slowing connections to a crawl."

Digital television can also be "widescreen". It is the term used to describe the new picture format to television broadcasts. It is a key part of digital television. It is also called sixteen by nine (16x9), and it is "a more natural view for the human using both eyes". The site of the DTG (Digital Television Group) explains the origins of this technique :

If you move the palms of your hands vertically and horizontally towards the side of your face until you can just see them, then a 16x9 field of view is apparent.

The relationship between the width of a film image and its height is known as its "aspect ratio". Standard televisions use a 4 : 3 aspect ratio, meaning four units of width for every three of height. Motion pictures use several formats, all of which are wider than a standard television screen. So when the movies are edited for display on a standard

television, one-third of the image is just cut out. Widescreen television displays a more rectangular image in a 16 : 9 aspect ratio. Most widescreen movies fill the entire screen without distortion.

Nowadays, anyone cannot afford a digital widescreen, but according to a recent study by InStat/ MDR (part of the Reed Electronics Group, a division of Reed Elsevier, a world-leading publisher and information provider), more and more people will have access to this advanced technology :

> In Europe, the price differential between analog widescreen TVs and idTVs is declining to less than the price of a set-top box. In markets where digital terrestrial boxes are not subsidized, consumers will be more likely to replace their analog set with a digital one.

Moreover, there are services that the analogue does not permit, like the interactive ones. Indeed, some systems allow the viewer to choose his camera view of big events, or to read related information running alongside the programme he is watching.

b) The offer

There are three main ways of getting digital television in Great-Britain : satellite, cable, or terrestrial. The European standards for broadcasting are the result of works led by the European Launching Group, or ELG, now called the Digital Video Broadcasting (DVB) Project. Their main objective was the definition of a system for the broadcasting of digital television by satellite, cable or terrestrial network. On their website, we can read a definition of their status and their work :

> The Digital Video Broadcasting (DVB) is an industry-led consortium of over 300 broadcasters, manufacturers, network operators, software developers, regulatory bodies and others in over 35 countries committed to designing global standards for the global delivery of digital television and data services.

Their work is very important because they develop specifications for digital television systems. Those systems are then turned into standards, and this part of the process is done by international standards bodies such as ETSI (European Telecommunications Standards Institute), or CENELEC (European Committee for Electrotechnical Standardization).

The development of the standards by the DVB Project is first studied in what they call a "Commercial Module" and its "Working Groups" : their role is to answer the needs of the market. They draw up a set of user requirements, then it is transmitted to the "Technical Module", and its "Working Groups": they examine the technological implications on the user requirements and the available technologies. When they agree on the resulting specification, it is transmitted to the "Steering Board", which gives the final approval. At this point, international standards bodies, ETSI or CENELEC, are given the specification for standardization.

The DVB Project asserts on its website that "DVB's main transmission standards, DVB-S for Satellite, DVB-C for Cable and DVB-T for Terrestrial, dominate the world and are the basis for most of the alternative standards."

For the United Kingdom, the DVB Project formed the Digital Television Group (DTG) in 1995. The aim of the DTG was to set technical standards for the implementation of Digital Terrestrial Television (DTT) in the UK. The British DTT was launched in 1998. It was divided between six multiplexes : two multiplexes gave the BBC's programmes and those of Digital 3 and 4 ; S4C and Channel 5 shared a third multiplex ; the last three broadcasted the channels of ITV Digital. Those multiplexes allowed about 90% of the population to receive digital television. Since then, there has been a redistribution of the offer.

Concerning the DTT, Freeview is leader on the market. It is the result of a consortium made up of the BBC, BskyB and Crown Castle (the transmitter company). This

consortium was awarded the DTT licence by the Independent Television Commission. Initially, there are twenty-four free television channels available on the Freeview platform : eight are from the BBC, others include UK History, ITV2, Sky News, UK Style Extra, and two music channels, plus the existing five analogue ones. Nowadays, Freeview provides thirty free-to-air digital channels. It transmits its signals through rooftop aerials. There is "no subscription, no monthly bill and no dish, just a set-top box plugged into an existing television set."

DTT can be received with a normal rooftop TV aerial. The user needs a set-top box to go with his existing TV set, or he can buy a new digital TV set which is designed to pick up the new digital signals. About three-quarters of the homes in the UK with a rooftop aerial can receive DTT. But for some of them a new aerial can be required, if the existing aerial is in poor condition, or if the digital channels are outside the band of channels the aerial was designed for.

Regarding the satellite provision, Sky Digital dominates the market. Digital satellite signals reach the vast majority of British homes. It is received with a dish, and the user needs a set-top box in addition to his existing television set, or a new digital television set. A new Sky "minidish" on the outside of the house is also necessary. The minidish that is placed on the house receives a signal from a satellite in space. According to Sky's website, "the minidish needs to be able to "see" the satellite in space", and in the United Kingdom and Ireland it is located at 28.2 degrees east. The Sky minidish is made by several manufacturers. It is roughly 45 cm wide, and "the wider a dish is, the less interference it will receive from adjacent satellites". This is how it works :

> Each satellite has a number of transmitters or "transponders" which give slightly different "beams", resulting in different "footprints" on Earth. In England, a strong signal is received from all of these transponders but, outside England, the signal becomes progressively weaker as you get further away.

The advantage with the Sky minidish is that the user can record a channel on the satellite while watching another one. The channels are stored on the hard drive, and they can be seen later.

Last, digital television can also be delivered by cable. There are two cable operators, NTL and Telewest, which are mainly located in urban areas. Concerning NTL, they deliver ITV, Channel 4/S4C and Channel 5 "to more than 22 million households in the U.K." They also uplinked over one hundred of satellite channels to the Sky platform.

Telewest Communications "provides multichannel television, telephone and internet services to 1,73 million of U.K. households." All of these services are transmitted by a broadband communication network, "that combines high band-width fibre optic technology with modern digital transmission and switching techniques." Fibre optics technology is the process of using very thin thread of glass or plastic to carry information in the form of light. On their website, Telewest explains that "the network consists of (…) a national digital head-end, a national data centre, 60,000 km of fibre and coaxial cable, and various high-capacity electronics." The whole process is detailed : first, the digital television signals are received from the national digital head-end. Then, the digital signals are "multiplexed" with the analogue, for transmission via the local distribution networks. The process is then explained as follows :

> Telewest's networks use multiple fibre-optics cables to transmit signals from the regional head-ends to fibre nodes dedicated to small clusters of about 500 homes, at which point Telewest uses high bandwidth coaxial cable to distribute the signals to individual customer homes.

The national network distributes all of Telewest's digital TV channels to the local franchises. In addition to that, Telewest has deployed an interactive services platform, with a national Internet Protocol (IP). The IP network "consists of 13 high-capacity Asynchronous Transfer Mode switches, together with 54 high-capacity IP routers located

in existing Telewest facilities."

To get digital television by cable, the user needs to subscribe to one of the cable television provider, who gives him a set-top box to use with his existing television set.

c) Technique of the compression of images and sound

The compression of the images and sound is an important advantage of the digital over the analogue. Indeed, digital television "squeezes the information that the viewer cannot see or hear out of a standard analogue TV."

For the source coding of audio and video, the DVB Project has chosen the MPEG-2 standard.

MPEG stands for Motion Picture Experts Group. It is a working group of ISO (International Organization for Standardization ; it has defined a number of important computer standards). It is also the name of family of standards for coding audio-visual information in a digital compressed format. MPEG uses very sophisticated compression techniques, that is why MPEG files are much smaller than the other video and audio coding formats, for the same quality :

> MPEG achieves high compression rate by storing only the changes from one frame to another, instead of each entire frame. The video information is then encoded using a technique called *DCT*. MPEG uses a type of *lossy compression*, since some data is removed. But the diminishment of data is generally imperceptible to the human eye.

The MPEG standard includes MPEG-1, MPEG-2, and MPEG-4. MPEG-1 did not offer a sufficient resolution for the broadcasting, that's why MPEG-2 has been chosen for the European digital television. MPEG-2 is called "the gold standard of image compression."

An MPEG-2 image sequence is made of three kinds of images : the "intra" (I)

images are entirely coded as one fixed image, without any reference to other pictures. They contain the access ports where the decoding starts. The "predictive" (P) images are coded according to the preceding I or P image. The compression rate of those images is superior to the one of the I images. Last, the "bi-directional" (B) images are obtained with a bi-directional prediction, or with a linear interpolation from the next P or I images. They have got the highest compression rate and they are never used as a reference.

MPEG-2 is made of three parts : MPEG-2 System, MPEG-2 Video, and MPEG-2 Audio. There are five "profiles" which determine the set of tools used for compression : the "simple" one, meant for the simplification of the coder and the decoder. The "main" one is now the best compromise quality/compression rate, using the I, P and B images. The "scalable" ones ensure a good quality at reception. The "high" one is for the High Definition Television (HDTV).

There are also four "levels" which define the resolution of the image : the "low" one corresponds to the Source Intermediate Format (SIF) resolution used with MPEG-1. The "main" one corresponds to the "normal" resolution. The "high-1440" and "high" ones are meant for HDTV.

The actual combination is called "main profile at main level", or **MP@ML.**

MPEG-2 uses the variable bit rate method whereby the data rate varies according to the information content of the image.

Technically speaking, MPEG-2 offers resolutions of 720x480 and 1280x720 at 60 fps (frames per second). That means that it can fit all the major television standards, including NTSC (National Television Standard ; the American standard for the broadcasting of images, also used in Japan and Canada) and HDTV. The digital compression works by reducing the redundancies between the images and by transmitting only the signals which are useful for the eye.

As it is made for the video, the audio is compressed. The audio digital compression allows to get a better sound than the analogue.

The digital audio is known since the launching of the Compact Disc in 1984. Digital audio compression is "the removal of redundant or otherwise irrelevant information from a digital audio signal- a process that is useful for conserving both transmission bandwidth and storage space." The MPEG audio compression "exploits the weaknesses of the human auditory system in order to reduce the number of information to broadcast without damaging the quality of the audio signal in a perceptible way."

There are two different kinds of audio compression : the "lossless" and the "lossy". The lossless one keeps all the information in a given signal so that a decoder can reconstruct the entire compressed signal. On the contrary, the lossy one eliminates information from the original signal, so that its reconstruction will be different (but it does not matter if the human ear cannot perceive the difference). The audio compression exploits both techniques.

The rate is reduced while a hi-fi quality is maintained. The non audible signals are eliminated according to the sensitivity curve of the ear : it is the "perceptual encoding", the reduction of the size of input data. To determine which information is irrelevant to the ear, compression algorithms rely on psychoacoustics, which is the study of human sound perception.

