Digital Communication Policies

in the Information Society Promotion Stage

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Contents

Introduction: A comprehensive digital communication

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This book analyses several aspects of media convergence particularly related with the digitization of the transmission channels which give the world a binary nature. This technical specification of the information society abolishes the frontiers between the old mass media and the new computer systems which mainly operate within a peer-to-peer logic resulting in sociological changes that are still nebulous but nevertheless significantly impacting on the formation of communication contexts, on the debates about policy and regulation, and consequently, on the notion of citizenship in a globalized world. The new international configuration provided by the adoption at a planetary scale of the mathematical language of two digits has put an end to the Babel Tower and positioned the globalized local, national and supra-national communities in constant interaction (even if not necessarily in dialogue). New networks have created high and glowing expectations regarding quick and trans-boundary communication flows.

The present-day technological landscape and the intensity of its pro-active imposition (perceived as inevitable and urgent) have transformed digital telecommunications' politics into government priorities. Therefore, there was a public comeback on media questions, which is, according to Gómez-Barroso and Feijóo (2010), the third phase of the relationship between states and companies. According to these authors, the first phase refers to the period between the end of World War II and the seventies, when telecommunications were subjects related to national sovereignty questions and, practically in all of Europe, services were provided by public companies, the "national champions" within the framework of the communication sectors' natural monopolies. The second phase is marked by changes in the global

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scenery, which include economical and political questions influenced by alterations in the world-wide politics of oil production, provoking successive rises on the price per barrel, which consequently brought the weakening of national states and the strengthening of important industrial players that, in the need of gearing up their behaviour towards the crisis, started fighting state interferences in their strategies. From the businessmen point of view, it was necessary to reduce the welfare state and to diminish the cost of workers for the companies by cutting benefits, that is, it was necessary to substitute the current Keynesian model of economy by a neoliberal model, one that would give a bigger autonomy to private initiative.

Such policy was largely implemented throughout the western world. It was spread out the idea that the state was inefficient, excessively bureaucratic and that the market could offer better quality services at lower prices. In this new scenario, telecommunications started to be seen as an essentially private matter. The public power had the limited function of intermediation, but no longer could it extensively intervene. Such idea is still prevalent but since the first decade of the XXI century, the need for a digital inclusion has brought the public power back to the centre of decisions on telecommunications investments.

In this third phase on public-private relationships, the public power returns to the sector's decisive centre and does enormous investments on the construction of electronic communication networks. The telecommunications and new generation networks infrastructures - which include broadband spectrum Internet – have been considered by governments as strategic areas of development.

Among the main reasons for the return of public investment to the telecommunications sector are the equity and the need to stimulate an industrial policy in the area. Regarding equity, public involvement is justified by the necessity to promote digital inclusion in order to balance the participation of people and also regions on the economic, political and social life which is built from a new world in bits. Referring to the industrial policies, the public sector has intervened to provide competitive advantages for domestic actors. Therefore, it becomes a state function to make available infrastructures for digital data transmission that are to be used in consumption as well as in production.

Television is still in the front-row role of the new world of telecommunications. But differently from what was taking place up to the beginning of the '90s, when TV channels and content were high in the agenda, now terrestrial TV is accounted for a system which uses a precious space, the radio spectrum, which serves as a platform for digital data transmission, and therefore it must be better used in order to allow the entry of new electronic services of communication. Hence the urgent necessity of converting analogical television into digital, since television signals occupy fewer frequencies because of their binary status.

Previously, when the spectrum was only serving for the diffusion of electric signals, the world of computer science was something apart from the television world.There was an industry which occupied itself with computer production and its by-products, and another one which was moving itself around the production of electronic equipment which was intended for the market provided by television. While North Americans stood out in computer science, leadership in the television equipment industry belonged to Japan. Hence the Japanese were pioneers in developing a specific high definition television standard, betting that image improvement was the right path for the television of the future. The Japanese pattern for HDTV, called Hi-Vision, was based on analogue transmissions and it was somewhat revolutionary. Bearing in hands something which was groundbreaking, the country hurried to seek the support of great groups in order to propose that its technology would be turned into the worldwide television pattern. But both Europe and the United States, because of market logic issues, refused the offer and started to work with their own technologies.

In the '90s, the United States became responsible for 40 % of the consumption of information technologies in the planet, leading the market of computer production companies, telecommunication equipments and software. It was when the country glimpsed that the future of TV would not go solely through image improvement, but also through the convergence between the most diverse means, and this would only be possible if television was binary like computers.

Before digital TV's configuration, Japan sees its technology become obsolete even prior to its full development. Nowadays television signals cease to be transmitted through electric waves and start to be carried as bits. That allows a better use of the

radio spectrum and frequencies are freed in order to be used in new electronic communication services, such as the high speed spectrum Internet.

Since telecommunications convergence is a result of the split between the world of computer science and broadcasting, we have decided to divide this book in two parts. The first one addresses the implementation of television digital systems in some European countries that are facing singular predicaments within the conversion process. According to Iosifidis (2011), these situations are mainly caused by the fact that the European Union has recommended state members the analogical switch-off in 2012, creating great distortions in domestic markets demonstrating to be incompetent to properly govern the play of interests which such change involve. Among the countries that have been presenting problems, we can quote Poland, whose proper history even suggests social difficulties in promoting political understanding of the issue. We can also mention small Western European countries like Greece, Ireland and Portugal, which do not constitute cases of success in terms of migration.

So, the first five chapters are dedicated to the presentation of singular cases of the European digital terrestrial TV, in order to clarify how the implementation of digital transmissions are taking place. We are going to present details on the TDT implementation process in Poland, Greece, Portugal, Ireland and Italy.

The Polish case is described by Adam Kupiec who gives us a general view of the country's politics for the analogical switch-off, demonstrates which are the main interveners and evaluates government actions, pondering on the delays that the country is facing regarding other European countries.

Regarding Greece, Stylianos Papathanassopoulos and Konstantinos Papavasilopoulos analyse the reflexes of the country's internal politics which resulted in a slanting digital TV process of implementation, which was aggravated by the economical crisis that has knocked down the country since 2009. The authors demonstrate that the government has left the construction of the digital TV model in the hands of the market.

The Portuguese case is analysed by Célia Quico, Manuel José Damásio, Iolanda Veríssimo and Sara Henriques who illustrate the results of a qualitative and quantitative project on digital television that was carried out in 2011. This study

highlights the logic of the stakeholders which were involved in the system's implementation process and also the viewers' perceptions.

On Ireland, which only began to implement its digital terrestrial television system in 2011, Kenneth Murphy explains why the country is one of the furthest behind in all Europe in what concerns migration, narrates the process' round trip, reflects on the way the economical crisis has affected the plans for the end of analogical television transmissions.

The Italian scenario is approached by Emiliano Treré and Valentina Bazzarin who talk about the country's reality focusing on a Web TV perspective. They demonstrate how Web channels have become an alternative to the duopoly market in Italy, which is dominated by the public operator RAI and by the private group Mediaset owned by Silvio Berlusconi. Such characteristic turns Italy into a singular case. The chapter reflects on questions of regulation and deeply leans over the emergent market of Italian channels in the Web.

The second part of the book addresses digital communication in other spheres rather than television. It is pointed out the convergence that has been taking place in cinema, radio and education. Cinema is reported by Gabriel Menotti, within a peer-to-peer movie distribution logic, which brings up the piracy subject. Menotti supports the notion that cinematographic experience is made rich from the digitization and diffusion of movies, wrapped in the concepts of multimedia and transmedia.
In the chapter about radio, Fábio Ribeiro analyses the way Internet has been modifying the radio environment. Starting from a case study, where he observes the participation of listeners in two Portuguese broadcasting stations, the researcher reflects on the possibilities that being online can provide to radio, in terms of interactivity between the environment and the public. He emphasizes nevertheless that, that although the Internet allows new participation windows, it still does not exist a clear model of Web radio financing.

Digital education analysis is done from a study which was carried out in Brazil, where, up until the communications digitization, analogical TV was one of the most important means used by the country's pedagogic politics, as a way of complementing teaching in the classroom. Ivaldir Júnior, Marcelo Mendonça, Bento Silva, Cleyton Rodrigues, Flávio Dias and Ryan Azevedo, analyse the viability of distance teaching on

the basis of digital interactive ways. They present data on a project which they have carried out to evaluate the efficiency of distance education means on T-learning platforms (transformative learning), supported on digital platforms, especially television.

References

Denicoli, S; **Sousa**, H (2012). *The implementation of DTT in Portugal: a case of public-private interplay.* International Journal of Digital Television, Vol. 3, n°1, 39-52.

Cave, M.; **Martin**, I. (2010). *Motives and means for public investment in nationalwide next generation networks.* Telecommunications Policy, 34 (9), 505-512.

Gómez-Barroso, J. L.; **Feijóo**, C (2010). *A conceptual framework for public-private interplay in the telecommunications sector.* Telecommunication Policy, 34, 487-495.

Iosifidis, P (2011). *Growing pains? The transition to digital television in Europe.* In European Journal of Communication, (26)1, P. 3-17. Sage, London.

An overview of digital television in Poland[3]

Adam Kupiec[4]

1. Introduction of the paper: an outline of the situation in Poland

The main aim of this paper is to present the development of digital television in Poland. As a member of the European Union, Poland is obliged to prepare for the switchover that will include replacing the old, analogue television signal with the digital standard. In order to make the paper complete, it was necessary to write not only about the current situation of DVB in Poland, but also mention the characteristics of this country, current analogue and digital television offer, history of the DVB trial projects and first stages of the switchover process, the biggest players on the Polish DVB market and TV providers, along with the activity of the government and the attitude of Polish society towards the implementation of the new television standard in Poland.

1.1.   Background information about Poland

Poland is a country situated in Central Europe. It has 38,1 million inhabitants and a total area of 312,679 square kilometres, which makes it both the sixth largest and most populous country in the European Union. Poland is divided into provinces (Polish: *województwa*) which are based on the country's historic regions. They are subdivided into counties and these are further divided into communes. Poland currently has 16 provinces, 379 counties and 2,478 communes (Kupiec, 2008).

The demographic structure of Poland is very homogeneous. More than 96% of the population consider themselves Polish while only 3% declare another or no

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nationality whatsoever (Kupiec, 2008). The currency in Poland is the Polish Zloty (PLN; the currency exchange rate of PLN against Euro on November 29th was 4,53 : 1).

1.2. Television in Poland: TV channels

1.2.1. Public broadcasting companies.

There is only one national public broadcasting company in Poland, Telewizja Polska SA, which has two nationwide channels, TVP1 and TVP2. It also owns many niche channels like TVP Historia, TVP Polonia, TVP Sport and TVP Kultura, TVP Seriale, TVP HD and 16 regional branches – TVP INFO. TVP1 and TVP2 are accessible for more than 99% of the inhabitants and TVP INFO for 95,2% (Nielsen Audience Measurement). Audience measurement conducted in 2011 shows that main public channels (TVP1 and TVP2) are threatened by the growing popularity of niche channels. Their share has been decreasing for many months as the former TVP viewers seem to have found niche channels' offer more attractive. What is important, the share of TVP niche channels is growing very dynamically. This situation may attest both to the evolution of Polish TV viewers who are aware of the changing trends and new possibilities offered by thematic channels and to easier access to other channels caused by the digitization process.

1.2.2. Licensed television

In Poland there are also some private broadcasting companies with their own TV channels offer – Telewizja Polsat, TVN, TV4, Telewizja PULS, Cyfra Plus, Polsat Cyfrowy and n.

Before the beginning of the switchover process in 2010, POLSAT was technically accessible for 94,8% of residents, TVN – 89,5%, TV4 – 76,4% and PULS - 74% (Nielsen Audience Measurement).

The mentioned channels were, however, accessible for owners of satellite digital platforms – Cyfra Plus, POLSAT CYFROWY and n. Owners of cable television (both analogue and digital) had access to these channels as well.

The statistics refer to the period before September 2010 and have changed since the beginning of digitization process. As MUX2 includes all the mentioned channels – they are technically accessible for 87% of Polish population (EmiTel, 2011).

1.3. Television in Poland: statistics

In 2010, 96,6% of Polish households were equipped with a TV set (Millward Brown SMG/KRC TGI, 2011). 33,2% of them already had at least one flat screen in the household (10,6% more than in 2009) (GUS, 2011). 31% of Poles still watch analogue terrestrial television. 35% own a cable television and 33,1% have a satellite dish and only 4,2% use DVB-T. 70% of Poles have access to digital or cable television (CBM INDICATOR, PBS DGA, 2011). And, what is important, the number of Polish households with two or more TV sets is growing very dynamically. 38% of Polish households have at least two TV sets (TGI MillwarbBrown SMG/KRC, 2011). Poles seem to need access to a TV set not only in the living room, but also in the bedroom or the kitchen, and the growing income makes it possible.

The average monthly payment for using TV in Poland amounts to 45 PLN. As far as only the owners of cable television, digital and satellite users are considered, the average monthly payment is higher (CBM INDICATOR, PBS DGA, 2011).
72,1% of the inhabitants are satisfied with the services of their TV providers (CBM INDICATOR, PBS DGA, 2011).

The average viewing time in Poland in 2010 was 245 (240 in 2009) minutes a day (Nielsen Audience Measurement). However, the share of main channels viewing in this estimate has been decreasing steadily for the last few years. This situation is caused both by the growing number of profiled niche channels that are accessible for the Polish TV viewers, and the commercial TV providers whose offer includes a growing number of the mentioned niche channels.

2. DVB introduction

2.1. Current situation in Poland

After joining the European Union in 2004, Poland has committed itself to implement the DVB-T. However, the process of putting it into practice turned out not

to be that simple. There have been many delays that caused further problems with replacing the test stage with the definite switchover process. According to the final plan of the Department of the Infrastructure, the process began on September 29th, 2010.

At this moment in Poland, we are dealing not only with the DVB-S and DVB-C standard, offered by the commercial broadcasters, but also with DVB-T, which is no longer in testing stage, and with IPTV. The channels issued by satellite reach the inhabitants via individual satellite decoders and analogue or digital cable networks. However, more than 90% of the Polish digital subscribers use the signal broadcasted via satellite or cable (CBM INDICATOR, PBS DGA, 2011).

The choice of the DVB-S and DVB-C standard by commercial broadcasters was motivated by many factors. First of all, by its operating costs, which are much lower in comparison with the terrestrial broadcasting stations, and also the low price of purchasing licenses. The choice of this form of broadcasting was also influenced by easy access to satellite channels and their favorable capacity.

IPTV is also offered in Poland, but – so far – it is not as popular as DVB-S and DVB-C.

Even though there are so many ways of receiving digital signal, more than 30% of Polish population still watches analogue terrestrial television (CBM INDICATOR, PBS DGA, 2011).

2.2. Digital conversion in Poland

The development of digital television in Poland was initiated in 1998 by broadcasters issuing Polish channels from abroad, via satellite. Also the Polish broadcasters started digital broadcast of their channels via satellite. Most of these channels were widespread by terrestrial analogue networks, but some of them were created for the digital platforms.

The digital conversion in Poland already took place before the year 2010, amongst the subscribers of the commercial satellite digital platforms and a few thousand households that had purchased set-top-boxes to receive the terrestrial digital signals activated by TVP SA in Sucha Góra, by TP Emitel in Warsaw and Wrocław

and by INFO-TV-FM in Leżajsk Giedlarowa. A few thousand inhabitants also have access to Leszno TV – a regional digital television station in Wielkopolskie Province. However, as the DVB-T will be implemented in MPEG-4/AVC/H.264 standard, the above households will be forced to purchase new set-top-boxes in the future.

2.3. Test trials of DVB-T in Poland

Terrestrial digital television in Poland was first introduced in 2001 during the Telestrada, the travelling exhibition arranged by an organizing unit of Telekomunikacja Polska SA. Since 2002, this unit has been known as TP EmiTel.

TP EmiTel activated the first digital multiplex and the first terrestrial DVB station in Warsaw on November 9th, 2001. The multiplex included 4 TV channels – TVP1, TVP2, Polsat and TVN – , the most popular channels in Poland. This station's work had been subject of many tests, conducted by the Research and Development Centre of TP SA. The tests involved the range measurement of various modulation modes.

In March 2003, EmiTel began test trials in Lodz (which were finished in March 2004) and by June 2003, in Wroclaw. The multiplex signal was also created in Warsaw.

Another trial project took place in the first half of the year 2004, in Podkarpackie Province. The signal of the new transmitter covered almost the whole area of that province.

Since the beginning of the year 2005, DVB-T tests have only been conducted in cooperation with TVP SA and Polskie Radio SA, as Polsat and TVN gave up on their joint/common tests.

In October 2005, in cooperation with Polskie Radio SA, the DVB-T multiplex was provided with three nationwide radio channels. At the same time, the transmitter in Wroclaw was provided with a TV regional channel, TVP3 and radio channel, Radio RAM.

Another three test trials took place in May 2007. EmiTel activated an experimental broadcast in MPEG-4 standard in RTCN Poznan/Srem. At the same time POT (Polish TV Operator – a company belonging to both Polsat and TVN) started the DVB-T tests in RTCN Poznan/Srem and in Warsaw/PKiN.

On February 7th, 2008, another experimental DVB-T broadcast in Krakow/Krzemionki was activated, and on April 8th another broadcast from the transmitters located in RTCN Zielona Gora/Jemiolow was activated (EmiTel, 2008).

In October 2011, EmiTel activated another experimental broadcast from the transmitters located in RTCN Kraków/Chorągwica and in RTCN Katowice/Kosztowy (EmiTel, 2011).

2.4 Beginning of the digital switchover

According to the final plan of the Department of Infrastructure, the switchover process should have begun in September 2009. However, due to some formal circumstances, it was not possible, and digital broadcasting only began one year later, in September 2010 (EmiTel, 2011).

The plan assumes creating three basic multiplexes that will cover the whole country with digital signal. The first two of them should be available until the end of the year 2013 and the third one in April 2014. Each of them is supposed to contain (more or less) seven Standard Definition channels. Other multiplexes will be probably destined for mobile television and the Internet.

At first, the plan assumed three stages of launching DVB-T and six for the analogue switch-off.

The first multiplex (MUX1) was supposed to contain channels available free to air via analogue signal (TVP1, TVP2, TVP Info, Polsat, TVN, TV4, TV PULS).
The plan also assumed that channels in the second multiplex (MUX2) should be chosen by tender (EmiTel, 2011).

The third and last multiplex (MUX3) was supposed to be comprised of TVP channels only.

At the beginning of 2010, a new plan on introducing DVB-T in Poland was presented. It changed the previous assignment of the multiplexes. And in June 2010, another change in the assignment was made. The current plan that is being put into practice assumes the following channel split:

- MUX1: will consist of seven Standard Definition channels (three TVP channels: TVP1, TVP2 and TVP Info) and four channels chosen by tender. On April 26th

2011, KRRiTV decided that these would be Kino Polska Nostalgia, Eska TV, ATM Rozrywka TV and U-TV. The first stage of launching MUX1 is planned for December 14th, 2011. On that day the signal of the first multiplex will cover about 15% of the country. The second stage is supposed to take place until the end of May 2012. After that date, 92% of Poles should be able to watch channels contained by MUX1 via DVB-T. The process should end in September 2012, when by that time the digital signal will be available for 95% of Polish population (EmiTel, 2011).

- MUX2: in case of the second multiplex, the plan assumes six implementation stages. MUX2 will contain eight Standard Definition channels (Polsat, TVN, TV4, TV PULS, TVN7, PULS2 which is supposed to be replaced by PULS Kids, TV6 and Polsat Sport News). MUX2 was the first officially launched digital multiplex in Poland. The broadcasting was started on September 29th, 2010, and covered about 15% of the country. Ten months later, in July 2011, MUX2 achieved a nationwide range, covering about 87% of the country. The final sixth stage is planned for December 2013. Until the end of that year, 95% of Poles should have access to the channels contained in MUX2 via DVB-T (EmiTel, 2011).

- MUX3: the third digital multiplex will consist of Public Television (TVP) channels: TVP1 (until MUX1 signal covers the whole country), TVP2 HD (launching in June 2012), TVP Info (just like in case of TVP1 and TVP2 HD, when MUX1 is nationwide accessible these three channels will be transferred to the first multiplex), TVP Kultura and TVP Historia. The plan assumes four stages of launching MUX3. The first one started on October 27th, 2010. A year later, after the third stage, MUX3 turned accessible for 48% of Polish population. The final stage is planned for April 2014 (EmiTel, 2011).

After some formal complications between 2009 and 2010, the final plan of launching DVB-T in Poland was finally introduced and put into practice. Considering its pace and the fact that it is following the outlined schedule, it seems to be very realistic that no other complications will appear in the nearest future.

3. DVB status overview

3.1 DVB offer

There are many ways to receive digital TV signal in Poland. The technologies currently available in the country are DVB-T, DVB-S, DVB-C and IPTV.

Currently, the most widespread system of digital broadcasting in Poland is DVB-S, which is the most popular amongst digital television subscribers (CBM INDICATOR, PBS DGA, 2011). The number of Poles who receive digital TV signal via cable is growing. However, most of them are subscribers who simply replace analogue cable TV with DVB-C and do not change the provider. The number of IPTV subscribers is also growing, but, so far, IPTV is no competition for DVB-S and DVB-C commercial providers.

The table below summarizes the services of the three top DVB providers in Poland: Cyfra Plus, Cyfrowy Polsat and n. All of them use the DVB-S standard. Cable providers have also recently introduced their digital offer (DVB-C). However, the number of their subscribers is, so far, too low to be considered serious competitors for the major three DVB-S providers which are described below:

Cyfra Plus	Cyfrowy Polsat	N
HD set-topbox available since December 2006 **Channels:** - Digital channel offer (all analogue available channels) - Thematic channels - Movie channels (Canal+, Cinemax) - Football - Some channels in HD standard (31 in total)	**HD set-topbox available since October 2007** **Channels:** - Digital channel offer (all analogue available channels) - Thematic channels - Some channels in HD standard (23 in total)	**HD set-topbox available since October 2006** **Channels:** - Digital channel offer (almost all analogue available channels) - Thematic channels - Movie channels - HD channels (34 in total) - nRadio -nPortal (additional internet services on the TV screen)

Electronic Program Guide (EPG) On-demand offer: - Video on demand **Personal video recorder (PVR)**	Electronic Program Guide (EPG) On-demand offer: - Video on demand **Personal video recorder (PVR)**	Electronic Program Guide (EPG) On-demand offer: - Video on demand **Personal video recorder (PVR)** - Recording (nbox HDTV recorder) - possibility of USB recording

Source: www.n.pl, www.cyfrowypolsat.pl, www.cyfraplus.pl

3.1.1 High Definition channels in Poland

At the moment, there are 58 High Definition channels in Poland. Even though their number is still growing, it is pretty low in comparison with High Definition Channels available in other European Union countries.

The greatest number of High Definition channels is available in n, Neostrada TP (TP SA) and Cyfra+ offers. However, despite the fact that all of these providers use DVB-S, the number of High Definition channels available in the offers of all DVB-C providers is higher than in case of DVB-S (Szewczyk, 2010).

3.2 DVB subscriptions

First of all, it is necessary to distinguish two groups that are able to receive digital signal in Poland. The first one consists of people who are able to receive a free DVB-T signal in the areas already covered by the digital terrestrial signal. The other group consists of subscribers of the commercial DVB providers who decided to receive the digital signal before starting the digitization of TV signal in Poland. They prefer to pay higher fee and have access to channel offer of DVB-S or DVB-C providers that is richer than in case of the traditional terrestrial television.

3.2.1 DVB-T

It is hard to estimate the number of Poles who watch television relying only on the free-to-air digital signal. At the end of 2010, only 4,2% of Polish households declared using the DVB-T standard, as more than 30% were still using analogue terrestrial television (CBM Indicator, PBS DGA, 2011). This has definitely changed during the last year as the range of two digital multiplexes (MUX2 and MUX3) is now much broader than in 2010. Some of them declare using DVB-T as an alternative for the primary DVB-C or DVB-S TV-set. Even though the analogue switch-off is planned for July 2013, there are still many households in Poland that will have to choose an alternative way to receive the TV signal.

3.2.2 DVB-S

The past year was a great success for the satellite providers in Poland. The number of customers of three of the biggest commercial DVB-S providers has risen by about 0,33 million in comparison with the year 2009 (Lemańska, 2011).

The total number of subscribers of the three major DVB-S providers is about 5,8 million. If we also take TP SA into consideration, the number will grow up to 6,2 million. The biggest player in this share of the market is Cyfrowy Polsat, with 3,43 million subscribers. They are followed by Cyfra Plus and n. In 2011, the number of Cyfra Plus customers reached 1,55 million and the youngest player among the Top DVB-S Three – n – had 0,8 million subscribers (rp.pl, 2011). The fourth force in the DVB-S market is TP SA, the major provider of telecommunication services in Poland. In case of television signal, it focuses both on IPTV and DVB-S. In 2011, on TP SA the number of DVB-S subscribers reached 0,4 million. What is worth mentioning is that TP SA started to cooperate with n. As a result, its subscribers have access to n channels and n can also include Internet in its digital offer (Lemańska, 2011).

The offer of DVB-S providers is very impressive in comparison with the options of standard television. Services as EPG, VoD, PVR and a very high number of High Definition and thematic channels are omnipresent in the offer of DVB-S commercial providers. More importantly, they still tend to improve their services (n, for example,

started to offer free access to dedicated Internet services). Advanced technology, dynamic growth, easy access and competitive prices are factors that make the DVB-S standard a very attractive option for potential digital television subscribers.

3.2.3 DVB-C

During the last three years, DVB-C providers have become a serious competition for the satellite ones. In 2008, the number of Polish households using DVB-C was below 200.000. In 2011, their number reached 20 million and is still growing as more cable television subscribers decide to replace the analogue signal with DVB-C. This process is very often initiated by cable television providers, who are aware of the fact that, if they want to keep their subscribers, they will have to offer them access to the DVB-C signal before the analogue switch-off (Szewczyk, 2010).

DVB-C offer contains many channels that used to be available only for DVB-S subscribers (nSport, Canal+). Digital cable television users have also access to services such as VoD, EPG, PPV, PVR and many High Definition channels. It is also important that DVB-C is often offered by the same company that provides a household with telephone service and Internet, and it is cheaper than DVB-S. However, DVB-C needs cable infrastructure available only in bigger cities - that is not necessary in case of broadcasting via satellite.

The first cable provider that implemented the DVB-C standard was ASTER, in 2005. The other cable providers have also spread their digital offer. It is worth adding that implementing the DVB-C among the cable providers has been a very dynamic and well organized process.

Provider	Number of digital TV subscribers 1Q 2011	Number of digital TV subscribers 4Q 2010	Dynamics
UPC Polska	408 100	370 700	+ 37 400
Vectra	331 200	313 300	+ 17 900
Multimedia Polska	155 000	142 000	+ 13 000
ASTER	100 000	100 000	0
INEA	71 500	70 000	+ 1 500
TOYA	41 000	39 000	+ 2000
Stream Communications	27 390	116 500	+ 10 890
Promax	11 000	10 000	+ 1000
Petrus	8 000	7 400	+ 600
Sat Film	2 300	2 300	0

Source: www.media2.pl

The situation of cable providers described in the previous table seems to be very optimistic. However, the situation on the Polish DVB-C market is very specific. Most of the providers are not present in the whole country. Multimedia and Toya, for example, are <u>not</u> active in Warsaw, but focus on smaller cities, while UPC focuses not only on the capital of Poland, but also on other areas.

The major cable player, UPC, had about 0,4 million customers of digital television services in the first quarter of the year 2011 (media2, 2011). UPC will certainly remain the leader of the DVB-C market due to their taking over ASTER by the end of 2011. It also seems that Vectra and Multimedia Polska will remain the strongest market followers. The fast development of cable providers can result in their becoming great competitors for the three major Polish DVB-S providers in the nearest future.

3.2.4 IPTV

IPTV is also accessible in Poland, but it is not as popular as DVB-S and DVB-C. However, this situation may change in the future, as it is a very attractive alternative for smaller TV providers. In 2008, there were only 54 thousand IPTV subscribers in Poland. In 2011, this number grew up to about 200 thousand subscribers. The market leader is TP SA (with about 110 thousand customers), followed by Telefonia Dialog (40 thousand subscribers). IPTV is also included in offers of Netia, Multimedia Polska and smaller providers (Inotel, Play 5, Telpol). According to the research of Point-Topic, the number of IPTV subscribers can reach up to 700 thousands by the end of 2020 (Dec, 2011).