Audio compression algorithms exploit the conditions under which signal characteristics obscure or mask each other. The frequency and temporal maskings convey a few inaudible signals which must be eliminated. The frequency masking is noticed when two signals next in frequency are from different levels. The most important signal covers the faintest one. The temporal masking occurs when a high level signal precedes or follows a fainter signal which is covered.

So the input signal is compressed with the elimination of irrelevant information :

This is done by deriving and applying a shifted hearing threshold based on the content of the signal. Hearing threshold indicate how strong a certain frequency component must be in order to be heard, based on the characteristics of neighbouring components and properties of the ear. (…) Components that fall beneath this shifted threshold need not be transmitted, and (…) any noise beneath the threshold is irrelevant.

The encoder of the signal's representation must quantize each frequency component, that is to say it gives a binary representation to each of them. If the encoder assigns more bits to each frequency, less error, or noise, is introduced, but more space is needed to store the result. To preserve storage space, perceptual encoders use just enough bits to encode each frequency without introducing audible quantization noise.

2. Interactive television

d) The origins : the United States

Nowadays, millions of homes in the United Kingdom and Western Europe enjoy interactive television over satellite, cable and terrestrial broadcast services. Interactivity means that there is a "link" between a human being and a machine : "a noninteractive program is one that, when started, continues without requiring human contact."

It all began in the United States, in the 1950s, with a little cartoon called *Winky Dink And You*.

This cartoon was very popular, and was "the first ITV show in history." It was created by Harry Prichett Sr. and Edwin Brit Wyckoff. The show was written and produced by Louis M. Heyward, and was broadcasted from October 10, 1953, to April 27, 1957, every Saturday on the CBS network. The program "featured the adventures of a star-headed cartoon lad named Winky-Dink and his dog Woofer." The program was meant for children, who could buy a Winky Dink Kit by mail, that was produced with the show, for fifty cents :

> This "game" consisted of a sheet of plastic shaped like a TV screen (called a "magic TV window" or "magic screen"), and a number of crayons ("Winky Dink magic crayons"). This sheet of plastic was put over the TV screen at selected moments (static electricity kept it in place). During appropriate moments in the show, the viewers were asked to help Winky Dink do something by holding the plastic sheet to the TV set and by drawing (for instance) a bridge for the cartoon character(s) to use to cross the river or ditch etc.

The show rapidly became a success, and over two million people bought the kits : "It is believed that most mothers purchased them in a state of panic simply to keep their children from destroying their television sets, which were incredibly expensive at the time." Indeed, many children who wanted to help Winky Dink simply drew directly on the

screens with their own crayons.

In 1969, the show was revived, as a five-minute cartoon feature, with a new Kit for kids. But it was quickly withdrawn, because "consumer groups argued that children shouldn't be playing with their eyes so close to the television sets." And also because many parents complained that their children kept on drawing on the television sets.

Winky Dink And You can be considered as a pioneer of video games, which is a way of interacting with television. So the first to watch television as "active" viewers were the children. They could see a direct answer to their drawings on the screen.

Then there was another experiment in the 1970s, with the Qube network. It opened on December 1, 1977, in Colombus, Ohio, as "the world's first commercial interactive TV service opened for business." It offered thirty channels, divided between ten broadcast television channels, ten premium or pay-per-view channels, and ten channels with original interactive programming. The Qube system was built by Warner Communications, an aspect of Warner Bros motion picture company.

How did it work ? It "consisted of a set-top box with a computer chip and some memory." The viewers accessed to programming with a Qube remote control. It was a small box with eighteen buttons, connected by wire to the set-top box. Three of these buttons gave access to ten local television channels, ten premium channels (including the pay-per-view program at three dollars for a movie), and ten community programming channels. Five buttons were reserved for responses to Qube's original interactive programming : they allowed the viewers up to five answers to a question (at least "yes", "no", or "undecided"). The headend (a computer which managed all the interactions with the set-top boxes) "could poll all the boxes, collect all the responses, and immediately report to viewers the percentage for each of the possible answers."

Qube programming included first-run movies on a pay-per-view basis, pay-per-

view boxing matches, talk-shows ("Good Day, Colombus", where the viewers were asked all sorts of questions), interactive games, community auctions, and so on.

All these contributed to its success, and as a result Warner earned contracts to build similar thirty-channel systems in Houston, Milwaukee, Chicago suburbs, and Saint-Louis suburbs. Warner also won the franchises for a sixty-channel Qube systems in Cincinnati, Dallas and Pittsburgh. Programming was shared nationally, because every local Qube system was interconnected to other local Qube systems.

So it was to be a hit for Warner, but there was a big problem : money. Staffing, construction, all these were very expensive. "Warner Cable would not have been able to keep going on past 1980 if they had not received an infusion of capital from American Express", according to Paul Dempsey, who was the chief engineer for Qube in Colombus. When Amex withdrew from Warner in 1984, the Qube systems closed one by one over a decade. The last Qube boxes were phased out in 1994, in Cincinnati.

But for John Carey, director of the telecommunications consulting firm Greystone Communications, Qube was "not a failure at all", for it "demonstrated that pay-per-view was viable, if the cost of promoting and processing pay-per-view orders could have been reduced."

e) British experiments

In the United Kingdom, the milestone was in 1990, when the BBC gave viewers the option of seeing news, weather and stock prices running across their screen on top of regular programs : it was the first appearance of the Teletext, an analogue one-way transmission of text and graphics through terrestrial or cable networks. According to Alan Yates, general manager of Microsoft TV Marketing for the Microsoft TV Division, it

"paved the way for broad acceptance of TV-based commerce (t-commerce) and information delivery in Europe and opened up exciting, new revenue streams for network operators." The BBC Text appeared in November 1999, it was the first digital text service in the United Kingdom.

Then the interactive services were really accessible to the British viewers in 2001, with the BBC's coverage of Wimbledon. The spectators were "offered" five tennis matches simultaneously on their TV screen, and they could make their own selection of matches and even camera angles :

> The BBC has probably been the most flamboyantly experimental network when it comes to iTV. The network scored its first hit during the Wimbledon tennis tournament in June 2001. Rather than deciding which tennis match to televise at any one time, the BBC let viewers watch up to five of them at once on split screens. It was a big hit, attracting more than 4 million viewers.

This was the first step. Another programme, called *Walking With Beasts*, confirmed the taste of British viewers for interactivity : it "revealed the exciting new dimension and potential of interactive TV." It was a series about prehistoric creatures, with Kenneth Branagh as a narrator, and more than two million people watched it and used the interactive services :

> Viewers were offered on-screen insights into how this complex series was made four hours of additional content, pop-up windows with additional facts and 700 complementary text boxes and profiles of creatures while the programmes were on air.

Since the audience is present, British channels develop more and more interactive programs. The BBC is working on new shows :

> The number of BBC programmes with interactive options which will benefit audiences is increasing all the time. They cover programme genres ranging from education to soap operas. 2002 was an exceptional year for major sporting events. Interactive sports coverage included the Winter Olympics, the FA Cup, Six Nations, the World Cup, Wimbledon, the Open Golf and the Commonwealth Games.

Sky Digital has also chosen sports to launch interactive programs : Sky Sports Active, enhancing Premiership football matches, started in 1999. The next year it extended to rugby with the Six Nations Championship, including the matches of England at home. Today the interactive programming is assembled into Sky Active, which incorporates Sky Sports Active, Sky News Active and Sky Movies Active. As an example, Sky Sports permits the spectator to watch the football matches from different angles and to follow a single player on the field. One of the last interactive shows proposed by Sky Sports concerns the gamblers : they will soon be able to bet on sporting events. British people are known to be great gamblers, so exploiting that passion is a good way to enhance interactivity : it will involve many persons who are not yet concerned with the interactive services.

In relation to interactivity are the games, which are a great market and includes not only the children. A new term has appeared in the 2000s which concerns television, it is the "gameshow". It is a way for people to play games with their remote control, in order to win prizes. The Digital Interactive Television Group (DITG), the biggest interactive TV company in the United Kingdom signed a contract with Ludus Entertainment, a world-leading production company, in March 2004, to produce and sell television formats in the whole world. DITG had already made a successful concept which is now the channel Avago, which enables the viewers to play bingo : the viewers can buy virtual bingo cards using their remote control, and the presenter talks directly to them by name. It "has attracted more than 150,000 registered Sky viewers."

The British channels clearly rely on the interactive shows to boost their audience. A journalist from *The Guardian* even evokes a "Red button revolution", in reference to the button on the remote control which permits the access to interactivity. Talking about Channel Five, the youngest television channel in Great-Britain, and known for its poor-

quality reception, he says that "Five will use the red button in the hope of wooing audiences in the ever-fragmenting multichannel world." In February 2004 the channel has indeed announced a new reality and interactive show. And it has lots of projects : "Five is planning in the autumn to increase its use of the red button and launch interactive advertising and gaming." So using interactivity is a way for less-known channels to become attractive to the spectators.

Last, one of the most important market for British TV is shopping. Before the arrival of digital television, it was still in place : it began ten years ago with the QVC (Quality, Value, Convenience) channel, and "a decade later, Britain's TV shopping industry is worth a staggering £ 1.5 billion a year and growing all the time." There are today forty shopping channels, that the British viewers can watch 24 hours a day except for one. These channels "sell" holidays, jewels, health and beauty products, and so on. The viewers access interactive services simply by pressing one button on their remote control. Though there is much competition between those channels, QVC still has four million customers, and the other ones are successful. This is another form of interactive television, because while the viewers are active in front of their television screens, they become passive in their daily life. They can order what they want without going away from home.

But when television shopping is "reserved" to women, men are a new target for more ambitious channels. Bid-upTV started in October 2000 as the first live auction channel and is today a flourishing one. Men are more interested in this kind of selling, they can outbid each other for very different objects such as bottles of wine and cars.

f) Interactive services : VoD and Personal TV

Nowadays, the Web-like technology, the pay-per-view, the personal video

recording, the video-on-demand, all these are revolutionising our way of watching television. In people's mind, television has always been "the idiot box", the archetype of passive entertainment. Nowadays, watching television is becoming an activity : the viewers are evolving from a passive to an active role.

With interactivity the viewer is given the possibility to use his/her television set just like a computer : s/he clicks on an electronic button, just like s/he would click on a hyperlink on the Internet. This is the "On-demand" services : the Video on Demand, or VoD, and the Personal TV.