3.3. DTV costs

The traditional, public analogue TV is relatively inexpensive. The license fee for using radio and TV in Poland is only 17 PLN/month. It is obligatory for every Polish household. However, a very poor channel offer induces Poles to get a cable or satellite TV. The average cable/satellite fee in Poland is about 45 PLN per month (as an addition to the 17 PLN of obligatory license fee).

3.3.1. Requirements

There are some infrastructural requirements that must be met in order to receive digital signal. They may be considered expensive, as the GDP per capita in Poland is still much lower than in countries of the old European Union. Furthermore, there are some surcharges for the additional applications of the DVB.

In order to receive digital signal, subscribers have to purchase (or rent – in case of commercial providers) a set-top box. It is enough for the DVB-C and DVB-T standard. Subscribers of the DVB-S providers have to purchase not only a set-top box, but also a satellite dish with LNB, and an antenna cable.

3.3.2. Prices

Prices of set-top boxes have recently become relatively low because of the great number of promotions, which are a result of growing competition on the Polish digital television market. The standard price (if bought in a normal RTV shop) of the HD set-top boxes available in offers of commercial providers is obviously much higher.

Cyfra Plus	Cyfrowy Polsat	N
- Set-top box: 49 PLN to 99 PLN (depends on the fee) - HD set-top box: 0 PLN per month (In case of more expensive options) - subscriber must purchase a satellite dish on his own	- Set-top box: 10 PLN per month - HD set-top box: 25 PLN per month	- nbox HDTV – 0 PLN in promotion - nbox HDTV recorder – 0 PLN in promotion - subscriber must purchase a satellite dish on his own
Fee: depending on the number of channels, set-top box and other options: <19 – 78 PLN>/month	Fee: depending on the number of channels: <at least 37,90 PLN/month	Fee: depending on the number of channels: <39; 149PLN> /month

Source: www.n.pl; www.cyfrowypolsat.pl; www.cyfraplus.pl; www.satkurier.pl;

www.media2.pl

The VOD offer in Poland is very specific. At first, it was developed mostly in n: in offers "nSeriale" and "Picture Box" (movies) – by 30 PLN each (or 40 PLN if bought together), "funVoD" (programmes for adults) for 15 PLN and nFilm HD. Having paid an additional fee, a subscriber may watch their selected series* or movies as many times as they wish.   n offers also an additional possibility to watch the greatest cinema movies that are not included in the above mentioned offers – by approximately 11 PLN each.

Cyfra Plus offers VOD as an additional option to its traditional offer. VoD is available for those subscribers who rent a PVR HD set-top box (usually the more expensive options). The average price for a movie is 9 PLN.

Cyfrowy Polsat started to offer VoD later than their DVB-S competitors. The most attractive movies in their offer cost 11 PLN and the cheapest ones only 3,7 PLN.

The average price of a VOD in offer of DVB-C providers is similar to the offer of their DVB-S competitors and varies from 7 PLN to 13 PLN for a movie.

4. Policy

4.1. Activity of the government

After many delays, the process of implementing the DVB in Poland has finally been initiated. According to the new plan of the Department of Infrastructure, it should end on June, 2013.

The Polish government was highly involved in the DVB trial projects. Almost every test trial was supported by the government. The departments that were mostly involved in the process of testing DVB-T in Poland are KRRiT (Krajowa Rada Radiofonii I Telewizji – National Broadcasting Council), UKE (Urząd Komunikacji Elektronicznej – Electronic Communications Department) and URTiP (Urząd Regulacji Telekomunikacji I Poczty – Telecommunications and Post Regulations Department).

In January 2004, the Polish Prime Minister brought into life an interdepartmental unit, responsible for the implementation of digital TV and radio in Poland. Its basic task was to prepare a strategy concerning the dissemination of the digital TV and radio in Polish conditions – the economic, market and social ones.

Another initiative of the Polish government was to join the Digital Innovation through Cooperation in Europe program (DICE). Now, after the election in October 2011, the Polish Prime Minister is determined to create a separate digitization department.

The analogue terrestrial switchover is planned for July 31st, 2013.

The two main sins of the Polish government in this matter are: no information campaign about the implementation of DVB-T in Poland until July 2011 (commercial broadcasters do not seem to be interested in informing the society about the digital revolution as they use DVB-S or DVB-C standard), and no specific regulations concerning subsidizing of the DVB-T set-top boxes, so the society does hardly know anything about the expected financial support.

According to the act about digitization from June 30th 2011, broadcasters present in MUX1, MUX2 and MUX3 are obliged to broadcast information about the upcoming digital revolution and analogue switch-off (Dziennik Ustaw nr 153).

A television campaign was initiated in July 2011, and generated 789 GRP until the end of October (among All 4+ population). However, it was based on TVN Group channels, which are not accessible for people who are not aware of the process (especially those living in the country). (Nielsen Audience Measurement, 2011).

The second problem – subsidizing set-top boxes- is expected to cost about 340 million PLN. However, it is necessary in order to avoid digital exclusion of about 1,35 million of the poorest Polish households (PBS DGA, 2010).

4.2. Awareness and expectations of Polish society towards the implementation of the terrestrial DVB (DVB-T) in Poland

As no campaign informing the society about the changes in broadcasting has been conducted until July 2011, many Poles are still unaware of the digital revolution. In 2008, merely 23% of Poles knew about the switchover, planned for the year 2013 (On Board PR/PBS DGA, 2008).

Based on the results of a survey conducted on that year, almost 70% of the respondents declared willingness to purchase new set-top-boxes if it is necessary for the reception of the signal. On the other hand, as much as 25% of the interviewed declared no intention to do so. It means that a quarter of the society may become cut off from the most important medium. Readiness to buy a new set-top-box was also diversified by income of the residents. While more than 86% of respondents with a household income of more than 2500 PLN were ready to purchase a new set-top box, only 54% of the interviewed with a household income of less than 1100 PLN declared to do so. It means that not even the dissemination of the information about the planned switchover will induce the poor to purchase a new set-top-box, because they simply cannot afford it (On Board PR/PBS DGA, 2008).

Only 18% of the respondents thought that the benefits connected with the implementation of DVB in Poland definitely justified expenses for the set-top-boxes, which are necessary to use this technology. 41% of the interviewed shared this opinion

to a smaller extent and as much as 40% of them were of a different opinion or none whatsoever. This shows that the announcement of benefits connected with DVB in Poland should be the most important part of the information campaign (On Board PR/PBS DGA, 2008).

Another problem is the lack of specific regulations concerning subsidy of the DVB-T set-top-boxes in Poland. 75% of the respondents shared the opinion that purchase of DVB-T decoders should be subsidized. Only 16% of Poles thought that subsidizing was not necessary and 10% had no opinion about it (On Board PR/PBS DGA, 2008).

Almost 50% of the interviewed shared the opinion that the purchase of the set-top-boxes should be subsidized by national budget. Referring to the opinion of 32% of Poles, it should be sponsored by private companies, and only 17% of the society thought that the main sponsor should be the national budget (On Board PR/PBS DGA, 2008).

Results of the survey conducted one year later were more optimistic. In 2009, 52% of Polish population declared that they knew about the upcoming digital switchover (On Board PR/PBS DGA, 2009). Even though this still represented only half of the society knowing about digitization, the growth in number of people who are aware of this process is impressive (especially if we consider the fact that no campaign informing the society about the upcoming changes had been conducted until July 2011). Most of them are people who live in big cities, educated and using the Internet where they can read a great number of articles dealing with the digitization process. This is why information campaigns in mass media (especially TV) is so important. 54% of Poles who live in the country are not aware of the upcoming revolution (On Board PR/PBS DGA, 2009).

However, almost 60% of people who know about the digitization process still have not started to prepare for it (On Board PR/PBS DGA, 2009).

According to the results of the new survey conducted in 2010, only 19% of the society was going to start using digital television in the near future, 34% was already using DVB and 44% was not intending to do so. It only showed that the strong information campaign about the digitization was vital (On Board PR/PBS DGA, 2010).

4.3. The parameters of DVB-T set-top-boxes in Poland – na początek

An open session of KIGEiT (a unit of the Polish Economic Council responsible for the electronics and telecommunication) took place on March 26th, 2008. Its main goal was to set the parameters of the DVB-T set-top-boxes that will be implemented in Poland. An update of the document was released in 2009.

Below are the most important details from the session (Kupiec, 2011):

1. Format and display provided for TV in terrestrial broadcast:

- 702x576 (SD 576i) at present

- 1280x720 (HD 720p) or 1920x1080 (HD 1080i) in future

2. Display of a 16:9 image on a 4:3 screen

- keeping the anamorphic video

3. Assuming that every user will be able to change the settings, an Automatic Format Descriptor will be used for the comfort of the audience

4. TV signal coding standard

- H.264/AVC only

    - MP@L3 for SD

    - HP@L4 for HD

5. The broadcast of teletext will be kept (Level 1.5). DVB subtitles are also a subject of the plan.

6. The pay-on-demand services are being planned but have not been specified yet.

7. Interactive services are not being planned at the moment.

8. Every TV set should receive the channels in HD standard and be able to send the signal (also in this standard)

- using HDMI for steering HD Ready display;

- using the SCART/Euro-connector in SD standard for the analogue TV set.

9. The 'HD Ready' iDVB sets should be equipped with the HD TV tuner compatible with the above-mentioned requirements and the S/PDIF outlet.

10. The set-top boxes should be compatible with DVB-MHP 1.2.

11. The set-top box should enable blocking the access to various programmes or programme categories, if parental rating descriptor appears in the stream.

5. Conclusions

The situation of Polish digital television market seems to improve every year. As Poles tend to watch TV more often than the inhabitants of the old EU countries, they pay more attention to the quality of television, channel offer and comfort (for example VOD). The competition on Polish digital television market also seems to increase as more and more cable providers implement the digital standard and competitive services such as VoD, EPG and PVR in their offer. However, DVB-S providers are still the greatest part of the digital television market. The main problem is still the fact that many Poles are not aware of the planned switchover. The government finally conducted an information campaign this year, generating almost 800 GRP in four months. Its results should be noticeable in further research. Another issue is the price of DVB. Many people find set-top boxes too expensive. Most of them share the opinion that purchasing should be subsidized by the European Union and the government. It is almost certain that politicians will spend about 340 million PLN in subsidizing DVB-T set-top boxes for poor families.

References

CBM Indicator, PBS DGA (2011), "*Rynek telekomunikacyjny w Polsce w 2010 roku*". Raport z badania konsumenckiego przeprowadzonego dla urzędu Komunikacji Elektronicznej, pp. 190-194

Dec, Ł. (2011), "*Polska będzie 11 rynkiem IPTV w Europie?*",
http://www.rp.pl/artykul/731367.html

Dziennik ustaw nr 153, "*ustawa z dnia 30 czerwca 2011 o wdrożeniu naziemnej telewizji cyfrowej*", pp. 9091 – 9093

EmiTel website (2008 – 2011), www.emitel.pl

GUS (2011), "*Sytuacja gospodarstw domowych w 2010 roku w świetle badania budżetów gospodarstw domowych*", pp. 11

Kupiec A. (2008*) "Digital television in Poland".* Digital television in Europe, pp. 163-172

Lemańska, M. (2011), "*Przybędzie klientów platform*",
http://www.rp.pl/artykul/655946.html

On Board PR Ecco Network, PBS DGA (2008), "*2014: Cyfrowa rewolucja?* Raport z badań opinii", pp. 2-14

On Board PR Ecco Network, PBS DGA (2009), "*2014: Nowoczesne technologie i telewizja cyfrowa w oczach Polaków*", Raport z badań opinii, pp. 2-17

On Board PR Ecco Network, PBS DGA (2010), "*Media: Cyfrowa rewolucjail koniec abonamentu?*", Raport z badań opinii wraz z komentarzem z rynków zagranicznych, pp. 2-23

Szewczyk, Ł. (2010), "*Kanały HD, kabel wyprzedził satellite*",
http://media2.pl/media/61881-Kanaly-HD-Kabel-wyprzedzil-satelite.html

Nielsen Audience Measurement, 2011

TGI MillwarbBrown SMG/KRC, 2011

Official websites of DVB providers

www.n.pl

www.cyfrowypolsat.pl

www.cyfraplus.pl

Digital television policies in Greece

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A SHORT VIEW OF THE GREEK TV LANDSCAPE

Greece is a small European country, located on the southern region of the Balkan Peninsula, in the south-eastern part of Europe. The total area of the country is 132,000 km^2, while its population is of 11.5 million inhabitants. Most of the population, about 4 million, is concentrated in the wider metropolitan area of the capital, Athens. This extreme concentration is one of the side effects of the centralized character of the modern Greek state, alongside the unplanned urbanization caused by the industrialization of the country since the 1960s. Unlike other European countries, almost all Greeks (about 98 per cent of the population) speak the same language, Greek, as mother tongue, and share the same religion, the Greek Orthodox. Greece has joined the EU (then it was called the European Economic Community) in the 1st of January, 1981. It is also a member of the Eurozone since 2001. Until 2007 (when Bulgaria and Romania joined the EU), Greece was the only member-state of the EU in its neighborhood region.

Central control and inadequate planning is a "symptom" of the modern Greek state that has seriously "infected" not only urbanization, but other sectors of the Greek economy and industry as well, like for instance, the media. The media sector in Greece is characterized by an excess in supply over demand. In effect, it appears to be a kind of tradition in Greece, since there are more newspapers, more TV channels, more magazines and more radio stations than such a small market can support (Papathanassopoulos 2001).

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It is certainly no coincidence that both radio and television, the two major electronic media of the 20th century, made their first steps under the strong-iron fist of authoritarian dictatorships. Radio was founded in 1938, when the whole country was under the control of the Fascist-like dictatorial regime of Ioannis Metaxas, while television first started broadcasting in February 1966, roughly a year before a coup d'état executed by a bunch of colonels has sunk the country into darkness for seven years (1967-1974).

The public service broadcaster, ERT, served the purpose of a propaganda outlet for the military regime for almost the entirety of its first decade of life. But the government's tight grip continued even after the fall of the "junta" in 1974, as the ruling party of that time had the legitimacy (according to the Greek Constitution of 1975) to appoint all seats at the Board of Administrators (BoA) of ERT. The monopolization of broadcasting by ERT, alongside the complete control of the flow of information from the airwaves by the ruling party, led to an ever growing resentment from a part of the political system, the media professionals, academics and eventually the public. During the late eighties, the Public Service Broadcaster has lost, in the eyes of public opinion, its legitimacy as a trusted provider of free and unbiased information, a situation that led, after a series of blows, to the deregulation of the Greek television system. The deregulation of the state broadcasting monopoly in the late 1980s has led to a radical transformation of the whole media sector. In fact, the Greek newspapers faced the biggest challenge in their history: increasing competition from electronic media and the need to harness the publishing tools offered by new technologies. For newspapers, these challenges required the reconsideration of traditional publishing goals and marketing strategies.

The Greek market is very rich in magazine titles, with more than 900 popular and special interest titles. However, there are about 50 consumer magazines - mostly monthlies - of real importance. The financial crisis and the subsequent decline in advertising revenues, related with a sharp decline in sales, have led many magazines to suspend circulation. The best period of the magazine sector, especially life style magazines, was between 1995-2004, which witnessed a big explosion of new titles and advertising revenues. Since then, the Greek magazine sector has entered a period of re-shaping in terms of titles and publishers, in order to cope to the new and highly

competitive media environment, especially with the development of broadband internet. The broadcasting sector has undergone a spectacular change: from a broadcasting environment with two public TV channels and four public radio stations, in the early 1990s, it has been led to an overloaded environment comprising 160 private TV channels and 1200 private radio stations broadcasting into an overcrowded landscape. In addition, Greece has undergone a broadcasting commercialization, adopting a market-led approach, resulting in even more channels, more advertising, more domestic productions and more programme imports, as well as more politics.

The deregulation of the broadcasting system gave a substantial contribution to a situation which was quite eloquently described as "the Greek analogue television chaos". Some of the consequences of this chaos were to be felt decades after the end of the state monopoly, and in the process of full digital migration. One of the most serious consequences was the lack of available frequencies. During the first decade of deregulation, it was quite a rule for commercial TV channels, mostly local ones, to "occupy" a free analogue frequency in their area (usually a frequency not used by any other channel, either public or commercial), on the basis of a rather defying "first call, first served" principle. The situation was quite similar to the one experienced in Italy after 1976, when local channels quadrupled practically "overnight", creating what was called "the Far West of frequencies". This bullying behaviour practically sealed the entrance to new market players, as there were no available frequencies to launch a new channel. On top of that, political clientelism and favouritism with the local political elite resulted in the rather *bizarre* situation where those "occupiers" paid no fee or licence costs for the use of those frequencies! The political system quickly understood that "freezing" this lawless situation from the part of TV stations would concur to their benefit: they denied them the full legitimacy that a proper licensing regime would have established, as it is always tempting from the point of view of politicians to 'hold hostage" the broadcasting system. It is emblematic of the "intertwined" conjunctions between political and media systems that, even in 2011, (22 years since the first commercial station started broadcasting) no permanent licences have been issued and all channels rely on temporary permits.

Many experts believe that digital transition will have a beneficial impact on Greek TV landscape. Many of the misdeeds and "irregularities" of the past will be

magically erased, and the new digital environment will constitute a modernization of the system, fully incorporating it with the European mainframe. However, even if someone can take for granted the existence of a strong political will to end the mess and put in place a modern legal framework, the recent downturn of the Greek economy and the severe financial crisis, which is looming upon Greece, will certainly take their toll in terms of forestalling any serious movements in that direction. This paper will try to discuss the development of digital television in Greece. The main focus will be to trace the initial stages and roll-out of different digital platforms for delivering audiovisual content (terrestrial, satellite, IPTV, mobile etc.), government policies and strategies (whenever such actually exist), as well as to present, in a clear and synoptic form, the players, the economics and the politics associated with this new digital era for the television medium. Satellite was the first platform that transmitted digital signals to the Greek TV households, and this will be our starting point as well.

DIGITAL SATELLITE TV

Satellite TV in Greece, as in the majority of countries, started as an analogue television service. From the beginning, the television offer was based on a subscription business model (Pay-TV). Satellite broadcasting started in 1994, when Greek Authorities gave their permission for the operation of Filmnet, the country's first pay-TV channel, owned by Multchoice/ Netmed Hellas, and member of the South-African based Naspers Group of companies. The initial analogue offer comprised three thematic channels (the first one was Filmnet, with a programme menu filled with mostly American movies and TV series; the second one was Filmnet Sport, covering all major sports, but primarily football; and the third channel was targeting kids and families, with a programme menu filled with kids TV series and cartoons). Multichoice/Netmed Hellas adopted and implemented an aggressive marketing policy, by acquiring TV rights of football and basketball games, and premier films. Those practices helped the company to "survive" in an environment rather "hostile" to Pay TV like the one in Greece, and by the end of 2000, the number of subscribers had reached 290.000.

Since international environment was in favour of the development of digital television, the company decided to enter the digital age, without abandoning, however, its utilizing frequencies leased from ERT, the Public Service Broadcaster. In effect, the history of Greek satellite digital television (and of digital television as well) starts in March 1998, when Multichoice/ Netmed Hellas announced its intentions to 'go ahead' with its own digital platform, called Nova. This announcement caused anxiety and furore within some circles around the socialist government of those days. The reason is that PASOK, the ruling party, wanted to "secure" the digital future of two major state-controlled companies, the incumbent telecoms operator OTE, and the public service broadcaster ERT. In that framework, the government was openly in favour of a single satellite platform, in which all the interested parties, both private and public, could participate, and therefore announced that it would pass a new law on both Pay and digital TV services. In effect, after pressures by the shareholders of Multichoice Hellas (Netmed NV, Teletypos), the government presented to the Parliament its proposals, in June 1998. As expected, they became law in October 1998 (see also Iosifides 2001). The new law on "the provision of subscription of broadcasting services and related regulations", the so-called law 2644 of 1998 (Government Gazette 1998), attempted to cover all aspects of subscribing broadcasting services, not only of satellite but also of any other Pay television service.

Exactly as the law had predicted, soon after its passing the involved parties expressed their interest to cooperate on a single, joint digital platform, considering that the Greek market was too small for competitive digital ventures. Not willing to lose any more time, Multichoice/ Netmed Hellas moved swiftly, and at the end of December 1998, applied for a license at the Ministry of Press and Media, and at the National Broadcasting Council, the audiovisual regulatory authority (NBC). After the application, all interested parties (mostly commercial FTA TV stations) started negotiations concerning the percentages each one would hold on the digital satellite platform, Nova. One of the thorniest issues of these negotiations was the current net value of the company that would own and manage the satellite platform and the Pay TV services. Investment banks (such as the Lehman Brothers and Merrill Lynch) were hired in order to provide a much needed evaluation. Negotiations were tough and lengthy, all the interested parties could not reach an agreement at the end of the day.

The events that followed the break-up of negotiations gave a serious boost to Multichoice/ Netmed Hellas plans. First of all, on May 20th, 1999, the NBC decided to award a broadcasting license to Multichoice/ Netmed Hellas. The company reacted immediately, announcing the start of digital satellite television services. In fact, on December 16th, 1999, Nova officially started its operation, by securing three transponders on Eutelsat's Hot Birds Satellites 2, 3 and 4, respectively, all of them located at 13 degrees East. The company also signed a 15-year contract with the Greek state which allowed the former to offer Pay TV and related services (Pay-per-View, tele-votting, tele-betting, interactive games etc.) to its Greek subscribers.

The 15-year contract was the first which the Greek state signed with Multichoice/ Netmed Hellas. It entailed the payment of 0.5 percent of the company's gross annual profits, a value to be adjusted every two years, and 45.000 Euros per day. The service started by providing a wide variety of Greek and international channels, as well as interactive services. Through NOVA, the viewers were able to see more than 300 foreign satellite channels and listen to local and international radio stations.

Nova wanted to profit from the fact that it was the only Pay-TV service in the country, and its price policy was streamlined according to the goal of breaking-even in the shortest period possible. This led to prices that were considered to be very high for the medium income earned at the time by a Greek family, and furthermore Nova's offer in the market comprised only one package (no diversification according to the major needs of the subscriber, that is, a basic package, a package for football fans, a package for film lovers, etc.).

Nova's monopoly did not last for long. The NBC awarded a licence for the provision of Pay TV services via a digital satellite to a second company, Interactive S.A., member of the Intersat Group, led by businessman Mr. George Batatoudis, only a year after Nova's (2000). That same year, a third digital satellite TV venture, led by the telecommunications organisation OTE, by the public broadcaster ERT and by Alpha Digital Synthesis S.A., a subsidiary of private TV station Alpha TV, announced their aim to offer their services to the audience.

Although many believed that this new venture had the (hidden) backing of the socialist government, because of the participation of OTE and ERT, the three partners could not reach an agreement, and their cooperation plans collapsed. Commercial TV

station Alpha TV decided to get along with this new venture even if they couldn't count on the support of the two public companies (OTE & ERT). So, one and a half years later, Alpha TV announced their plans to enter the digital television landscape with their platform, Alpha Digital. The second digital satellite platform in the Greek TV landscape started broadcasting on October 29th, 2001. The company was a joint venture of Mr. Efstathios Tsotsoros (35%) and Greek businessman Dimitris Kontominas (60%), through his companies Interamerican Hellenic Life Ins. Co. (insurance, 20%), Intertek International Technologies (20%) and Alpha Communications Network (19.4%), and others. There were also negotiations for the participation of an American company, but details were never published. According to a press interview, the company had invested 31 billion drachmas (€89.6 million) for the whole operation.

Alpha Digital's satellite bouquet consisted of 17 thematic TV channels and radio stations. It also transmitted more than 100 FTA channels and 50 radio stations, and had already signed contracts with some of the most popular football teams in Greece, in order to broadcast their home games under exclusive rights. Alpha Digital decided to subsidize the purchase of the set-top box, in order to boost their subscriptions, but selecting a different Conditional Access system from the one used by Nova. The consequence of this business choice was that the two set-top boxes (Nova's and Alpha Digital's) were incompatible, because different access cards could not be inserted in the card-slot of different devices, thus denying the possibility for multiple access cards to be inserted in the card-slot of the subsidized devices. Therefore, someone who wanted to watch both packages was obliged to have two different set-top boxes at home. The cost of Alpha Digital's reception equipment, as well as the monthly subscription fee, was higher than that of Nova's. Regardless of the fact that there were voices arguing that the Greek broadcasting market was too small to sustain competing digital platforms operating incompatible decoding technologies, Alpha Digital considered that subscription television was at its childhood in Greece. They seemed to believe that the prospects were favourable and that the market would create a vast business opportunity during the following years of realisation of convergence, and that there was room for a second operator in the market.

The main dilemma that Alpha Digital was facing was akin also to Nova, whose budget sheets were still on the red mark, after more than seven years of operation:

namely how to attract the largest number of subscribers with the lowest possible cost of acquisition of prime content. For Greek households, and above all for the male audience which both platforms were vowing to attract, prime time could only mean one thing: football, and especially Greek League football. Alpha Digital then had to offer its services to subscribers at reasonable prices, considering that pay-TV in Greece was too expensive, while at the same time trying to keep their budget as tight as it could be. The problem with this strategy was that most of the football clubs of Greece's major League had already signed multi-annual contracts with Nova. Alpha Digital's only alternative was to offer much higher contracts to the clubs, and thus 10 out of 18 of them broke their previous contract with Multichoice/ Netmed Hellas.

The result of this was a "war" between the two digital platforms, and the Greek football league became one of the most expensive programmes in European television. But this war led to an impasse, if not a fiasco. After a year of intense competition, especially on football TV rights, Alpha Digital, with only 35.000 subscribers, announced on September 9th, 2002, the suspension of their operation due to failure in keeping up with its financial obligations. Alpha Digital's collapse brought about the woes inflicted upon football by television rights problems that affected other European countries as well. Since digital pay-TV entered the Greek television universe, it was frequently remarked that the domestic market, due to its size and peculiarities, was not in a comfortable position to sustain two competitive digital platforms (Papathanassopoulos, 2006; 2002). In fact, the eagerness of interested companies and businesses parties in introducing digital TV services led them to ignore both the size of the Greek market and Greek consumers' behaviour. It was also proven in practice that the Greek market is too small for competing digital pay-TV ventures. As a result, no economies of scale were created and the final cost was passed on to the consumer, while the market actually did not expand with the arrival of the second platform. After the demise of Alpha Digital, Nova was left as with the sole Pay TV platform for the following four years (until 2006, when Vivodi launched the first IPTV service in Greece) but this headway did not materialize into inflated revenues from disillusioned subscribers that returned to Nova after being left stranded by the Alpha Digital wreckage. Today, almost a decade after Alpha Digital's collapse, Nova's subscribers have reached 380.000, a meagre 20% above the number which the platform had

attained in 2001. But, as the tide turns, Nova is about to face a rather formidable foe by the end of 2011.

OTE Satellite TV and Hellas Sat

Greece had obtained, as a result of multilateral negotiations at ICAO, the right to launch a satellite at the orbital position 39 degrees east. After a long period of delays and indecision from 1993 until 2001, the Greek and Cypriot governments finally reached an agreement to form, in August 2001, a joint company[+], having as main task the launching and managing of Greece's satellite system. Hellas Sat was the trade name of the joint enterprise, which was inaugurated by both the governments of Greece and Cyprus. Hellas Sat owns and operates the high power and advanced satellite HELLAS SAT 2, which was successfully launched by Lockheed Martin's Atlas 5 rocket into orbit by May 2003, from Cape Canaveral. Hellas Sat's aims were to link Greece with its Diaspora and to provide services to the country's remote island and mountain regions, as well as to serve a range of civilian and military needs. It was planned to be used for video transmissions, digital satellite television broadcasting, high-speed Internet connections and two-way broadband services.

Hellas Sat is a subsidiary of the Hellenic Telecommunications Organisation (OTE S.A.), since OTE is the major player in this satellite venture, owning an 83.34 percent stake in Hellas-Sat SA. The project cost 180 million Euros, including the satellite, the Atlas rocket and related insurance. Other shareholders in Hellas Sat are: the Hellenic Aerospace Industry (EAB), with 3.93 percent, the Cyprus Telecommunications Authority, with 3.84 percent, Cypriot IT firm AvacomNet Services, with 8.5 percent, and Canada's TELESAT, with 0.39 percent. A primary controlling station is located in Greece and a reserve one in Cyprus.

[+] The cooperation with Cyprus emerged when, during the hearings and negotiations process with the involved companies in the project, it was realised that it only made business sense if it were on the basis of the joint use of frequencies of two orbital (geostatic) positions. Canadian company Telesat, a partner with Cyprus bourse-listed AvacomNet, proposed the joint use of the frequencies of Hellas Sat and Kypros Sat in the same position (i.e., 39 degrees east longitude), in which the Cypriot satellite has 16 frequencies and the Greek one 24.