VoD is "an umbrella term for a wide set of technologies and companies whose common goal is to enable individuals to select videos from a central server for viewing on a television or computer screen." So the viewer selects a program via an on-screen menu (an electronic programme guide, or EPG), and this program is supplied by cable or ISDN (Integrated Services Digital Network). The video is stored in the viewer's set-top's hard drive. The viewer can then watch the program, and have access to VCR-like functions such as stop, freeze, fast-forward and rewind. On the contrary of the pay-per-view system, the viewer can watch the program at any time. There are different kinds of VoD systems nowadays : Interactive Video on Demand (IvoD) ; Near Video on Demand (NvoD) ; Subscription Video on Demand (SvoD) ; Quasi Video on Demand (QvoD) ; True Video on Demand (TvoD) ; Everything on Demand (EoD).

IvoD contains additional functions such as jump forward, jump backward slow down, and so on. The viewer can also select or avoid advertisements, or purchase goods. There are three components : the set-top box, the network, and the servers to archive programs.

NvoD allows the viewer to select a movie, and the day and time s/he wants to watch it. A part of the movie is sent on the hard drive of the user, because most of the movie is viewed from the server of the company.

SvoD gives subscribers unlimited access to certain movies, which are part of a package for a fixed monthly fee.

QvoD is nearly the same as Nvod, except that the video is sent only if a minimum number of people have asked for it.

With TvoD the viewer can order programs and gets immediate responses when s/he interacts with the system. This service is much faster than the others, and that also means that it is more expensive.

Last, EoD is a new system developing very rapidly. With this system, more content can be stored and delivered, "creating technical and business challenges for service providers."

The VoD enables users to be active participants when watching television :

> In the current broadcasting environment, programme timing and selection is the exclusive prerogative of the broadcaster. The consumer is merely a passive participant with no control over the session. With VoD, the consumer has complete control over the session presentation.

One of VoD's obstacles is "the lack of a network infrastructure that can handle the large amounts of data required by video."

Another revolutionising system is Personal TV :

> Personal TV is the viewing, via a Personal Video Recorder/ Digital Video Recorder, and most likely a subscription to a content provider, of live television programming in a manner that can give the viewer options such as : pausing (…) ; automatic programming and recording of shows that the consumer prefers (…) ; being able to skip over periods of the program.

Personal TV gives the viewer a multitude of options such as the record of up to 320 hours of television before having to erase any previously stored programs ; the storing of digital photos ; the programming of the unit even if s/he is not at home, using the Internet ; the recording of as many as two programs at the same time while watching a third pre-recorded program.

TiVo and BSkyB were the first in England to launch a personal video recorder : they chose Thomson multimedia to manufacture standalone TiVo recorders for the British market. With that service the viewers can watch the programmes they want when they want to. But in 2003 TiVo has announced it would stop manufacturing its digital video recorder, while continuing to support existing customers.

The Sky Plus set-top box is now the most performing product available to British spectators. It has TiVo-like features, and about 250,000 viewers owns one in 2004. The personal video recorder, or PVR, is a new technology but it will certainly last long :

> In an ambitious vision of the future of home entertainment, PVR will herald the next generation of interactive advertising and virtual video on demand, becoming the video equivalent of Apple's iPod.

This optimism is confirmed by research showing that "the Sky Plus customers watch more TV, value their Sky subscription more highly, and are less likely to stop subscribing." So it seems that the Sky customers have already adopted this new way of watching television.

g) Web-like television

Interactive television is a way of bringing the Internet somewhat a little closer to your television, and vice versa. Nowadays, there are already television sets which permit the viewer to surf on the Web : this system is called "Web TV".

Web TV is "a system and/or process that uses television to access the Internet via a set-top box or a Built-in." In the United Kingdom the viewers are given a choice between different offers.

One of them is Netgem's i-player. It was launched in November 2002, just after the

introduction of Freeview. The i-player is a set-top box which combines Freeview digital terrestrial television reception with internet access. It contains a 56k modem, a USB port to connect a printer, a "flash memory" (it is a memory that does not get lost until the viewer shuts off the television), a portable 20Gb hard disk (as an option to record television programmes), and an adapted remote control to surf on the Web. The user can send and receive e-mails, connect his/her webcam, listen to music and play video clips on his/her television set.

Web-like television is a new technology in the United Kingdom, but there is already competition between the different channels to become the leader of this market.

Bush Internet TV is one of the systems accessible to the British. Bush Internet is a joint venture between Alba plc, "the company of leading brands", and Virgin Net. It began operating in July 2000. Their offer is made of a standard television set, which permits the user to connect to the Internet with his/her remote control and keyboard. The user can buy the Bush TV with a built-in modem at 33K, or a separate set-top box s/he can add to his/her existing set. The second solution seems more attractive to most of people, because they do not want to buy a new set to access the Web, or they would simply buy a computer. The box is linked to the phone line, and to the television's Scart socket. The service is free, except for the local-rate phone call. The user can surf the Web and send and receive e-mails.

So the question is : will television soon replace computers ? Today the answer is no. First, because the Web TVs are not yet really adapted to offer a good quality while surfing on the Internet. For example, the size of the text used to write Web pages is too small to be seen well on Web TVs. Concerning the Bush TV, the *Web-User*, a British Internet magazine, explains that "TVs are not designed to display high-resolution Web pages and, even though the Bush box does some clever tricks to make the most of the TV

display, some web pages are tricky to read." In addition to that, Web TVs don't refresh pages as rapidly as a computer would. But there is also the reaction of the users to that system : "The biggest obstacle (…) is consumer's reluctance to surf the internet from their sofa on a screen several feet away." Television remains a way for people to relax, they just want to sit down and enjoy the programs. And last, many people already have a computer at home to surf on the Web.

That may be one of the reasons why Microsoft and Thomson have not launched yet in the United Kingdom their own Web television, developed by Tak, a subsidiary of Thomson dedicated to the distribution of interactive television. In July 1998, Microsoft and Thomson multimedia signed an agreement to develop and "accelerate the adoption of interactive television worldwide."

The system they created was announced in 2001, and was supposed to be the first of a new generation of television sets. Indeed, it was programmed to appear first in France and then in other "key European markets", including the United Kingdom. The offer is made of a choice in the television sets, from the classic one to the 16x9, flat screen and Dolby Surround set. They integrate a 56K modem and a range of progressive softwares with Internet standards such as HTML language, JPEG images, and Flash animations. Those television sets have to be linked to a phone jack, because the information is transferred via the telephone network.

When firing up the television set with the "Tak" button on the remote control, it gives the viewer access to a home page composed of a reduced television image, plus six interactive menus : e-mail, Internet, TV programmes, and so on. The user can define his/her "profile" first, so that s/he can access pertinent services.

But in a few years the Internet connections have developed and nowadays the high bandwidth and the WiFi are replacing the old modems working with a phone network.

NTL is one of the best examples of this rapid evolution. They also propose access to the Internet through the television sets, but via the cable : "the most popular TV channels available (…), plus the chance to use emails, surf the web, shop, play games, even send text messages to a mobile phone, (…) all through a single cable connection into the home." The user chooses between three packages : Base Pack, Mid-Tier and Family Pack. They also have a special offer with the "Sainsbury's to You" show : the viewers can order all their shopping "from the comfort of their sofa and have it delivered to their front door." The shopping market is clearly a key one, and is used to attract customers.

Therefore Web-like television is still to be developed with new technologies, and there will certainly be studies on the subject to see whether this kind of service can attract customers.

3. The beginnings and the evolution

h) The 1990s

In the United States, the first digital programmes intended for the general public started in 1994, with the project DirecTV. It had an immediate success, with more than one million subscribers after its launching. This success can be explained partly because a certain number of viewers had no access to the cable services. As a result, digital television was an alternative for them : "for the first time, rural consumers who were not being served by cable at all now had access to programming like their urban and suburban counterparts." Nowadays, DirecTV is one of the leading digital television on the american market.

In Europe, researches were targeted at an analogue HDTV. But at the end of 1991 it had been decided to stop those attempts. Then European broadcasters and industrials constituted a group to promote the developement of digital television, and the European Launching Group was created. It became the Digital Video Broadcasting Project in 1993. The standards of transport were first defined for the cable (DVB-C) and the satellite (DVB-S). It was only two years later, in 1995, that the standard for the terrestrial broadcasting (DVB-T) was elaborated.

In November 1998, the United Kingdom was the first European country to embark on digital television, closely followed by Sweden in 1999, and Spain in 2000. The British offer was made of multiplexes, with channels such as the BBC or ITV Digital.

i) The DTT : from OnDigital to Freeview

When it was launched, the British DTT covered 50 to 70% of the population, according to the multiplexes, but it rapidly grew its coverage to reach 90% of British viewers. To promote this new technology, many industrials offered the decoders. The first models of integrated digital television sets were sold on the market for about 1,000 pounds or less.

On June 24, 1997, "the licence for the pay TV digital service was awarded to "British Digital Broadcasting", beating the other contender DTG". It was a joint venture between UK operators Granada plc and Carlton Communications plc. ITV Digital was set up on November 15, 1998 as OnDigital. When it started, it was licensed to use three multiplexes. Then it obtained extra capacity with two more multiplexes. It "used to be the sole British terrestrial digital television broadcaster." In April 2000, the channel was rebranded ITV Digital. In 1999 ITV Digital already suffered from its competition with Sky digital, and had decided to give free decoders for every annual subscription since that same year. At the end of June 2001, ITV Digital announced that they had 1,135,000 subscribers using set-top boxes. At the same time, there was a problem between the channel and the Football League about the distribution rights for the second, the third and the fourth leagues. ITV Digital had bought the rights to broadcast live football matches. Carlton and Granada "hoped that a three-year deal to broadcast Football League games would drive business growth." But the deal was very expensive : 315 million pounds were asked to have the rights. The channel started paying, but 180 million pounds were left unpaid to the League. After negotiations, the League offered a compromise, saying that they would accept 90 million pounds. But ITV Digital could not give more than 50 million pounds, and failed to find an issue to the conflict. As a result, Granada and Carlton Communications asked for the firm to go into receivership. It was placed into administration on March 27, 2002, following a High Court order. Almost a month after, on April 23, 2002, ITV Digital closed down its pay-per-view movie channels, ITV Select,

which included five channels of Hollywood movies and three pay-per-view adult channels. Eventually the channel filed a petition in bankruptcy. On May 1, 2002, ITV Digital stopped broadcasting.