Hellas Sat is fully functional, meeting the needs of OTE, and covers Greece, Cyprus and another 25 countries in the Balkans, Central Europe, Africa and the Middle East; the satellite's active-life spans a full 15-year period. Media and telecom analysts interpreted OTE involvement in Hellas Sat as the first step towards the full roll-out of a digital satellite television offer to Greek households. The reasoning behind this thought was strong: first of all, OTE has never denied that it was investigating different business propositions which were put on the table by other Media companies (ERT, Ant1, Alpha Digital, etc.). Secondly, the Greek government and OTE saw the satellite endeavour as an issue of prestige, if not for strengthening the geopolitical role of Greece in the Eastern Mediterranean and the Balkans. Third, OTE had already obtained first hand experience on how to run a Pay TV business, as the Greek telecom operator is the owner of the Romanian digital satellite platform DOLCE, which was launched in 2006, as well as the owner of the Greek IPTV service Conn-X TV, which had a soft launch on October 2008, before moving to a full scale market launch in September 2009. However, OTE's moves were rather sluggish and many experts ascribe this hesitation on entering the satellite Pay TV market to political pressure from government officials. Finally, after many postponements, OTE satellite TV was launched on October 3rd, 2011, comprising a bouquet of 46 channels which were split in five sub-packages (the full package comprises all 46 channels). The sub-packages are being offered at much lower prices than Nova's, a strategy that many believe will instigate a price war between both services.

DIGITAL TERRESTRIAL TELEVISION

Digital terrestrial television (DTT), among all digital platforms, is the one on which governments are involved the most. This can be attributed to a plethora of reasons: supporting national TV equipment manufacturing industry, supporting national audiovisual production, upholding a status of "intervening powers" for government in contrast with other platforms and, primarily, the management of the frequencies spectrum, which is a very valuable public resource and can guarantee considerable revenues for the state. In many countries, especially in Europe, governments were actually the "sponsors" of digital terrestrial TV, spending public

money on state aid and consumer help schemes, and supporting information campaigns and DTT roll-out ventures. Strangely enough, this was not the case in Greece, thanks to the dismay of two consecutive Greek governments who were proved utterly unfit to keep under "command and control" the whole procedure. The Greek government chose, right from the beginning, a "light hands" "laissez faire" approach, at a time when a more "interventionist" policy would have granted more fruitful results. And now, almost lethally stricken by a dreadful economic crisis, it lays helplessly stranded and deprived of any meaningful policy tools.

As in many other European countries, it was the public broadcaster ERT that has acted as a pioneer, introducing DTT to Greek audience. ERT undertook a pilot project, launching three new channels in the first semester of 2006 (not simulcasting ERT's analogue channels), which were only available on digital terrestrial television. ERT started broadcasting DTT channels while no legislative framework was in place in Greece. The channels are being broadcasted free-to-air and are funded exclusively from ERT's budget, as they carry no advertisements (according to ERT's officials, the public service broadcaster did not want to offend or alienate commercial broadcasters by eroding their advertising revenues). The Greek conservative government (2004-2009) assigned to ERT two multiplexes -with four channels spots each (DVB-T & MPEG-2). Despite the fact that the government had clearly stated that ERT's DTT broadcasting was under a pilot regime, the legislative vacuum had to be filled.

THE LAW 3592/2007 ON DIGITAL TV SERVICES

On 19th of July, 2007, a new legislative framework, Law 3592/2007, has received a positive vote from the Hellenic Parliament. The Law tries to establish a comprehensive legislative apparatus that will be swiftly integrated with the new regulatory framework for electronic communications networks and services being pursued by the EU.

The Law makes a clear distinction between platform and multiplex operator (sometimes it is called network operator), and content provider. The platform or multiplex operator is under a general license regime, provided that its undertaking/company is registered by the Hellenic Telecommunications & Post

Commission (E.E.T.T.). The Ministry of Transport & Communications and the Ministry of Press and the Media are responsible for establishing the digital frequencies map and for planning the relevant assignments. The new Act makes it possible for licensed television stations to transmit digitally their analogue TV programmes (simulcasting), using frequencies that are to be allocated for the period up until the digital switchover. The majority of those frequencies is being used for analogue TV broadcasting by local TV stations, but they will be cleared so as to be available only for digital terrestrial TV broadcasting. The procedure for licensing digital terrestrial television stations is to be regulated through a Presidential Decree;

The Law is following the direction of the French regulatory framework for DTT, as the frequency is being allocated to each channel editor and not to the platform, multiplex or technical operator. But contrary to the French law, the Greek one fosters a financial charge which will be levied for spectrum usage. The new bill does not create a special authority (organization or body), with competence to settle issues relating to the switch--over process (such as the Digital UK in the United Kingdom or the Comitato Nazionale Italia Digitale in Italy), as well as it does not propose a timetable for this process.

Responsibilities for the Ministry of Transport & Communications and the Ministry of Press and the Media:

- Establishing the regulatory framework for the licensing procedure;
- Creating the frequency map and establishing technical requirements;
- Granting of licenses

National Council for Radio and Television:

- Responsible for initiating the tender procedure for the granting of licenses and for checking the compliance with the relevant legislation regarding content;

Hellenic Telecommunications & Post Commission

- Checking for compliance with technical requirements.

Finally, this new legislation contains provisions on the implementation of the Electronic Communications Services & Networks Directive 2002/77/EC, as well as on television via broadband networks (IPTV) and wireless networks (mobile TV).

The law 3592/2007 received a plethora of criticism on the ground that it contains no provision for a switchover plan, or for the procedures and criteria for licensing new digital channels. There is no timetable, even the frequency map (a *sine qua non* for any analogue switch off procedure) which is being used is provisional, with an unclear future as to when the final one will be ready. Furthermore, the Law "freezes" any new technological development, as it demands that only four channels can be added to any multiplex, without taking into account more effective standards (MPEG-4 and later on DVB-T2). Also, it makes no provision for HDTV channels or interactive services on multiplexes. Law 3592/2007 is incomplete and, according to many legal experts, a row of decrees and ministerial decisions is needed to cover the numerous details that need clarification.

The years 2007-2009 could be characterized as a period of stagnation. ERT did not carry on the expansion of its DTT network, leaving the majority of Greek towns and regions (apart from Athens and Thessaloniki) with no DTT signal. This delay was attributed to efforts by the conservative government to encourage commercial analogue TV broadcasters to collaborate with ERT in forming a joint multiplex operator company, one which will act as the network operator for the whole Greek Digital Terrestrial Platform. This plan, according to government circles, will help keeping the cost of rolling-out a nationwide DTT network at a reasonably low level, while fostering the necessary scale economies. Commercial broadcasters and ERT were brought together at the negotiating table, but talks did not produce the sought outcome. Commercial broadcasters decided to go along relying on their strengths, and in June 2009 formed a joint network operator company, Digea. Digea was established by all seven major commercial TV stations in Greece (MEGA, Ant1, ALPHA, STAR, Alter, TV Macedonia and SKAI), and started broadcasting (simulcasting the analogue channels in two multiplexes) utilizing DVB-T MPEG-4 in September 2009, from an area in the Corinthian Gulf, in the Peloponnese. In January 2010, they carried on their DTT roll-out from the city of Thessaloniki, before moving to Athens in June 2010, just in time for the FIFA World Cup. Before the end of 2010, Digea has switched off its analogue channels

from a large area in Northeastern Greece (in the borders with Turkey and Bulgaria), and in the first semester of 2011, Digea's DTT network had covered Thessaly (at the centre of mainland Greece) and the island of Rhodes in the southeastern part of the Aegean sea. By the end of the third quarter of 2011, Digea's DTT network covered roughly 65% of Greek households. The company's CEO Mr Giorgos Mathios has stated that, by the end of the first semester of 2010, Digea's founding partners had already spent around four (4) million euros on equipment purchase and other relevant costs. Their plans for the rest of 2011 have been altered due to the financial hardships that some members of Digea are facing, and to the quagmire between Digea and ERT in reference to the formulation of a common plan for the analogue switch off.

ERT, on the other hand, "reactivated" its plans and started moving to the Greek periphery, executing regional switch offs in Thrace, Thessaly and in the northern part of Peloponnese, by the end of 2011. Furthermore, the public broadcaster aimed to rearrange the channels spot in the two multiplexes, by merging two digital channels and creating a new one, ERT HD. ERT is now managing two multiplexes: the first (DVB-T, MPEG-2) comprises the following channels: PRISMA+, CINE/SPORT+, the Parliamentary Channel and RIKSAT, while the second (DVB-T, MPEG-4) comprises the "old" analogue channels (ET1, NET, ERT3) plus the new ERT HD channel. ERT has included five radio stations in the offer of its second multiplex. In a very recent development, on the 19th of March 2012, ERT ceased broadcasting its two remaining pilot digital channels (PRISMA+ & CINE/SPORT+). The Public Service Broadcaster announced that the decision was the first in a string of serious reforms that ERT is in a process to undertake following the Government's mandate for shrinking some of ERT's operations and implementing draconian budgetary cuts. The channels-slots on the first multiplex have been filled with the BBC World Service and the Deutsche Welle English service. The two remaining slots have been covered by Euronews and TV5 Monde/Europe.

A third DTT network operator was created in 2009, Digital Union, by a joint effort of some local and regional channels. Digital Union's strategy is to manage and run the two local multiplexes that have been assigned for each one of the 11 broader services areas (according to the provisional UHF Frequency Map, Greece is being divided into 11 broader services area. In each service area, the minimum number of

multiplexes that is operational is seven). Digital Union is active in Thessaly, Attica, Northern Peloponnese, Macedonia and Crete.

Greece moves forward in a rather haphazard and slow-moving manner, and many experts believe that even the final deadline for digital switchover (17th of June, 2015) will be a hard target to achieve. At the time of writing this chapter the country is faced with an inadequate legal framework, a provisional frequency map, and a delayed licensing procedure, while private TV stations are at the verge of bankruptcy. Moreover, the government has not established a single organization or entity with the sole authority and power to oversee and manage the switchover process (like *Digital* in the UK, *TNT pour tous* in France, *ImpulsaTDT* in Spain etc.). The severe financial crisis renders any future planning uncertain and it will be a real challenge (not only for the Greek government, but for the television market as a whole) to be able to fund information on public campaigns which are needed, or indeed to provide any form of assistance to low income families and people with disabilities.

IPTV

IPTV is the third digital television platform in Greece. Cable television is practically non existent in Greece (apart from two pilot projects in the 1980s, in the city of Rethymnon, and in Plaka, in the old city of Athens). As in most other countries, IPTV started as a bundled service i.e. telephone, Internet access and television content were bundled together as a single package, charging every subscriber with a single bill. Broadband penetration in Greece (a prerequisite for offering TV content via IP networks) was limited at the begging of 2007, around 7%. This situation enabled the market entry of new players, companies that were not previously involved in the television business The pioneers of IPTV are telecom companies, because the provision of television services enabled them to reduce churn from their main business (voice and data i.e. telephone and Internet). Two newcomers in the Greek Media market, Vivodi and OnTelecoms, were the first companies to offer IPTV services in Greece. Vivodi started as broadband provider, covering only a small part of Athens in 2004. Its major shareholder is Lazaros Efraimoglou, a local businessman. OnTelecoms's owner's profile is more diversified: among its major shareholders is a team of Italian businessmen who manage the Fastweb IPTV service in the neighboring country. Both

providers, OnTelecoms and Vivodi, offer their services only in Athens and a few more major cities, through their own closed IP Network (local loop unbundling from incumbent telecom operator OTE). Vivodi was the first company to offer IPTV services back in 2006. The market name of the service was Cable TV (somewhat misleading as no cable TV exists in Greece). Cable TV is a triple-play service (together with phone calls to 21 international destinations and a 20 Mbps internet connection). Only a few months after Vivodi, OnTelecoms offered a triple-play service called All in One (it consists of a fixed telephone, a broadband connection with speeds between 16 and 24 Mbps, and a TV service). For more than a year (end of 2008), none of these two companies had published any subscribers' data. Analyst's estimations put the number of IPTV subscribers of Vivodi and OnTelecoms at 24.000 and 35.000 respectively, at the end of 2009. The reasons for these disappointing figures are multiple: poor content, limited geographical coverage, limited marketing and advertising campaigns, public aversion to Pay TV, Nova's competition, etc. Things were about to get worse for both companies, when in 2009 two telecoms powerhouses, incumbent OTE and Hellas Online (a major broadband provider) announced their plans to enter the IPTV market. OTE launched its own service, with the trade name Conn-X TV, in October 2008, as a pilot, and six months later as a full commercial offer. Hellas Online followed suite and launched its own HoL TV at the second semester of 2009. Both providers were subsidizing the set-top box. They also offered, right from the beginning, Video On Demand (VoD) services, PVR functionality (albeit the subscriber had to pay the cost of purchasing the advanced set-top box) and modem/routers with WiFi capabilities. The entry of OTE and Hellas Online caused turmoil in the IPTV market, especially for Vivodi and OnTelecoms. The two newcomers had stronger financial muscles and could negotiate more generous contracts with content owners. OnTelecoms and Vivodi started negotiations for a possible merger between the two companies and, finally reached an agreement on September 2009. According to the agreement, OnTelecoms acquired 100% of Vivodi's shares, with the latter acting from then on as a subsidiary of the former. OTE and Hellas Online boosted their IPTV offer with HD channels, more VoD content, and lucrative football deals (especially Conn-X TV, which acquired the rights of some major European football leagues). At the time of writing (October 2011), Conn-X TV has around 60.000 subscribers, while Hellas Online has given no official

data. However, Hellas Online is revamping its service, renamed as "hol my TV", and is enriching its offer with more HD content and a free set-top box for every new subscriber. IPTV is definitely "here to stay", but with only a meager 3-4% of penetration on Greek households, it has a long way to cover.

Other platforms (Mobile TV) & services (HDTV, VoD, Catch-up TV)

Mobile TV is not developed in Greece, despite the fact that Greeks possess one of the highest per capita penetration rates of mobile phones (over 140% of the population). The main reason for this is that neither broadcasters nor mobile operators were seriously interested in rolling out that service. No DVB-H service was ever launched in Greece, despite the success the service had in Italy, and the fact that a similar service was launched, albeit with no success, in neighboring Albania. The three mobile operators in Greece (Cosmote, Vodafone and Wind) experimented with a 3G offer that comprised a selection of the programmes of few of the main commercial channels (MEGA, Ant1, Alpha etc.).The offer included live as well as On Demand content. The mobile operators had reached some form of agreement with the broadcasters, but no serious attempt was ever made for marketing and advertising this new offer. Another impeding factor was the high charges inflicted upon a mobile subscriber who would try to use its 3G phone connection to watch a television programme. Greece had amongst the highest billing charges for 3G use in Europe. Mobile operators focused their strategy towards the provision of Mobile Internet rather than Mobile TV, as they considered that the former will be more profitable on the short run than the latter.

High Definition is a newcomer to the Greek TV landscape. As in the rest of Europe, it was the satellite provider, Nova, which offered the first HD channels. This is understandable since satellite providers have the necessary capacity to transmit HDTV streams. Nova wanted to boost its product and HDTV channels were the proper tool to carry it out. The digital satellite provider's HD offer included both international channels (Nat Geo Wild, Discovery, Eurosport, etc.), as well as Nova's own channels (Nova Sports channels). Additionally, during the 2009-2010 football season in Greece, it started broadcasting a number of matches in HD format. The next broadcaster to

trial HDTV was ERT. The public service broadcaster created a new digital channel, ERT HD, and inserted it to one of two digital multiplexes it operates. The first HD broadcast from ERT HD was the UEFA Champions League final, between Barcelona and Manchester United on May 2011. ERT has stated that ERT HD was a pilot channel and the broadcasters' intentions were to cover some major events (major football, basketball and tennis matches, the EuroVision Song Contest, etc.) so as to introduce HDTV to Greek public. ERT's initiatives caused a furor and a string of reactions from commercial broadcasters and Digea. They accused ERT of violating an agreement between all digital terrestrial broadcasters on which it was declared they would move forward in rolling out DTT in a coordinated and synchronized manner, with no surprises and unilateral "fait accompli'. ERT replied by stating that HD transmissions were not prohibited according to the current state of law, and that ERT HD was a pilot project. Furthermore, ERT argued that since HD is the future of TV, as many experts claim, then it should be credited for "introducing and educating" the public for this great development, instead of having to face a string of accusations and threats. At the moment, there is no concrete government plan for the introduction of HDTV on DTT platform, and the initiative lies at the hands of broadcasters. The majority of DTT broadcasters are not ready for HDTV because they have not made the necessary investments in time.. IPTV providers OTE and Hellas Online are planning to offer HD channels on their respective services beggining on the last quarter of 2011[5].

Video-on-Demand (VoD) is being offered as an extra service, as an added value component of the main subscription packages. Nova started offering a VoD service in 2001, but it had attracted limited interest from the subscribers. The service was revamped in 2010, named Nova On Demand, and it functions by downloading to the hard disk of the subscriber's PVR set-top box a selection of movies and TV series. The menu alters every two weeks, while any downloaded TV content has to be consumed within the next 20 hours. The service is offered free of charge for those among Nova clients who have subscribed to the full package. On their part, OTE and Hellas Online are also offering VoD, which mainly consists on a selection of movies, TV series, documentaries and music video clips. The VoD content is transferred from the servers

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[5] In fact OTE offers (end of March 2012) nine (9) HD channels but only on its satellite platform. The IPTV platform still offers no HD channels.

of each company upon request sent by the subscriber (so in the case of IPTV there is no need for the subscriber to possess a PVR set-top box) through their private IP networks (network-stored content). In the case of Conn-X TV, some of the content is being offered for free for existing clients while some other (more exclusive and comprising recent Hollywood blockbusters) is provided for some extra fee, or as a Pay-per-View service. Currently, digital terrestrial broadcasters have no plan to move into the VoD business.

An area where "traditional" broadcasters were actively involved in is catch-up TV. All major public and commercial broadcasters use their websites as a platform for transmitting TV content. The content usually comprises TV series and shows, news bulletins and infotainment programmes, for which the broadcasters hold rights, excluding therefore foreign TV series and shows, football matches, movies and foreign reality shows. The content is offered for free, but is tied with some advertising. The interested viewer can choose to either download the content to its own hard disk for later viewing, or to watch it being streamed on his computer screen. Some broadcasters have uploaded the full range of episodes of a TV serial on their websites, while others keep the content online for only 15 days.

ENDNOTE

The severe financial crisis has hit all sectors of society, and the media sector could not be an exception. On the contrary, the media sector is one of the major victims, with media outlets ceasing publication and unemployment reaching one of the highest levels in the industry. This situation has been causing doubts whether Greece can manage to complete switchover plans within the EU time frame or not. Once again, the gap between smaller and larger, more affluent and lesser affluent, countries in the era of globalization cannot be overlooked (Papathanassopoulos 2005, 2007). Nevertheless, digital television may be seen as a driver for development. Private channels claim that, in areas where DTT is the only mode of reception, people have changed their TV sets almost immediately. This is true, but the question on how many of them will survive the financial tornado the country, its economy and society are facing, hasn't got an answer yet.

Table 1: Basic Statistical Data for Greece (1st Semester 2011)		
Population & Equipment	**Data**	**Percentage**
Households	3.789.000	
TV Households	3.770.000	99,3%
Analogue TV Households (including households equipped with digital TV where at least 1 TV set receives analogue TV)	3.770.000	100%
Digital Satellite Households	474.000	12,5%
Digital Terrestrial Households	700.000	18,48%
I.P.T.V. Households	130.000	3,43%
Total Digital TV Households	1.304.000	34,41%
Households equipped with at least 1 PC	2.046.060	54%
Households with Internet	1.780.830	47%
Households with Broadband Internet	1.591.380	42%
Installed 3G phones	1.023.030	27%

Table 2: Digital Terrestrial TV Network Operators in Greece (1st semester 2011)			
Name	**E.R.T.**	**Digea**	**Digital Union**
Launch Year	2006	2009	2010
No. of Multiplexes	2	4 (2 national+2 with local and regional channels)	2
Population Coverage	Circa 65%	Circa 65%	Circa 55%
Plans for DVB-T2 Launch?	No	No	No
Compression Standard (MPEG-4 or MPEG-2)	MPEG-2 on the first Multiplex. MPEG-4 on the 2nd Multiplex.	MPEG-4 on both Multiplexes	MPEG-2 on both Multiplexes
No. of Channels	8	14 (6 national channels on 2 Muxes and 8 local and regional channels on two Muxes)	8
HDTV channels on offer?	Yes (one channel, ERT HD on the MPEG-4 Multiplex)	No	No
Interactive services on the Multiplex?	Yes (info+ on the MPEG-2 Multiplex)	No	No

Table 3: IPTV Services in Greece (end 2010)				
IPTV Services	Hellas On Line	OTE Conn-X TV	On Telecoms	Vivodi
Monthly Subscription Fee (in euros €)	9,90 (only for the TV service)	15 (only for the TV service)	34,90 (triple-play package)	35 (triple-play package)
Service Activation Fee (in euros €)	49,90	None	60	65
Set Top Box (with no PVR functionality)		Free	Free	Free
Set Top Box (with PVR functionality)	Free	99	Not available	Not available
WiFi modem/router	Free	35	Not available	Free
HD Channels	Yes (2nd semester 2009)	No (but the stb has HD functionality)	No	No
VoD costs / pay per view (movies only)	From 0,99€ to 3,99€ per movie	From 2€ to 4€ per movie	From 2€ to 3€ per movie	From 1,99€ to 3€ per movie

References

Adams, A. (2003) *"Greek DTH market still not settled"*, *TV International,* November, 12.

AEGIS *"Review of Digital Dividend Options in Greece"*, report prepared for EETT, 26 of June 2009.

Galperin, H. (2004) *"New Television, Old Politics: The Transition to Digital TV in the United States and Britain".* Cambridge and New York: Cambridge University Press.

Gambritsos, G. (2010) *"The Digital Television Strategy of ERT"* speech given by the then CEO of ERT AT THE 5TH EETT International Conference, Athens 18 of June 2010.

Iosifides, P. (2001) *"Digital Television in Greece"*, *Intermedia,* 28, 5: 12-16.

Iosifides, P. (2002) *"First the UK, now Greece"*, *Intermedia,* 30, 5: 21-23.

Iosifides, P. (2006) *"Digital switchover in Europe"*, *The International Communication Gazette*, 68, 3: 249–268.

Official Government Gazzette (2008) *"Formation of the Frequency Map for the transition to the digital terrestrial television broadcasting"*, No. 1680, August, 20.

Papathanassopoulos, S. (2001) *"Media Commercialization and Journalism in Greece"*, *European Journal of Communication,* Vol. 16 (4): 505-521.

Papathanassopoulos, S. (2002) *"European Television in the Digital Age: Issues, dynamics and realities".* London & New York: Polity & Blackwell Press.

Papathanassopoulos, S. (2005) *"Europe: an exemplary landscape for comprehending globalization"*, *Global Media and Communication*, 1 (1): 46-50.

Papathanassopoulos, S. (2006) *"Television in the 21st century"*, Athens: Kastaniotis (in Greek).

Papathanassopoulos, S. (2007) *"The Development of Digital Television in Greece"*, *Javnost/The Public,* 14 (1): 93-108

To Vima (2006) *"War for the satellite television"*, 22 January: A56 (in Greek).

Zotos, G. (2006) *"The satellite fiasco of Greece"*, *To Vima*, 22 January: B12 (in Greek).

Digital terrestrial TV switchover process in Portugal: viewers between a rock and a hard place

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INTRODUCTION

To understand what are the most significant factors for the Portuguese population to either adopt or reject digital TV, was the main goal of the project "ADOPT-DTV: Barriers to digital television adoption in the context of the digital switchover (PTDC/CCI-COM/102576/2008)", conducted by Universidade Lusófona de Humanidades e Tecnologias. This project focused on the people who receive free-to-air analogue terrestrial TV exclusively, particularly those who have no intention of or are doubtful about adopting digital TV.

The ADOPT-DTV research project began in April 2010, and lasted for 18 months, being formally concluded in October 2011. The project combined quantitative and qualitative methods, in accordance with the good practices of projects of a similar scope – more details about methodology and theoretical framework on Quico & Damásio (2010):

1) Ethnographic study, with a sample of 30 Portuguese families from the 3 pilot-areas for the switch-off (Alenquer, Cacém, Nazaré), with the objective of exploring in their respective natural context their attitudes and level of knowledge regarding digital TV;

2) Interviews with stakeholders, aiming to understand all the different perspectives of the main interested parties in this specific field;

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[6] Lusophone University of Humanities and Technology.

3) Quantitative survey, administered to a representative sample of the Portuguese population of approximately 1.200 respondents, with the main goal of determining the main adoption and rejection factors associated with digital TV;

4) Usability study, with a sample of 20 users, aiming to conduct a comparative analysis of digital terrestrial TV set-top boxes in the Portuguese market, considering their ease of use and general satisfaction.

The research team, thus, aimed to contribute to a better understanding of the challenges faced in Portugal during the process of transition from analogue terrestrial to digital terrestrial TV – also known as switchover – and in practical terms, to contribute to the development of a more inclusive digital TV, both in Portugal and in other countries in a similar situation. In Portugal, the first phase of the analogue terrestrial TV switch-off is planned to occur on January 12, 2012 and the third and last phase is planned for April 26th, 2012.

It should be noted that. in late 2011, digital terrestrial television (DTT) viewers have exactly the same number of channels offered by analogue terrestrial broadcast – and no plans are known to increase the number of free-to-air channels available to the Portuguese population before (or after) the switch-off via the DTT network. A 5th free-to-air channel can be launched in the future, but its concession has been adjourned *sine die*, due to the exclusion of the only two contestants in a public tender promoted by the national media regulator Entidade Reguladora para a Comunicação Social – ERC (2009). The pay-TV DTT operation is also adjourned *sine die,* after the winner of the public tender for this operation, Portugal Telecom (PT), decided to give up on this license.

Also significantly, the national communication campaign about the analogue TV switch-off only began in mid-March 2011, merely 10 months before the first phase for switching off the analogue terrestrial signal, and just 13 months before the planned dead-line for the switchover process.

Also in March 2011, the telecommunications regulator (Anacom) and the company responsible for the DTT free-to-air operation (PT) announced that the maximum value for reimbursement for the DTT set-top by was up to 50% of the total cost of the equipment, with a maximum of 22 euros per device and per household. The groups who could benefit of this subsidy were people with special needs of at least

60% of disability degree, beneficiaries of "rendimento social de inserção" (social insertion subsidy) and retired people earning less than 500 euros per month. Yet, until recently the average price of a DTT set-top box was about 40 to 50 euros - and it might be necessary for a technician to go to the household to redirect the antenna, which is also an extra cost. More expenses are awaited in the case of 13% of the Portuguese population who live in areas not covered by the DTT network, who will have to install a satellite dish if they want to continue to have free-to-air TV, receiving nonetheless the same 22 euros of subsidy for the equipment and installation of the satellite dish and set-top box.

Therefore, with almost no tangible benefits for changing from analogue terrestrial TV to digital terrestrial TV, having to support in most cases all the costs and trouble to continue to have access to free-to-air TV and, also, being warned with short notice about the mandatory TV switchover, it seems like Portuguese TV viewers are between a rock and a hard place. This way, the question is to choose from the lesser of two evils: to pay for a decoder device or TV subscription to continue to have something that is now for free or, in alternative, to be left without television signal after the switch-off.

Next, we will present a selection of the main results of the ADOPT-DTV research project, focusing on the rates and profiles of pay-TV subscribers versus free-to-air TV viewers, as well as their awareness and knowledge about the digital TV switchover process in Portugal, and intention to adopt digital TV on the case of free-to-air TV viewers. The full final report and the partial reports of each empirical study are available at the project public web site: http://adoptdtv.ulusofona.pt/

1. Ownership of free-to-air TV and pay-TV: rates and profiles

The population in mainland Portugal which receives exclusively free-to-air TV should come close to 38%, as in September 2011. In the latest survey on digital TV conducted by Universidade Lusófona in September 2011[7], **61.7% claimed to have pay-**

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[7] Survey conducted within the scope of the research project entitled "iDTV-Health: Inclusive services to promote health and wellness via digital interactive television" (UTA-Est/MAI/0012/2009); the fieldwork took place from September 16th to 27th 2011, with a representative sample of the Portuguese population over 18 years of age, constituted by 1.207 respondents, 1.202 of which claimed to have TV at home.