Though the competition between the channels on this new market was fierce, it is not the only explanation for the failure of ITV Digital. Indeed, a journalist from *The Observer* compares the end of the channel to a "murder", and suggests that "a whole raft of characters conspired to bring about the demise of the world's most expensive digital terrestrial television platform." In the top list of the arguments of the journalist, the conflicts between Charles Allen and Michael Green, chairmen respectively of Granada and Carlton. Both men "squabbled massively over when and how much to invest in the platform." Those quarrels contributed to create tensions within ITV Digital. In July 1999, Stephen Grabiner, ITV Digital's chief executive, left his job "after clashes with Green." In addition to that, the channel had technical problems : certain antenna were not properly installed, and the customers were discontented because of the frequent breakup of the picture. The Independent Television Commission and the Radio Communications Agency, the two organisations responsible for spectrum licencing, revealed unable to increase the power of ITV Digital's broadcasting signal, and consequently many areas in the country could not receive the channel correctly. In 2002, the licence bid for the Freeview service made by ITV and Channel 4 shows the situation :

> ...[of the] people wishing to buy ITV Digital in a retail outlet, 50% of those intending to purchase had to be turned away because they found that they were out of coverage. Of the 50% who found that they were in coverage, 25-30% required aerial upgrades and 15% churned almost immediately or could not connect, mainly due to signal problems. In addition a third of those who did not renew their subscriptions after the initial twelve months minimum period did so for technical reasons or because of poor picture coverage. When the customer base was asked for the one improvement ITV Digital customers would most like to see, 32% mentioned picture quality (...).

However, Granada and Carlton did not give up, because the two companies merged

in November 2003, and this amalgamation gave birth to ITV, "the biggest commercial television network in the UK". ITV1 and ITV2 have become flourishing channels, because the first one is "watched on average by 45 million people every week", and the second one is a very popular entertainment channel for young spectators.

Though it has been a fiasco with ITV Digital, the DTT system was not abandoned. A consortium made up of the BBC, BSkyB and Crown Castle International was given ITV Digital's broadcasting license, and they launched the Freeview service on October 30, 2002. The Freeview Consumer Press Pack, available on the Freeview web site, defines the role of each of the company :

> The BBC is committed to ensuring that free-to-view digital television is available to everyone. Crown Castle brings to the consortium many years of technical expertise in the transmission industry. BSkyB is the UK's leading digital television operator and, as well as having three channels in the FREEVIEW package, provides its expertise in consumer and retailer relations.

Freeview was the "phoenix that has emerged from the ashes of ITV Digital". It was an achievement for the BBC, since they had begun trials of a digital terrestrial service a few years before, in June 1996. Indeed, the channel had decided to launch this service in the autumn of 1998.

When Freeview was put on the market, many people believed that it would fail just like ITV Digital, because it would not resist the competition with Sky digital, which was already well established in England. Steven Barnett, professor of Communications at the University of Westminster, summed it up in *The Observer* :

> It may not be the most alluring television offer in the world, but it's free, it's simple, it's more telly and (...) it works. There is just one problem : it isn't Sky Digital. Time after time, usually without any prompting, the same message came across : if you want premium services, if you want any kind of interactive TV, if you want decent sport or access to the internet, you really need the Sky Digibox.

In fact, it is more true to say that though Freeview was a "limited" access to digital

television, it was to be improved with new interactive services : the text services, with BBCi (a constantly-updated information service, plus enhancements to certain programs), Teletext (up-to-the-minute national and international news, weather information and so on), and YooPlay (an interactive channel with games such as Tetris). Moreover, it was attractive for people because it was subscription free, and there was no complicated installation at home.

The BBC was aware of the fact that people would be afraid to get the DTT, because of the problems many of them had met with ITV Digital. The channel wanted to reassure the viewers, and encourage them to buy the Freeview service. This is very clear in the Consumer Press Pack about Freeview people can read on the Internet :

> With the launch of the FREEVIEW service, significant improvements were made to the quality and reliability of the digital terrestrial television signal. The result is that more households can receive the FREEVIEW service than previous digital terrestrial TV services, and fewer homes are affected by interference.

They even add that "around three out of four households" are in a Freeview coverage area, and "out of three households in coverage, two should be able to receive the FREEVIEW service immediately, providing their aerial is in good condition."

So the BBC was not sure of the success of Freeview at the beginning, and it took a few months to really become popular. The system offers certain advantages, it was attractive to many people because there is no subscription fee and the channels are free to view. In August 2003, the BBC had a positive result as they announced that "according to figures from the Institute of Practitioners in Advertising, it signed up 637,000 viewers during the first half of 2003- making a total of 1.5 million." In december 2003, 2 million homes had access to the Freeview service.

In June 2004, the BBC announced that four million UK households had "at least one Freeview box or iDTV (integrated digital television)", and the system was "available

to 73 per cent of the UK's population."

More and more British viewers adopted the digital terrestrial television with Freeview : the system established DTT as the second largest digital platform in the UK, after the satellite. According to Andy Duncan, Director of Marketing, Communication and Audiences for the BBC, the good results of Freeview are due to the fact that people do not pay any subscriptions :

> The continued growth of digital television is very encouraging. The Freeview figures show that the free proposition has really cut through and is currently the single most important factor in driving digital take-up.

Nowadays Freeview is the second most important broadcaster on the market of digital TV, just after Sky Digital.

a) Sky Digital : the domination of the satellite

Sky Digital was the first digital system offered to the British viewers, since it was launched only a few weeks before OnDigital.

At the end of 1998, Sky and BSB (British Satellite Broadcasting) merged to become British Sky Broadcasting. The company brought out Sky Digital the same year, in October. With Sky Digital, people had access to 140 channels, and in the 30 first days of its selling, more than 100,000 digital satellite decoders were bought.

Sky Digital had an immediate success, and in 1999 a free minidish and a set-top-box were on the market. Sky Digital announced that they were "the fastest growing digital TV platform in Europe with over 1.2 million subscribers in just 10 months." They also offered their first interactive services to their viewers, with Open Sky and Sky Sports

Active.

In 2000 Sky Digital reached five million homes, and they led the "UK's first ever interactive advertising campaign." In December 2000, Sky Text, a digital teletext service was proposed to the viewers, with news, sport, and entertainment information. Only two years after the launching of Sky Digital, Oliver Rowe, Head of Insight at CIA Media-Lab, wrote an article for *The Guardian*, and explained that Sky Digital had played an important role in the digital booming, saying that it had "converted most subscribers to digital" and that it was "dominant in TV's latest revolution." At that time the company controlled the market :

> Sky has established itself as the dominant digital platform. Around four out of five digital households have gone with Sky, but it has now converted the majority of its traditional analogue users on to digital.

To Mr Rowe, this leading position of Sky Digital has one main cause : the sport's attraction. Indeed, to him the fact that Sky Digital offers a great number of channels is not the main source of motivation for the British viewers to subscribe. He bases his argument on a research made by the Media Agency CIA UK :

> CIA's research found four of the top five shows that could make Sky Digital viewers change supplier are football, namely home nations World Cup qualifiers (top with 28%), Premiership Football, Champions League and Match of the Day.

Together with sport, the Sky viewers gave importance to interactivity, their second choice in the list of results. The number of channels came only after those reasons, and we can guess that it was the demonstration that people worry more about the quality of the programming than the quantity.

This is where this poll shows its limits, because there is no real explanation about why people like interactivity, and if they have integrated this new system easily, or about the people who have not bought Sky Digital for the football games, what were their

motives.

In 2001, the company added new interactive services with Sky News Active and Sky Movies Active. Sky +, a fully integrated Personal Video Recorder, was put on the market. In September, BSkyB switched off its analogue broadcasting. Around 8.5 million UK households had access to digital television. Sky Digital went on gaining subscribers, and keeping them :

> BSkyB dominates the digital TV arena, with a 68% market share. A fifth of households have cable and the remaining 12% goes to ITV Digital.

Richard Bedwell, the author of the article in *The Guardian* and consultant at BMRB International (British Market Research Bureau), tends to demonstrate that the Sky Digital customers, though they pay the highest monthly subscription, are the most satisfied concerning the overall satisfaction on a "value for money" basis. In general, the customers seemed to enjoy their subscriptions :

> When asked about future intentions, a very small proportion (3%) of Sky Digital customers are planning to change platforms in the future, whereas 17% of ITV Digital and 11% of cable digital subscribers want to move.

Again this poll shows the success of Sky Digital, and the confidence people had for this company. This stability was confirmed in 2002, with 6.318 million homes reached by Sky Digital in the UK and Ireland. It permitted the broadcaster to offer "over 385 digital TV and audio channels."

The year after, Sky Digital reached 7 million homes in the UK and Ireland, with more and more interactive services : Sky Gamepad and Sky Bet Vegas.

But this progression began to slow down in 2004, with less and less people subscribing :

> The pay-TV giant added just 66,000 subscribers in the first quarter of 2004, the second lowest growth rate since the launch of the hugely successful digital service in October 1998 and well below City expectations of around 90,000.

There was no real explanation for that, some analysts talked about the competition with Freeview, others said that Sky should propose a lower priced version of its package for those not interested by sport and movies.

This stagnation was unprecedented in the ascension of Sky Digital, but it did not seem to alarm the chief executive James Murdoch, who declared that "the new football season and the run-up to Christmas would boost orders throughout the rest of the year." Indeed, despite those figures, the company expects a total of 8 million subscribers by the end of 2005, and even a total of 10 million subscribers in 2010.

b) Difficulties of the cable

NTL and Telewest are the main providers of digital television for the cable industry in the United Kingdom.

NTL has the first largest cable network in the country. In fact it is a US company, but "it does the majority of its business in the UK and Ireland." NTL provides digital cable television, dial-up and broadband internet services.

The firm was founded in 1993 as International CableTel Inc. It acquired franchises covering the London area and parts of Scotland and Wales. In 1998 it became NTL (National Transcommunications Limited), taking the name of the the privatised UK Independent Broadcasting Authority it had just acquired. NTL extended its coverage with the acquisition of new franchises, including Birmingham and Yorkshire. In 1998, it was a "meteoric growth" :

> Ntl acquired comcast UK (Cambridge and Teesside), ComTel (Midlands and South
> East including Oxford, Coventry, Swindon and Stratford) and Diamond Cable (East
> Midlands including Nottingham, Leicester and Lincolnshire), vastly increasing its

number of customers, products, employees and its network systems. With these three acquisitions ntl now covered approximately 25% of the UK with a total of 5.2 million homes in its franchises and over 85,000 business telephony lines.

So at a time when digital television was to be launched in the UK through the DTT system, NTL was becoming a major company, developing extremely rapidly. In 1999 it confirmed its ambition, with new invests in companies such as Cablelink, the largest cable TV provider in Ireland. It was "a monumental year, with ntl (...) buying Cable and Wireless UK cable operations – which now contained digital TV capability in some franchises." NTL covered at the time almost 6 million homes and over 150,000 business telephony lines. It also sold its 50% interest in Cable London plc to Telewest Communications. And eventually 1999 "saw the launch of ntl broadcast division's state-of-the-art Digital Media Centre in Langley providing a complete set of broadcast services under one roof." But it was only in May 2000 that the cable system could support the digital system.