TV at home (n=742), which implies that **38.3% of those surveyed do not have pay-TV** (n=460). These data coincide with the figures of the Telecommunications Barometer by Marktest, which estimated in 61.9% the penetration of pay-TV in mainland Portugal, in June 2011 (Anacom, 2011). On the other hand, the figures put forward by Anacom vary, depending on the denominator being considered: 49.5 subscribers per 100 homes, should one be considering the total amount of classic family homes (which includes homes of usual dwelling and seasonal use or secondary homes), while when considering the total number of classical families, Anacom (2011) estimated that 72.2% are subscribers of pay-TV in the second trimester of 2011.

As regarded in the results obtained in the first quantitative survey conducted within the scope of the ADOPT-DTV project, **54.7% had a pay-TV service at home** (n=655), which means that **45.3% of the total participants received only free-to-air television** (n=543). The fieldwork of this survey took place in November 2010, with a sample of 1,205 participants, 99.4% of which had at least one TV set at home (n=1198).

Table 1: Possession of pay-TV (ADOPT-DTV and IDTV Health - ULHT, 2011)			
	November 2010 (n=1198) %	**January 2011** (n=1198) %	**September 2011** (n=1202) %
Yes	54.7	59.5	61.7
No	45.3	40.5	38.3

So as to better understand **the profiles of viewers with subscription TV and without subscription TV**, we now present the descriptive and inferential statistical analysis of some variables, based on the main survey of ADOPT-DTV, the fieldwork of which took place in November 2010. The analyses conducted concern a confidence level of 95% (α = 0.05) and the Chi-Square test was used since it proved to be the stronger and more adequate. When the premises of the Chi-Square were not verified, we resorted to the use of Fisher's exact test.

Regarding the socio-economic profile of subscribers of pay-TV, the data indicate that the variables gender and subscription TV are not independent, there being statistically significant differences between the male and the female gender as

regards possession of pay-TV ($\chi 2$ (1) =0.185, p = 0.667, n = 1,198; α = 0.05). Data indicate that there is **a higher percentage of participants of the female gender that have pay-TV at home**, when compared to the participants of the male gender. We also detect a statistically significant difference between age and pay-TV, indicating that older participants are less likely to have pay-TV in their own homes ($\chi 2$ (5) = 73.879, p <0.001, n = 1,198; α = 0.05). We also observed a **reasonable and significant negative correlation between age and possession of subscription TV** (P =- 0.25, p <0.001).

Table 2: pay-TV and free-to-air TV vs. age (ADOPT-DTV, November 2010)			
	Total sample %	Pay-TV %	Free-to-air TV %
18-24 years old	12	14.2	7.2
25-34 years old	21	24	17.5
35-44 years old	19.1	20.8	17
45-54 years old	18.2	19.2	16.6
55-64 years old	13.3	11.3	15.8
> 65 years old	16.4	8.2	23

Regarding **the status of participants with pay-TV, a positive correlation was found** (V = 0.244; p <0.001) **and also statistically significant differences**. These data indicate that participants with a higher status level (A, B) have a higher probability of having pay-TV at home than individuals in less privileged groups (D, E), which are considerably below average in rates of subscription to pay-TV ($\chi 2$(4) = 71.093; p <0.001; n = 1,198; α = 0.05).

Table 3: pay-TV and free-to-air TV vs. Status (ADOPT-DTV, November 2010)			
	Total sample %	Pay-TV %	Free-to-air TV %
A	2.7	4	0.7
B	13.9	19	8.5
C	19.6	24	14.9
D	48.8	40	59.1
E	15	13	16.8

Regarding people with special needs, namely individuals with visual, hearing and motor disabilities, once again we find a **positive correlation between disability and possession of free-to-air TV**. Results also indicate that there are significant differences between these variables, revealing that participants with hearing, visual or motor disabilities are more likely to have free-to-air TV in their homes (visual disability χ^2 (4) = 21.422, p <0.001, n = 1,198; α = 0.05; V = 0.134, p <0.001; hearing disability χ^2 (4) = 42.303, p <0.001, n = 1,198; α = 0.05; V = 0.188, p <0.001; motor disability χ^2 (4) = 66.131; p <0.001, n = 1,198; V = 0.235, p <0.001; α = 0.05).

Table 4: Pay-TV and free-to-air TV vs. visual disability (ADOPT-DTV, 2011)			
Visual impairment	**Total sample %**	**Pay-TV %**	**Free-to-air TV %**
None	62.3	68.8	56
Slight	13.9	12.7	15.5
Some	18	14.8	22.1
Severe	5.1	4.1	6.4
I cannot see	0.1	0.2	0

Table 5: Pay-TV and free-to-air TV vs. hearing disability (ADOPT-DTV, 2011)			
Hearing impairment	**Total sample %**	**Pay-TV %**	**Free-to-air TV %**
None	80	86.7	71.8
Slight	9.4	6.4	13
Some	8.5	5.8	11.8
Severe	1.9	0.9	3.1
I cannot hear	0.2	0.3	0.2

Table 6: Pay-TV and free-to-air TV vs. motor disability (ADOPT-DTV, 2011)			
Motor impairment	**Total sample %**	**Pay-TV %**	**Free-to-air TV %**
None	77.1	85.5	67
Slight	10	7.6	12.9
Some	8.8	5.6	12.7
Severe	3.7	1.1	6.8
I cannot walk	0.3	0.2	0.6

In short, based on the results of the first quantitative survey administered to a representative sample of the Portuguese population within the scope of the ADOPT-DTV project, we can state that **individuals with pay-TV in Portugal are more likely to be young and middle-aged adults**, **more likely to have higher levels of education and to belong to higher status groups** (A / B / C)[8] and **less likely to have some type of disability** (visual, hearing or motor). On the other hand, **individuals without pay-TV in Portugal are more likely to be elderly people, over 55 years old, more likely to possess lower levels of education and low status (D / E) and, finally, to possess some level of disability** (hearing, visual or motor).

More details about these profiles can be found on Quico, Damásio, Henriques & Veríssimo, Iolanda (2011a) and, also, on the final report of the ADOPT-DTV project (Quico, Damásio, Henriques & Veríssimo, Iolanda; 2011b).

2. Type of access to free-to-air TV

The reception of analogue terrestrial TV is largely dominant with Portuguese who do not have pay-TV, meaning that access to DTT is not expressive. It is estimated that 35% of the population of mainland Portugal may be affected by the analogue terrestrial TV switch-off.

In the latest survey on digital TV conducted in September 2011, out of the 460 respondents who answered negatively to the question "do you have pay-TV" (total of respondents with TV =1,202), **92.4% claimed to receive analogue TV through the traditional antenna** (n=425) and **3% indicated they have DTT** (n=14), while 2.6% said they received TV free of charge through satellite dish, while 2.6% do not know or did not reply to this question.

It should be noted that in the previous survey, conducted in November 2010, from those polled who indicated they did not subscribe to a pay-TV service, 96.7% claimed to have analogue terrestrial TV, whereas 1.8% said they received TV signal through satellite dish and 1.1% said they received DTT, with 0.7% choosing not to reply and 0.2% of those surveyed identifying another kind of access. Therefore, there was a slight increase in the percentage of those who said they had DTT, which went from

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[8] Status is determined by the GfK market research company, based on the education level and occupation of the respondent.

1.1% to 3% of those polled who did not have pay-TV.

Table 7: Type of access to free-to-air TV in the family (ADOPT-DTV and IDTV Health, 2011)		
	November 2010 (n=543) %	September 2011 (n=460) %
Traditional antenna (analogue, with subscription TV)	96.7	92.4
Digital Terrestrial Television (DTT)	1.1	3
Satellite/ satellite dish (free)	1.8	2.6
Other type of access	0.2	0.2
Don't know/ don't reply	0.7	2.6

NB: there was the possibility of selecting more than one option

In the ethnographic study, conducted among 30 families of the 3 pilot zones of the analogue terrestrial TV switch-off, 5 of these interviewed families did not subscribe to television services (families 5, 8, 9, 17 and 23). Regarding the usability case study, 4 out of the 20 participants who collaborated in the assessment of DTT equipment were not subscribers of a pay-TV service.

3. Knowledge on digital TV and DTT

It is estimated that the majority of the Portuguese people has already heard of digital TV and DTT, but for the most part they find it hard to define or to characterize these technologies. Regarding familiarity with the terms and key expressions associated with digital TV, **78.2% of the participants in the survey conducted in September 2011 know or have already heard of digital TV**. In a second survey, within the scope of the ADOPT-DTV project, conducted in January 2011 and published in March, 75.5% answered affirmatively to the same question, which shows a slight increase in this indicator.

As regards to the expression "Digital Terrestrial Television", in January 2011, 46.1% of respondents said they had already heard of this distribution platform of

digital TV signal, whereas in the September 2011 survey, **72% of the respondents replied they had already heard of DTT**, which represents a considerable increase in an 8-month time difference. We should also mention that **14.3% of respondents replied they knew the term "digital switchover"** in this latter study, whereas in January 2011, 11% replied they had already heard the expression.

Table 8: Knowledge of vocabulary associated with digital TV (ADOPT-DTV and IDTV Health, 2011)		
	January 2011 (n=1198) %	**September 2011 (n=1202) %**
	Yes, I have already heard of...	**Yes, I have already heard of...**
Digital TV	75.5	78.2
High Definition TV (HD)	69.4	69.8
Digital Switchover	11	14.3
Digital Terrestrial Television (DTT)	46.1	72
BOX/Decoding Box (STB)	61.8	70.6

The ethnographic study is enlightening, as it regards the difference between having already heard of digital TV and knowing how to define or characterize digital TV. Thus, we observe a **general lack of knowledge of the features of digital TV:** out of the 30 families which participated in the study, at least one of the elements in 26 families claimed he/she had already heard of the subject, but only 3 participants from the total of 63 interviewed in the study were able to explain what this type of transmission of television signal and data is, and what are its features.

In these families where at least one of the members claimed to have heard about digital television, this information came from the national or local media, from relatives or friends, from specialized technicians, or from the television providers, via the telephone. *«I heard it on television, it seems that it's going to be from January or something, I'm not really sure...»*, says Sofia, 37, from Alenquer. *«I've heard about it, by the television man, our technician. He had already said that any day... And he said that Alenquer was one of the areas of the pilot experiment»*, states Carla, 65, after

explaining that, when she bought her latest TV set, she was told that it was already equipped with «*I don't know what for the digital age*».

Although people are apparently familiar with the terms, the ideas on digital television seem to be vague in 21 of the 26 families who claim to have heard about the subject; some individuals even relate digital television with aspects that are still far from reality. «*What I understood as digital TV is that it's those television sets for which we don't need to have for instance a remote to turn on and off*», suggests Adelaide, 37. «*Now there are no more remote controls, there is nothing. It is all done on the screen, which is very thin*», explains Luísa, banking on the same idea, that digital is synonymous with "touch". Actually, although over 40 individuals in 26 families have claimed they knew the term "digital television", very few knew how to define it, and the more recurrent expressions were: «*I have heard of digital television, but to be honest I do not have a clear idea of what it is...*» (Sónia, 35); «*I have indeed heard about it, but I am not quite in the know...*» (Isabel, 73); «*I have heard of it. But deep down I really don't know what's going on*» (Adelaide, 37); «*I have heard of it, but I didn't pay any attention*» (Américo, 77).

On the other hand, hardly any precise definitions of digital television were heard. We highlight only three more concrete replies*: «The idea that I have is that it is a different format, which can transmit much more information, which enables a series of functionalities. In the short run, better image and sound quality. And then a series of functionalities that common TV does not allow*», explains Carlos, 37; «*It is different, it's going to be a higher quality television... That's what they say... Higher broadcast quality*», defined Jorge, 64; «*There's a lot of talk about digital television. That it's a different television broadcasting system from the one currently in use. I don't know about technical details. The idea that I have is that it's a new thing which is going to be implemented in Portugal, but not only regarding television. In other communication systems too*», considered Manuel, 71 years old.

4. Advantages and disadvantages associated with digital TV

The limited perception of the advantages and disadvantages associated to digital TV is the most commonly observed situation; cost is identified as the main disadvantage, whereas higher image and sound quality is perceived as the main

advantage. In the ethnographic study conducted with 30 families of the pilot-zones of the switch-off, we became aware of the **hesitation of the individuals involved when they were to talk about the advantages and disadvantages of digital television**. Even so, the most commonly mentioned advantage was the higher image and sound quality, followed by high definition and 3D. The most commonly mentioned disadvantage was the cost involved in acquiring digital TV.

Among the 26 families in which at least one of the members admitted to have heard about digital TV, one or more members of 15 families stated they did not know what the benefits were, and in 11 families at least one of their members said they did not know the disadvantages. Next to the majority of *"Don't know"* (for 15 families), the most commonly mentioned advantage was the **improvement in image and sound quality** (by 6 families). Then, in 2 families, the possibility of bringing high definition or 3D into the living-rooms are acknowledged advantages, as is the possibility of having more channels (2 families), more services and features (2 families). Diversification of contents, decrease in technical malfunctions and the technological evolution were other advantages mentioned by the interviewees.

Although 11 families say they do not know enough about digital TV to indicate its disadvantages, **costs are the first con of those who suggest the inconvenient of this type of broadcasting system**. *«The disadvantages fall on the wallet!»*, says Jacinto, 32. *«It's one more thing for us to spend money on»*, adds Sandra, aged 34. *«It depends on its cost…»*, points out Laura, 70, turning to her brother who says he does not know the disadvantages of digital TV because he does not have enough information on the subject.

Then comes the compulsory subscription, the need to adapt the equipment and the need to have two remote controls as the disadvantages mentioned by families. Clara, 67, who lives in Alenquer, considers that the fact is there is no evident advantage to the change, but merely the obligation to switch, to be the greatest disadvantage: *«There's no motivation…»*.

We should point out that **the advantages of digital TV most commonly mentioned by the interviewees do not match the main reasons they say it will make them subscribe to digital TV**. In this case, the increase in the range of channels and the

existence of favourable packages are the most commonly mentioned reasons, rather than improvement in image quality, high definition and 3D.