In 2000, ntlworld.com, a free UK wide Internet service, was added for the customers. Later in the year, the company installed 500,000 digital TV customer and 500,000 ntlworld.com customer. In December 2000, the company announced that it had "met its target number of subscribers" for the year. ITN, a 24-hour digital news channel, was proposed to the viewers. NTL Digitalplus offered 120 channels as well as phone, interactive and internet service. In 2001, NTL continued its installations with 100,000 broadband customer in service by November. In August 2001, NTL had one million digital TV customers.

But in the course of 2001, the company faced serious problems with the collapse of the telecommunications market :

> The telecommunications market had seen a sharp decline in 2001as telecoms and media values plummeted and the high-yield markets came to a virtual shutdown. In response, ntl radically reduced capital expenditure and cut its costs. By the end of 2001 it became clear that the turbulence in the telecommunications market would not be short-lived.

NTL accumulated debts, for a total of around 18 billion dollars. The firm had to seek Chapter 11 bankruptcy protection in May 2002, to organise a refinancial deal. That year NTL presented a recapitalisation plan, endorsed by the US Court in September.

But it was not until January 2003 that the company could emerge from protection of Chapter 11. The last figures show that the company has around 3 million customers. In August 2004, NTL "unveiled a new target of winning 4 million customers by 2008". Nowadays the goal of NTL is to compete with Sky Digital : the company said that "the cable industry posed an increasing threat to satellite television operator BSkyB as it emerges from years of debt-stricken paralysis." In that purpose, the shareholders of the company want a merger with Telewest. In July 2004, NTL and Telewest were "urged by shareholders to kick off merger negotiations (...) to form a company with a market value of $7 billion." There has been rumours of this merger since 2000, but it was only in September 2003 that it became more precise. The two companies, touched by financial crisis, had just left out of a difficult situation. The merger seems to be a good solution for the shareholders of the two companies :

> The combined group would have more than 1.5 million customers and would throw down the gauntlet to BSkyB, the BBC and ITV in the battle for pay-TV viewers. (...) The cable market has long suffered from fragmentation, poor marketing and weak management. A combined NTL and Telewest network would reach most UK homes.

Telewest Communications also suffered from the collapse of the telecommunications market. The company is also American. It was founded in 1992, with the joint venture between TCI, the main cable operator in the United States, and US West. Then there was a succession of mergers which permitted the broadcaster to extend its network : in 1995 it acquired franchises "in the Midlands and North West totalling 1.3 million homes"; in 1998, it added " a further 1.7 million franchise homes in Yorkshire,

West London and Birmingham."; in 1999, it purchased "the remained 50% stake that it [did] not own in Cable London from NTL, adding 0.4 million homes in North London". This last buying gave the company "a significant slice of the cable TV and telephone market in the capital." A few days earlier, Telewest had announced the launch of its digital TV service :

> Telewest's digital TV service will launch in the Midlands in November with 150 channels, rolling out to the rest of the country by the middle of 2000.

In March 2000, Telewest launched new services, with high-speed internet (Blueyonder), interactive television and e-mail. It also "achieved 110,000 digital television customers" and expected "to reach 500,000 digital subscribers by the year-end." Its cable network reached 4.7 million homes in the UK. A month later, Telewest merged with Flextech, a pay-TV company, in order to develop interactive services. But the year was quite difficult for the company, because of technical problems and shortage for its set-top box.

2001 was more mitigated for the company, just as NTL it had "vast levels of debt". But in the first half of the year, Telewest had 564,000 customers for its digital service. It began a financial restructuring, and in 2002 it found an agreement with its shareholders. In July 2004, it "completed its protracted financial restructuring", and became Telewest Global. At the moment its network passes around 4.9 million homes, and it proposes its viewers a digital television service with Active Digital.

c) Technophobia : the future of the digital in question

In November 2003, a report revealed that half of the British viewers had adopted

digital television :

> Statistics compiled by the Broadcasters' audience Research Board (Barb) show that, by the start of this month, 50.4 per cent of viewers had access to Sky digital, Freeview or digital cable TV.

But those figures must be taken cautiously : they can be seen as buoyant, with 50% of the viewers having digital TV, but the question is about the other half : will they convert to digital television ?

This question must be examined first among those who already have digital TV : it does not seem that the system has been approved unanimously. For example, in November 2001, Steven Barnett, professor of Communications at the University of Westminster, explained in *The Observer* the difficulty to integrate the new system. Just like the launching of the computer and of every product from the new technology, at the beginning there is a rejection of it because of the feeling that it is "too complicated to use". Steven Barnett underlines the fact that after the purchasing of the TiVo box, the viewer must make an effort to understand the functioning of the system :

> Having established that a SCART socket was required, that the television where most household viewing is done didn't have one, and that the set-up instructions ran to several pages, I suddenly found an enormous number of household chores that simply had to be done first. Meanwhile, the unopened box sat for two months on a kitchen chair. This was not an acute case of technophobia, but something much more pernicious and widespread : technoapathy.

Though the new generations seem to be more prepared for the digital than the older ones, the vast majority of people need time to learn how to use new machines. And TiVo was not the only example : in 2003 a report showed that the majority of Freeview users only watched the five main terrestrial channels on average.

With the arrival of the digital TV, there was a growing interest for the "technophobes". A journalist from *The Guardian* defines "the UK's 613,000 technophobes (...) [as] naturally conservatives and fiercely loyal to established brands." In 2000, 25% of

adults declared they would "never intend to go digital". In January 2002, those people were categorized as the "digital refuseniks". At the launching of digital television, the companies did not pay much attention to them, because they were only a minority of the viewers. At first the companies competed to get more and more customers, and they succeeded quite well. But then, as time passed by, it became more and more difficult to attract people, and nowadays, 6 years after the beginning of digital TV, there are still people who do not want to get it. They will be the new target of the advertisements for digital TV.

Conclusion

Half of the United Kingdom has toppled over the digital television : the British government is almost succeeding in its bet of switching the population to digital between 2006 and 2010.

Indeed, the government wants to sell off the analogue signal spectrum in the country. It has become a priority and a major stake for the ministers, as Tessa Jowell, the Culture Secretary, declared in November 2003 :

> We need to convince people that switchover is good for them. Dual transmission is unfair. Switching off the analogue is the only way we can bring digital terrestrial TV to everybody. The continuing use of analogue deprives 20-25 per cent of the population of digital TV coverage, and we simply cannot improve this coverage before we turn analogue off.

The disappearance of the analogue would also be a good operation for the British government, because the television spectrum could be used for many services other than TV, like mobile communications or wireless data.

The government is determined, but will the population follow them on those arguments ? It seems that the target of 2010 is already compromised, as the broadcasters meet a few difficulties to attract more and more subscribers. 2014 would be more appropriate to them. And the government cannot simply cut off all the analogue before at least 95 per cent of the population can afford to get the digital, and have access to it.

There are still rumours in the country 2014 would be more appropriate to them. Apart from the question of the extinction of the analogue, there is also the question of the integration of the interactive services.

It seems that it will take a generation to absorb all the new services permitted by the

digital. The Web-like television is not really ready for the market, and new solutions must be found to integrate the Internet within the television. One solution could be a change in the design of the TV screen for the one of a computer, with tool bars and display menus.

Another issue of the presence of the digital is the consequences it can have on the programmes : with the new ability for the viewers to pause live shows, the advertisers will have to find new ways to attract them.

The British government's aim is not yet reached, and it will not be before a certain time, but gradually the digital will take its place as the viewers will be accustomed to it. Nowadays, Freeview covers almost 75 per cent of the British territory. The extinction of the analogue signals is already programmed :

> L'extinction progressive des signaux en analogique devrait débuter "au début de l'année 2005" et s'achever entre 2008 et 2012, lorsque la couverture du territoire aura atteint le seuil de 95%.

Before reaching that point, the British government is about to try a « mini-switchover », with an experiment coming soon : "The 300 inhabitants of two Welsh villages have agreed to be the first to receive solely digital signals in a "road test" beginning at the end of the year."

This experiment could play an important role at a time when Great-Britain is about to become the first country in the world to get only digital signals for its television network.

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The promoting site for Sky digital, with press releases, programming, but also a FAQ part giving details about digital TV.
I have employed it for Chapter 1, section b, to explain the technique of the minidish, but also in February 2004, for Chapter 3, section c, for the history of Sky Digital.

www.ntl.com, 2004, consulted in November 2003, March and August 2004
The site for the ntl Group gives information about its network, the history of the company and its offers.
I have used it for Chapter 1, section b to give figures concerning the coverage of NTL ; Chapter 2,

section d ; Chapter 3, section d for the development of the company ; the Annex, on page 69, with a chart showing the growth of the customers.

www.telewest.co.uk, 2004, consulted in December 2003, April and August 2004
The site of Telewest Broadband, it is complete, describing the cable network, the history of the company and its services, and the development of the digital.
It was useful for me to present the company, and to give information about the cable digital process, in Chapter 1, section b ; Chapter 2, section d ; Chapter 3, section d.

www.bbc.co.uk, 2004, consulted in August 2004
The site of the BBC, with the programmes of all the channels, and also an interesting section about the digital and its history.
I have used an article concerning the future of Freeview in Chapter 3, section b.

www.wi-fi.org, 2004, consulted in February 2004
The Wi-Fi Alliance site, it contains information about Wi-Fi, the way it works, the latest news, and articles from the press.

I have used it to explain the Wi-Fi technique, and included it in Chapter 1, section a.

www.dtg.org.uk, 1997-2004, consulted in October 2003, and in March 2004
The Digital TV Group Page. It is an association that was formed to set technical standards for the emplementation of the DTT in the UK. The site is very clear, with many explanations about digital television, particularly in its FAQ section : What is digital TV, how to receive it, and so on. It promotes digital TV.
I have used it in Chapter 1, section a, because their technical explanation was easy to understand.

www.msnbc.msn.com, consulted in January 2004
MSNBC News gives breaking news. Their site is constantly updated, with dispatches from different press agencies, and articles from *Newsweek*.
I have found an interesting article from *Newsweek*, dated November 24, 2003, concerning the Wi-Fi service, that I have mentioned in Chapter 1, section a.

www.guardian.co.uk, 2004, consulted from November 2003 to September 2004
The official site for *The Guardian* and *The Observer*.
There is a useful Archive Search section, accessible after a free subscription, which gives access to all Guardian and Observer articles from September 1, 1998. The Media section is quite important.
I have quoted many articles in Chapter 1, sections a and b ; Chapter 2, sections b, c and d ; Chapter 3,

sections b, c, d and e ; the Annex, pages 61 and 70.

www.silicon.com, 2004, consulted in February 2004

This site was created by British journalists, it gives news concerning the new technologies, it is constantly updated, and it has reporters all around the world.

I have found an article concerning Wi-Fi and security, which I have used to discuss that issue in Chapter 1, section a.

http://uk.biz.yaoo.com, 2004, consulted in April 2004.

The financial part in Yahoo UK breaking news site, with dispatches from press agencies, and constantly updated.

I have used it in Chapter 1, section a, relating to the digital widescreen.

www.satcure.co.uk, Webmaster Martin Pickering, last updated April 3, 2004, consulted in April 2004

SatCure supplies Sky digibox satellite receiver, Sky satellite dish accessories, and upgrades. There is a FAQ page with information about the digital satellite in Europe, how to get it, and so on.

There are interesting explanations about the satellite in England, I have used it in Chapter 1, section b.

www.etsi.org, 2004, consulted in December 2004

The site of the European Telecommunications Standards Institute contains Flash news, and in the section "On ETSI's radar" there are technical details concerning the digital.

I have made use of it for Chapter 1, section c for an explanation regarding the compression of images and sound.

www.webopedia.com, 2004, consulted in February and April 2004

Webopedia is the online Computer Dictionary for computer and Internet terms and definitions, which also gives links to other sites for further information.

I have used it in Chapter 1, section c for a description of the MPEG technique ; Chapter 2, section a for interactivity.

www.toshiba.co.jp/worldwide, 1995-2004, consulted in January 2004

The Toshiba Corporation site includes a Technologies section, with information on new technologies, not only dedicated to their products but also detailed explanation about the new techniques.

I have found details about the MPEG-2 standard of compression, which I have used in Chapter 1, section c.

Benoît, Hervé. Télévision par satellite : technique de la réception analogique et numérique. Dunod : Paris, 1998, 92. Consulted in February 2004

I have employed it in Chapter 1, section c, for the technique of the compression of the sound.

www.itvdictionary.com, 2003, consulted in April 2004

The Interactive Television Dictionary and Business Index : an online dictionary plus FAQs about the digital, the interactive, the VOD, the Pay-Per-View, etc.

I have looked at it to get information about Winky Dink, and I have used it in Chapter 2, section a, because it gave me lot of details concerning the show and its unrolling, and also in Chapter 2, sections c and d, for the definitions of Personal TV, and the Web TV.

www.tvparty.com, 2004, consulted in April 2004
The Tvparty site was the first one dedicated to the history of American television. It explores the past of the great TV shows.
There I have found articles about Winky Dink, especially the testimonies of those who had seen the programme when they were child. I have included it in Chapter 2, section a, plus a photo of the little hero that I have put in the Annex, on page 65.

www.gooddealgames.com, 2004, consulted in April 2004
A site for the addicts of the "old" videogames in the United States.
I have quoted an article about Winky Dink, in Chapter 2, section a, for the description of the atmosphere of the time, when the show was launched and had success. I have also used a photo of the presenter of the show taken from the site for the Annex, on page 65.

http://media-visions.com, last updated May 10, 2004, consulted in May 2004
A free web journal, about media in the United States and Europe. All the articles are written by Ken Freed, an American journalist.
It was very useful concerning the Qube system, because there I have found a complete history of the service, with interviews of the people who made it. I have used it in Chapter 2, section a.

www.digitaltelevision.com, 2004, consulted in May 2004
This site is produced by Entertainment Technology Group. There are files online, and articles concerning digital TV.
I have used it in Chapter 2, section b, to show the development of the Teletext and its consequences for the networks operators.

Newsweek, Guterl, Fred. " Is TV ready for a new era ?". December 2002- February 2003, Special issues 2003 Edition, 86-89.
I have used it in Chapter 2, section b, concerning the BBC's experiments with interactivity.

http://news.bbc.co.uk, 2004, consulted in May 2004
The official site for BBC News, constantly updated. It gives world news, and you can access a search section for the old articles.
I have used it to describe the interactive shows of the BBC, in Chapter 2, section b, and in Chapter 3, section b, to give figures about Freeview.

www.ditg.tv, 2004, consulted in May 2004
This is the site of the Digital Interactive Television Group the biggest interactive TV company in the United Kingdom. There are information about the firm, and the last news about its programs.
I have found information concerning the channel Avago, dedicated to the games, and it was useful to me for Chapter 2, section b.

http://news.independent.co.uk, 2004, consulted in June 2004

The site of *The Independent*, constantly updated, there are news online.
I have found an article about Channel Five and its future that I have used for Chapter 2, section b.

www.mirror.co.uk, 2004, consulted in June 2004
The site of *The Daily Mirror*, constantly updated, it gives sensational news, and there is also a Web and technology section.
I have quoted an article dealing with the TV shopping industry in the UK, in Chapter 2, section b.

http://isp.webopedia.com, 2004, consulted in June 2004
A glossary for Internet Service Providers.
I have used it to give a definition of the VoD system which seemed to me complete and clear, in Chapter 2, section c.

www.ccur.com, 2004, consulted in June 2004
The site of Concurrent Computer Corporation. It provides technology solutions to different sectors, such as the telecommunications or the aerospace markets.
I have looked at it for Chapter 2, section c, to explain the EoD system.

www.broadcastpapers.com, last updated September 2004, consulted in June 2004
The site provides business and technical White Papers free online.
I have employed it in Chapter 2, section c, to show the active role of the customer when using the VoD system.

www.albaplc.com, 2004, consulted in June 2004
The site of Alba Brand.
I have used it in Chapter 2, section d, only to explain the role of the company.

www.web-user.co.uk, 2004, consulted in June 2004
The site of *Web-User*, an Internet magazine where you can find reviews of the last products.
I have employed it for Chapter 2, section d, to show that there were critics about the Internet on TV.

www.tsri.com, 2004, consulted in March 2004
Ipriori, Inc. site, dedicated to software and Internet technologies.
I have found a picture of the Qube remote system that I have included in the Annex, on page 65.

http://teletext.mb21.co.uk, 2004, consulted in June 2004
The site of Teletext (but not the BBC Teletext), which provides information about the development of the teletext system.
I have used it in the Annex, on page 66, to illustrate the interactive services offered by the BBC to its viewers.

www.comparestoreprices.co.uk, 2004, consulted in June 2004
A complete site to compare the prices of all products in the UK including computer software.
I have used a picture of the TiVo box to put in the Annex, on page 66.

www.open-sky.it/works/fastnet.html, consulted in May 2004
The Italian branch of Open Sky.
There I have found an image describing the Open Sky technology of the Internet by the satellite that I have employed in the Annex, on page 67.

www.directv.com, 2004, consulted in July 2004
The site of DirecTV, with the programmes and the history of the company.
I have used it to explain the success of DirecTV at its launching in Chapter 3, section a.

www.kswindells.34sp.com, 2004, consulted in July 2004
A personal site where you can find the history of the DTT in the UK.
I have employed it in Chapter 3, section b, to explain the origins of ITV Digital, and also in the Annex, on page 68, with a picture of the screen the viewers could see when there was the collapse of the service.

http://en.wikipedia.org, 2004, consulted in July and August 2004
Wikipedia is a free encyclopaedia online.
There I have found articles relating to ITV Digital and NTL that I have used in Chapter 3, sections b and d.

www.itv.com, 2004, consulted in July 2004
The site of ITV, with programmes and the history of the company.
I have employed it to end the story of Granada and Carlton, in Chapter 3, section b.

www.freeview.co.uk, 2004, consulted in August 2004
The site of Freeview, with programmes but also simple questions concerning the purchase and the covering of the system.
I have employed it in Chapter 3, section b, to define the role of the three companies that gave birth to Freeview.

www.digitalspy.co.uk, 2004, consulted in September 2004
This site gives digital media news in the UK.
I have used the information I have found about the history of NTL in Chapter 3, section d.

Le Figaro économie, Derville, Claire. « Les leçons de l'échec du numérique terrestre anglais ». Samedi 25- Dimanche 26 Septembre 2004, n°18705, Cahier n°2, XII.
I have used it in my conclusion, to give the last figures concerning the extinction of the analogue signals, and I have added the whole article to the Annex, on page 73.

www.telegraph.co.uk, 2004, consulted in September 2004
The site for *The Telegraph* on line. There is a section dedicated to technology with the latest news.
I have employed it for my conclusion and I have put the whole article in the Annex, pages 71 and 72.

Annex

The offer :

►From Smith, David, "How to see a Freeview of the future". *The Observer* : Focus : Digital TV revolution. December 7, 2003, in observer.guardian.co.uk/focus/story/0,6903,1101654,00.html

What's on the telly ?

Freeview
Cost: The price of a set-top box, between £60 and £100. No subscription fees.
What you get: 30 channels, including the terrestrials, music, lifestyle and news.
Advantages: No financial contracts to sign and pay. No dish.
Disadvantages: Unlike subscription services from Sky, there is no way of adding film or sports channels.

Cable
Cost: Provider Telewest charges £10 monthly line rental and an installation fee of £50 (currently reduced to £10). Channel packages cost £3.50 - £15.50 a month.
What you get: Depends on the package. Cheapest comes with 32 channels; Supreme package has 109.
Advantages: Free e-mail and interactive services and broadband access.
Disadvantages: You have to pay more for premium channels such as Sky Movies.

Sky
Cost: £12.50 - £38 a month. Minidish and Digibox come with the packages.
What you get: £12.50 package has access to more than 100 channels and Sky digital offers in excess of 400.
Advantages: By far the largest selection of channels.
Disadvantages: Continuing cost and, to the annoyance of some, the satellite dish.

►From www.dvb.org/index.php?id=229, Digital Video Broadcasting, February 4, 2004

United Kingdom

General
Pilot trial	1996
Legislation in place	July 1996
Soft launch	September 1998
Full launch	November 1998
Analogue switch off	2006-10

Data
Population	59.2 million (UN 2003)
TV households	24.8 million (2003)
Cable penetration	3.62 million (ITC Q4-2001)
Digital TV households	2.1 million (Q4-2003)
Digital Cable households	3.6 million (2003)
Digital Satellite households	7 million (2003)

DVB-T Parameters
Multiplexes	6 (4-16QAM, 2-64QAM)
Operational bands	UHF only

Carrier type	2k
Guard	1/32
FEC	3/4 for 16QAM, 2/3 for 64QAM
Modulation	most 16QAM, 2 MUX 64QAM
Reception model	fixed, external antenna
MFN and SFN	MFN
Max. transmitter ERP	20kW
Middleware	MHEG
Channel bandwidth	8MHz

Digital Audio Compression :

►From Cavagnalo, B., Bier, J., "Introduction to Digital Audio Compression", Berkeley Design Technology, Inc., in http://3c.nii.org.tw/silicon/embedded/2003-03/IntroductionToDigitalAudioCompression.pdf, 2003
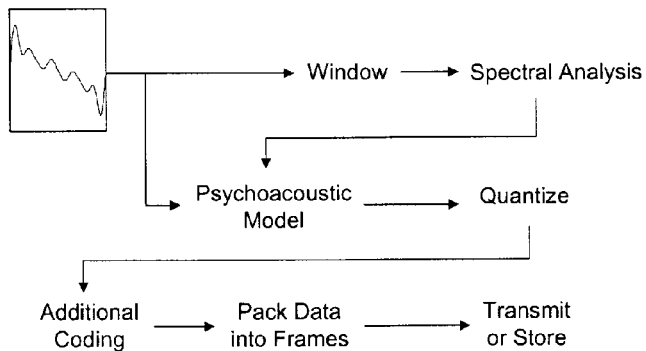
Figure 1. Generic Encoder.
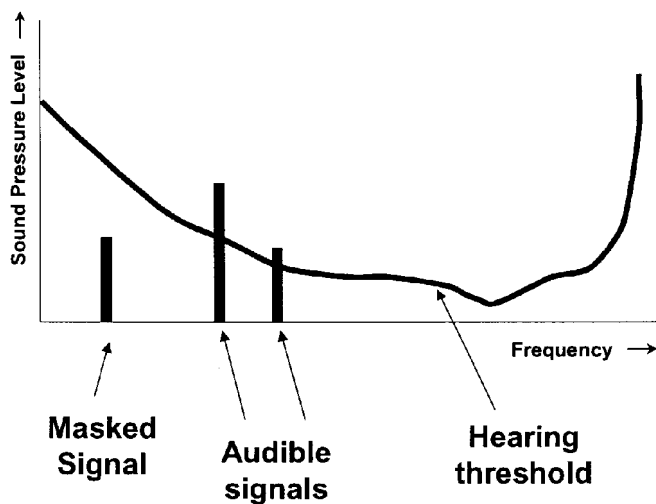
Figure 2. Hearing threshold up to about 20 kHz.
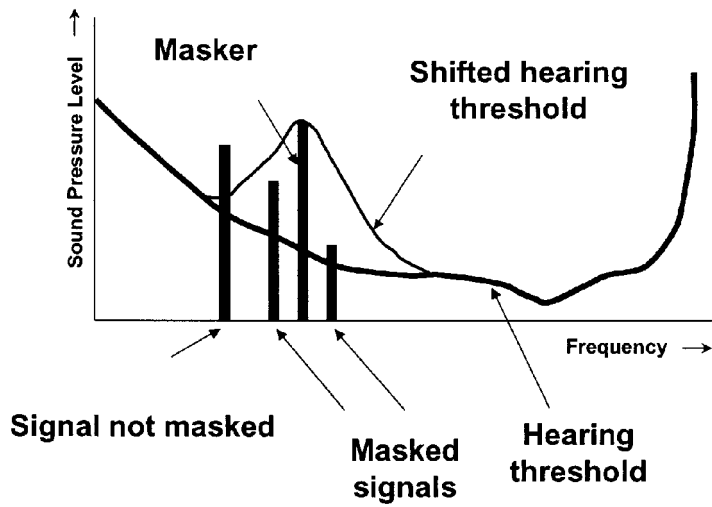
Figure 3. Frequency Masking.

After Zwicker/Fastl p. 78,
Buser/Imbert p. 47
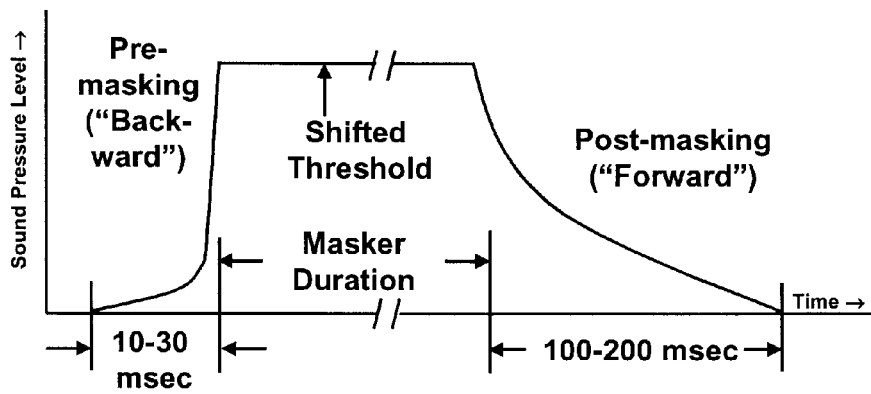
Figure 4. Temporal Masking.

The origins : the United States :

►From www.gooddealgames.com/articles/Winky_Dink.html :
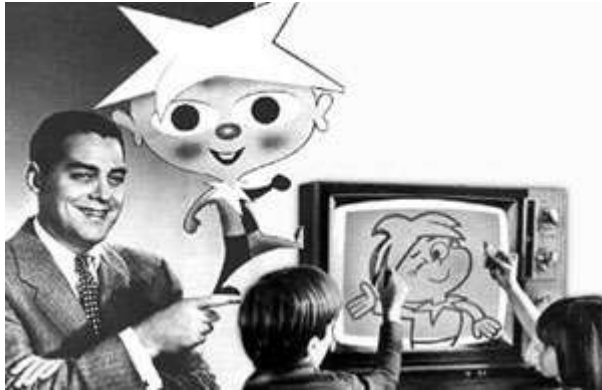
Jack Barry, presenter of the show *Winky Dink And You*, in 1955

►From www.tvparty.com/requested2.html :

The little hero of the cartoon

►From www.tsri.com/images/cable%20qube.jpg :
The Qube customer's console :

British experiments :

►From http://teletext.mb21.co.uk/gallery/extra/index.shtml :
During the BBC's covering of Wimbledon in 2001, the viewers could see this image on their screens :

Interactive services : VoD and Personal TV :

►From www.comparestoreprices.co.uk/images/th/thomson-tivo.gif :
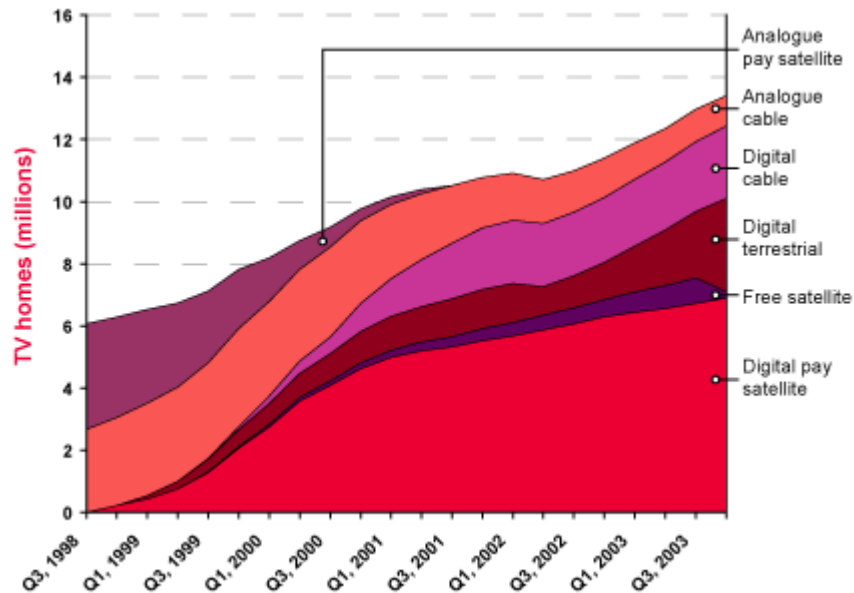
Web-like Television :

►From www.open-sky.it/works/fastnet.html :
The Open Sky technology :
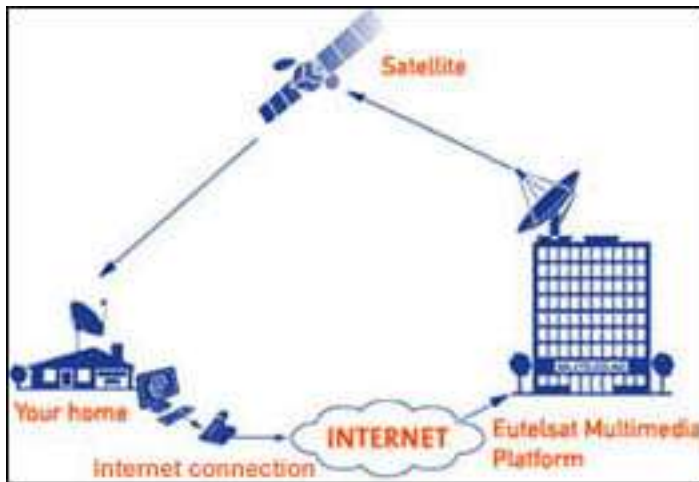
The growth of digital television :

►From www.ofcom.org.uk/research/dso_report/section3?a=87101, Office of Communication, Ofcom is the regulator for the UK communications industries.
Document printed in September 2004.

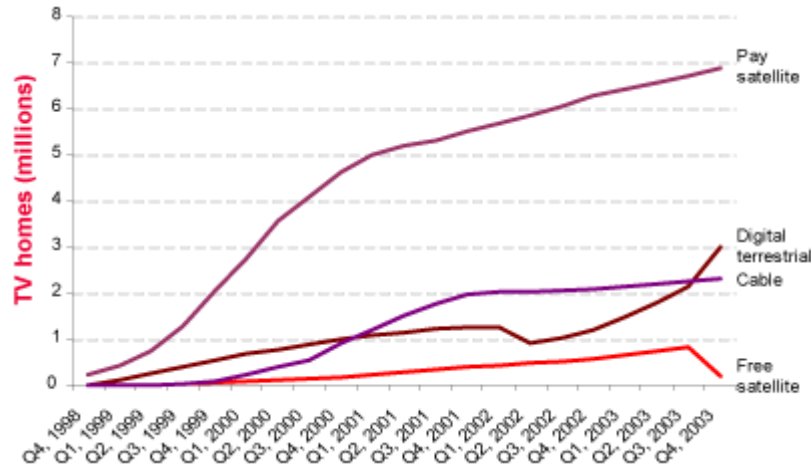The development of the multichannel TV market since October 1998

The collapse of ITV Digital :

►From www.kswindells.34sp.com/freeview/show.php/history
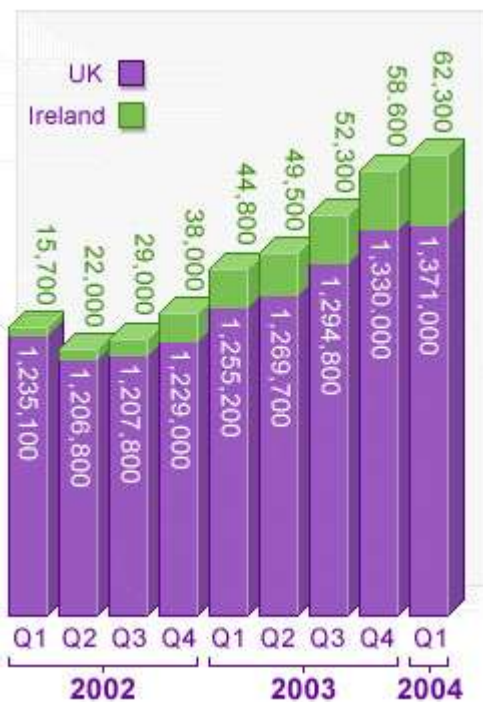
The domination of the satellite :

►From www.ofcom.org.uk/research/dso_report/section3?a=87101, Office of Communication

This diagram shows the rates of take-up of the different digital platforms since 1998

The cable : NTL

►From www.ntl.com/locales/gb/en/investors/companyinfo/images/digital-tv1.gif

This chart represents the number of customers for NTL since 2002

Technophobia :

►From Ray, Alastair. "What are you like ?". *The Guardian*, June 4, 2001, in
http://media.guardian.co.uk/mediaguardian/story/0,,500800,00.html

Technophobe

They may only be a small proportion of the population, but technophobes can be found in every social stratum and age group. The UK's 613,000 technophobes are naturally conservative and fiercely loyal to established brands. They openly dismiss new developments and have yet to get to grips with Teletext, let alone the internet.

How does this affect their viewing ?

Television has to be traditional and, most importantly, terrestrial to appeal. ITV and the BBC are always the preferred channels. Forty per cent of them think that ITV is better than it was last year.

So what are they watching ?

Favourites include drama, where Taggart, Casualty and London's Burning are winners, while Corrie and EastEnders top the soap charts. Other popular viewing includes lifestyle and pet shows, such as Ground Force, Animal Hospital and Pet Rescue.

Have any of them signed up for multichannel TV ?

Although 15% of technophobes have access to cable, satellite or digital TV, only 1% will watch anything other than sport.

What's their regular read ?

The weekend editions of the national newspapers, especially the red tops and the Mail and Express, are must-haves for this group. Female technophobes also read supermarket mags.

Any other features of note ?

This group are also heavy consumers of local media, with two-thirds picking up regional newspapers and the same proportion tuning in to the local radio station. Technophobes are also big bus users.

What are the key verbal giveaways ?

Typical comments are: "I used to go abroad for my holiday but these days I prefer a quiet week in the country. It's far less trouble and 10 times as relaxing", and "Apparently, my cooker is more intelligent than me. So why won't it tell me how to work it?"

The coming years :

►From Leonard, Tom Leonard, Tom. « Digital TV revolution could begin in three years, says Ofcom ». *The Telegraph*, September 22, 2004, in
http://www.telegraph.co.uk/connected/main.jhtml;sessionid=URO0FWXXUY5ZPQFIQMGSM5WAVC BQWJVC?view=DETAILS&grid=&targetRule=10&xml=/connected/2004/09/22/ecrdigi15.xml&secure Refresh=true&_requestid=80198

Digital TV revolution could begin in three years, says Ofcom

The switchover from analogue to digital television could start in just three years' time, the media watchdog Ofcom said yesterday.

The regulator, which is responsible for all commercial television, said it was technically possible to introduce digital-only areas around the country as early as 2007.

Ofcom, which was publishing its suggested timetable for the transition, said that terrestrial broadcasters must switch off their analogue signal by the end of 2012.

Both the BBC and Tessa Jowell, the Culture Secretary, have already indicated that 2012 was more

feasible for analogue switch-off than the Government's initial target of between 2006 and 2010 .

ITV, Channel 4 and Five are to be given new digital licences at the end of the year. Ofcom said they would have to comply with Dec 31, 2012 as a "backstop date", by which time they should have switched off their analogue services.

Ofcom's recommended timetable - which echoes comments by Ms Jowell in July - is likely to fuel the already controversial issue of switchover.

About half the country now has multi-channel digital television through either satellite, cable or Freeview connections. However, there is growing evidence that demand for digital television has reached a peak, leaving the Government to take the politically sensitive decision of whether or not to intervene to push the "revolution" through.

It is keen - primarily for financial reasons - for Britain to become the world's first country to have a digital-only television network. Nonetheless, it has been reluctant so far to contemplate using taxpayers' money to subsidise the switch.

Television chiefs have warned that converting second television sets within homes to digital will be an enormous challenge, as will converting video recorders to allow viewers to watch one digital channel while recording another.

The industry hopes the Government will help the elderly and those on low incomes to buy digital television receivers. Meanwhile, a hard core of "refuseniks" - estimated to be about 13 per cent of households - say they will not take digital television.

Half of those have said they will never switch, even if they are left with a blank screen when the analogue signal is cut.

Government research published earlier this year revealed widespread scepticism among viewers about the quality of programming.

The study warned of "latent opposition" to government plans to switch off the analogue signal and that opposition could harden if the switchover was pushed through without viewers' concerns being addressed.

The 300 inhabitants of two Welsh villages have agreed to be the first to receive solely digital signals in a "road test" beginning at the end of the year.

Ofcom has asked for responses to its proposals by Oct 25.

►From *Le Figaro économie*, Derville, Claire. « Les leçons de l'échec du numérique terrestre anglais ». Samedi 25- Dimanche 26 Septembre 2004, n°18705, Cahier n°2, XII.

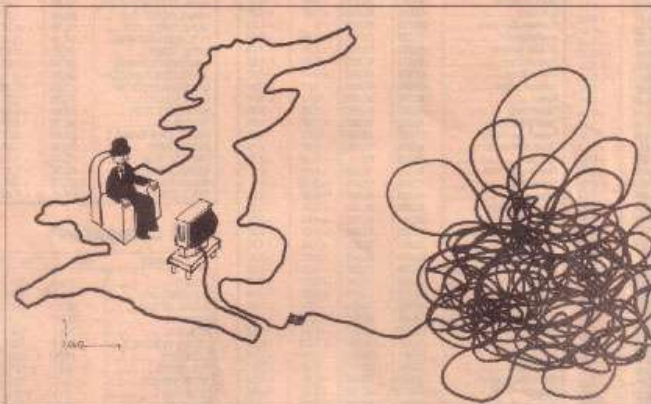# Les leçons de l'échec du numérique terrestre anglais

Claire Derville

Le fiasco. La réussite. En matière de TNT, la Grande-Bretagne a tout connu. C'est pourquoi Renaud Donnedieu de Vabres, le ministre de la Culture et de la Communication, était à Londres jeudi en compagnie de Dominique Baudis, président du CSA, pour s'enquérir auprès de son homologue britannique de l'état du déploiement de la TNT en Grande-Bretagne. « *Nous sommes venus pour un partage d'expérience* », a déclaré Renaud Donnedieu de Vabres. La Grande-Bretagne fait figure de pionnier dans le domaine du numérique terrestre.

Ce mode de diffusion des programmes télévisés y existe en effet depuis novembre 1998, date à laquelle les groupes privés Carlton et Granada lancent un bouquet payant. Baptisé ONDigital, puis ITV Digital, le service connaît des débuts prometteurs, grâce à sa politique de décodeur gratuit. Mais, très vite, ITV Digital se heurte à la concurrence de BSkyB, le très agressif bouquet satellitaire du groupe News Corp.

Ruiné par des droits sportifs exorbitants, rongé par de gros problèmes de réception, ITV meurt en avril 2002, laissant une ardoise de 1,3 milliard de livres à ses actionnaires. Un désastre !

Deux mois plus tard, un autre bouquet, Freeview, fait surface. Cette fois-ci, comme l'indique son nom, il est gratuit. Autre avantage : son actionnaire, un consortium formé de la BBC, de BSkyB et de l'équipementier Crown Castle International, a les reins solides et l'appui total du gouvernement.

Avec 30 chaînes de télévision et 20 fréquences de radio, Freeview couvre aujourd'hui près de 75 % du territoire, soit 14 millions de foyers. Plus de 4 millions d'entre eux se sont équipés du décodeur, et la croissance du bouquet va bon train.

Le modèle de Freeview semble donc tenir la route. En revanche, Top Up TV, l'offre payante du bouquet, lancée il y a quelques mois, a mal démarré. Seuls 50 000 souscripteurs se sont laissés tenter, là où ses actionnaires en attendaient au moins 80 000.

Forte du chemin parcouru, la Grande-Bretagne prépare dès maintenant, à grand renfort d'études de marché, enquêtes de terrain et autres projets pilotes, la mise en œuvre du « schwitchover », c'est-à-dire la phase pendant laquelle les émissions de télévision en numérique remplaceront progressivement les émissions en analogique.

L'extinction progressive des signaux en analogique devrait débuter « *au début de l'année 2005* » et s'achever entre 2008 et 2012, lorsque la couverture du territoire aura atteint le seuil de 95 %. Mais, d'ici là, « *il reste de nombreuses étapes à franchir* », affirme Catherine Smadja, directeur du projet numérique au ministère de la Culture, qui indique que « *couvrir les 5 % de population restante coûtera probablement aussi cher que les premiers 90 %* ». Autrement dit, ce n'est pas tout de lancer la TNT. Encore faut-il la développer. Le chantier est énorme.

« *Je réalise l'ampleur du travail qui nous reste à faire* », a déclaré Renaud Donnedieu de Vabres dans le train qui le ramenait de Londres.

La France en est au tout début du processus de conversion. Processus qui s'avère long et complexe. Le coup d'envoi de la TNT est fixé au mois de mars 2005 pour le bouquet gratuit et à septembre 2005 pour l'offre payante. Dès mars 2005, 35 % de la population devrait être couverte. Taux qui devrait passer à 50 % en septembre 2005, à 65 % en mars 2006, puis à 80 % en 2007.

Les objectifs sont donc fixés. Les moyens d'y parvenir, en revanche, restent à définir. C'est pourquoi la France est partie chercher en Angleterre l'occasion de « *dégager l'horizon des incertitudes techniques pour pouvoir lancer positivement cette offre télévisuelle nouvelle auprès de nos concitoyens* ».

Outre que le projet coûte cher, l'Angleterre a prouvé que le numérique terrestre réussit quand il est gratuit et échoue quand il est payant.