5. Knowledge about the switch-off of the terrestrial analogue TV broadcast

It is estimated that the majority of the Portuguese population does not know the scheduled date for the terrestrial analogue TV broadcast to terminate, 3 months from the first phase of switch-off. In the latest survey on digital TV conducted in September 2011, **59% of participants indicated they did not know the year when terrestrial analogue TV would be switched off**, with 41% of respondents identifying 2012 correctly, 5.2% indicating 2011, 0.7% a saying it would take place in 2013 and 0.2% stating another year, while 52.7% of all respondents said they did not know the year of the switch-off. [9]

We should highlight that, out of the 460 respondents who do not have pay-TV, **62% are unaware that in 2012 the terrestrial analogue TV broadcast is scheduled to be switched off**. Thus, 56.5% of these respondents stated they did not know the year scheduled for the switch-off of terrestrial analogue TV, 4.3% indicated the year 2011, 38% correctly identified 2012, 0.9% said it would happen in 2013, while 0.2% indicated another year.

Table 9: Knowledge of the switchover year (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all the respondents with TV) %	**September 2011 (n=1202; all the respondents with TV) %**	**September 2011 (n=460; respondents without pay-TV) %**
Don't know	85.4	52.7	56.5
Yes, for 2011	6.1	5.2	4.3
Yes, for 2012	7.8	41	38
Yes, for 2013	0.7	0.7	0.9
Yes, another year	0	0.2	0.2

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[9] NB: in the introduction to this question, respondents were informed by the interviewers that "digital switchover" is the name given to the process in which the analogue television transmission is converted to digital transmission and, should people not adapt the television set and should they not have subscription TV, they will cease receiving RTP, SIC and TVI channels.

Regarding the results obtained in the survey of November 2010, there is a considerable increase in the percentage of respondents who correctly indicated 2012 as the year when the television analogue broadcast would be switched off: in the previous survey only 7.8% of participants correctly identified 2012 as the year of the switch-off, while 85.4% of respondents said they did not know when it would occur, 6.1% indicated 2011 as the year for the switch-off and 0.7% said 2013. In this survey, respondents between the ages of 35 and 44 were those who proved to have more information about the year of the switch-off, with 13.1% answering correctly that it would take place in 2012. It should be pointed out that the group of individuals over 65 years of age was the one who proved to be the least aware of this date: indeed, 95.5% of these respondents said they did not know when this switchover process would occur, while merely 1.1% correctly identified the year of the switch-off, a percentage that falls well below the 7.8% average of the global sample. In total, 98.9% of individuals aged 65 or over did not know when the switch-off of terrestrial analogue TV will take place.

That same question was asked to participants in the ethnographic study, and among the 30 families interviewed, **within 15 families there was the knowledge that the analogue broadcast of terrestrial television would be switched off, and in the other 15 families this was not known**. In fact, among the 15 families aware of the switch-off, there were 3 cases in which some members knew about it, whereas others were not informed. At the Rosários family, for instance, it was apparent that Carlos, the father, aged 37, was much more aware of the technological innovations than any other member of the family. Although his wife and his in-laws also said they knew about the switch-off, Carlos was the only one who immediately used the term *"switch-off"* to reply, and demonstrated that he knew of the deadline. In the same way, in the Matos family, Manuel, 70, already knew that the switch-off of the analogue TV broadcast would occur, whereas his wife said the situation «*passed her by*».

Also in this subject, it was observed that **those individuals that had already heard of the *switch-off* find it difficult to explain the process and to indicate a deadline for the switch-off of the terrestrial analogue TV broadcast**. Although some of those interviewed had already heard of the analogue switch-off, 14 families did not

know the deadline for the process. Therefore, when it was time to ask the date when the analogue broadcast would be over, we heard such replies as: *«no»; «I have no idea»; «I know nothing of what awaits us».* Regarding procedures to have at that time, as it was mentioned above, some families stated they knew about the need to purchase *«a device»* (6 families). Some even knew the average price of this equipment (2 families), but in most homes (18 families) there were still doubts about who would be affected and how to act.

By way of example, there is the case of 73-year-old Catarina, retired, who was not aware of the switch-off and had no idea of the deadline, but who, after she was enlightened, suggested this would be a change *«for the better».* Still, she considered that this is a change *«for those who can afford it».* Questioned on the amount she would be willing to pay to go on having TV at home, Catarina replied it could not be *«very high».* Over and over, the old lady repeated the thought: *«But am I really going to be left without television? Oh my God… This is what keeps me company!».*

Although they do not know the technical terms to express the end of the analogue broadcast system, Sara and Maria do not receive the information regarding the switch-off as news and, facing the possibility of acquiring digital TV in the following 12 months, Sara says: *«If in May this happens (the switch-off), then we have to do it, if we are to watch television».* However, neither Sara nor Maria know what they have to do to go on having the four free-to-air TV channels at home. *«My son only told me that. But until then, we have time…»,* says Sara. After an explanation about the costs of switching to DTT and when questioned if they would be able to afford the cost of the decoder to continue having TV, Sara e Maria stated*: «We have to! We are not going to lose the television broadcast».*

Although they need not worry about adapting their television set to receive Digital TV – since they already subscribe to a service – both Manuel and Júlia fear the situation of their closest relatives, who do not have digital TV in all their sets. Manuel thinks that his mother will not want to buy a decoder or another set. *«My mother is already 78 years old, she gets a pension of a hundred and something euros. How can she afford it?».*

6. Knowledge of what must be done to continue to have free-to-air TV

It was found a low level of knowledge regarding the issues related with DTT reception, especially in the case of Portuguese people without pay-TV at home. In the latest survey conducted by Universidade Lusófona on digital TV in September 2011, 38.6% of all participants said their current television set is compatible with DTT broadcast, 28.4% replied it is not compatible and 33% do not know or did not reply to the question. It should be remarked in the case of respondents **without pay-TV, 43.9% claimed that their set is not compatible with DTT** and **41.5% replied they do not know**, while 14.6% stated that it is compatible. In the survey conducted in Janeiro 2011, 30.1% said their current TV set was compatible with DTT broadcast, 14.2% said it was not compatible and 55.8% did not know or did not reply to the question.

Table 10: Do you know if your current TV set is compatible, that is, if it can receive Digital Terrestrial Television (DTT) broadcast? (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all respondents with TV)	September 2011 (n=1202; all respondents with TV)	September 2011 (n=460; respondents without pay-TV)
Yes, it is compatible	30.1%	38.6%	14.6%
No, it is not compatible	14.2%	28.4%	43.9%
I don't know if it is compatible	55.8%	33%	41.5%

Still, these 460 participants without pay-TV were asked if they know what they have to do to keep receiving TV signal in their homes (Q.12): **55.4% replied they do not know what to do to have DTT**, against 44.6% of affirmative replies. As regards the data collected in January 2011 and published in March, 84.1% of respondents without pay-TV said they did not know what they should do to receive DTT. Therefore, we observe a significant decrease in the percentage of people who do not know what to do to get DTT; nonetheless, 55.4% is still a figure that can be considered troubling, given that the fieldwork survey was conducted merely three months before the first stage of the switch-off of the analogue terrestrial TV – which will affect most of the Portuguese population.

Table 11: Do you know what you have to do to receive DTT in your home? (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all respondents with TV) %	September 2011 (n=1202; all respondents with TV) %	September 2011 (n=460; respondents without pay-TV) %
Yes	23.8	53.3	44.6
No	76.2	46.6	55.4

In what concerns knowing if their respective area of residence is covered by DTT, **70.4% of those participating in the survey that do not have pay-TV, replied they do not know if they can receive DTT**, 18.7% stated that their area of residence is not covered and 10.9% replied that they are covered by this broadcast technology.

Table 12: Does your residence area have DTT coverage? (ADOPT-DTV and IDTV Health, 2011)			
	January 2011 (n=1198; all respondents with TV) %	September 2011 (n=1202; all respondents with TV) %	September 2011 (n=460; respondents without pay-TV) %
Yes, it has coverage	20.3	23.5	10.9
No, it does not have coverage	10.9	18.5%	18.7
I don't know if it has coverage	68.9	58.1	70.4

More specifically, in the September 2011 survey, the participants without pay-TV were questioned about the procedures they considered to be necessary to receive DTT at home; **44.6% replied did they not know if it was necessary to adapt the antenna** and 17.8% said this was a necessary procedure, **38.9% indicated they did not**

know if it was necessary to have a decoding box, 55.2% replied that this was necessary and **37.2% of respondents stated they did not know if it was necessary to buy a new television set**, whereas 38.5% said it was necessary to do so.

In the ethnographic study, several of the participants proved to know that families will have to invest in the purchase of a device, although the rule was that they do not know the costs and whether they will be affected or not. By way of example, Sónia – mother of two children, aged 5 and 7 – said that her family will not know how to act should it be faced with the need to adapt both television sets to receive digital TV. Conversely, Verónica, a 22-year-old dance teacher, told us she found out about the switch-off in a conversation with her sister-in-law, who lives in Spain, and who explained to her that the country had already switched over. Although Verónica was not quite clear on the subject, she did understand that a change was about to happen: «*In the conversation with my sister-in-law I realized what was going on, but quite honestly I didn't pay much attention. I found it odd... I thought "So now there's digital TV, they do everything now. Don't tell me they are going to take the remote away from me". That was the first thing I said (laughs)*».

For Ana, 34, the switch-off of the analogue terrestrial TV transmission is not news either. Indeed, this young mother was one of the interviewees who showed more knowledge of the switch-off, since her job involves keeping abreast of news on television. «*I already knew that. 12th April... No, April 2012. I think the day hasn't been set yet (...) You either buy a box, which converts the signal for the old television set, or you have to buy a new television set. I even know the price of that box: it ranges from 50 to 250 euros*», she adds. In the café of the Simões family, in Alenquer, another Ana, 33, also said she vaguely knew the process of transition from analogue to digital television, explaining that, through the conversations in the café, she realized that a change was coming.

Still, we can observe that the sources that are most commonly mentioned by the interviewees, when asked how they found out about the switch-off, are **word-of-mouth, national and local media, as well as telecommunication service providers**, via the telephone. In the ethnographic study it also became clear that, **when families do not know how to solve a problem with a particular technological piece of equipment, they mostly resort to friends or relatives**. People with over 50 years of age tend to ask

"the young ones" for help to deal with devices, since mobile phones, computers to a television set. Still, as a rule, **matters related with television are sorted by specialized technicians**.

7. Intention to purchase equipment or services to access digital TV and DTT

It is estimated that nearly half the Portuguese population without pay-TV is undecided about obtaining digital TV equipment or services, 3 months before the scheduled beginning of the analogue terrestrial TV switch-off. Starting with the latest data collected, concerning the survey conducted in September 2011, all the 425 participants who said they did not have pay-TV and received traditional analogue TV (35.3% of the total sample of participants with TV at home), were asked if they are considering buying or subscribing to equipments and services in order to receive digital TV in the following 12 months[10]. Thus, **16.2% of respondents without pay-TV consider buying a new set with integrated DTT, 24.2% consider buying a DTT decoding box**, 6.8% intend to subscribe to a cable TV service, 0.2% consider subscribing to an optic-fibre TV service, 0.5% plan to subscribe to a satellite TV service and none of the respondents identified the option "IPTV or ADSL". Still, **11.3% said they had no intention of purchasing** equipment and services to receive digital TV (they represent 4% of the total sample of the survey) and **46.4% did not know or did not reply to this question**.

Comparatively to the data collected in November 2010, the 525 respondents without pay-TV who received analogue TV transmission via traditional antenna replied as follows: 7.8% predicted they would choose to buy a television set with integrated DTT, 8% said they were keen to buy a DTT decoding box, 5.8% considered subscribing cable TV, 1.3% considered the possibility of having optic-fibre TV, 0.4% considered the option satellite TV, none of the respondents identified the option "IPTV or ADSL", 34.1% of respondents said they had no intention of buying any of the main pieces of equipment or services for digital TV, 45.5% did not know or did not reply if they have any intention to purchase the equipment and/or services required for digital TV in the following 12 months.

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[10] NB: during the survey it was explained to all participants what digital TV and DTT are, and also that DTT will replace the current analogue broadcast, and that in order to have DTT it is necessary to buy a decoding box or purchase a television set that is prepared to receive DTT.

Table 13: Intention of buying equipment or services for digital TV in the following 12 months (ADOPT-DTV and IDTV Health, 2011) (respondents without pay-TV and receiving analogue terrestrial TV)		
	November 2010 (n=525) %	September 2011 (n=425) %
Buy new TV set, with integrated DTT	7.8	16.2
Buy DTT decoding box	8	24.2
Subscribe to cable TV service	5.9	6.8
Subscribe to satellite TV service (satellite dish)	0.4	0.5
Subscribe IPTV / ADSL service	0	0
Subscribe to optic-fibre TV service	1.3	0.2
None	34.1	11.3
Don't know / Don't reply	45.4	46.4

NB: the respondents had the possibility of choosing several options

Thus, we observe **a substantial increase in the intention of buying decoding boxes and television sets with integrated DTT by the respondents without pay-TV and who receive analogue terrestrial TV transmission**, that is, from 8% to 24.2% in the case of decoders and from 7.8% to 16.2% in the case of TV sets with integrated DTT receiver. Still, **the percentage of these respondents who do not know or won't reply to this question has remained practically the same in this 10-month period: 45.5% in November 2010 and 46.4% in September 2011**. Moreover, the percentage of respondents who indicated their intention to subscribe to pay-TV service (cable, satellite, fiber-optic TV, IPTV) remained unchanged: 7.5% in November 2010 and 7.5% in September 2011.

These 425 participants of the September 2011 survey were also asked to indicate **when they are considering buying a television set or a decoding box to have DTT**; 1.9% of these respondents claimed they would do it in a 3 months' time, 2.8% within 6 months, 1.2% within a year, **37.2% only when it became compulsory, 6.3% said never,** 0.7% have already bought the equipment, 0.2% gave another answer and

49.6% do not know or will not reply to the question. In the survey conducted in November 2010, out of the respondents without pay-TV who receive analogue terrestrial TV, 53.1% did not know or would not reply when they considered buying a television set or a DTT decoding box, which implies there is a slight decrease in this indicator. Conversely, 30.5% of these respondents claimed they would only do it when it became compulsory, a figure which increased to 37.2% in the September 2011 survey.

Table 14: Intention of buying equipment that is compatible with DTT transmission (ADOPT-DTV e IDTV Health, 2011) (respondents without pay-TV and receiving analogue terrestrial TV)		
	November2010 (n=525) %	September 2011 n=425) %
In 1 month	0.4	0
In 3 months	0.2	1.9
In 6 months	0.6	2.8
In 1 year	2.1	1.2
Only when it becomes compulsory	30.5	37.2
Never	12.4	6.3
Already bought/already have	-	0.7
Other	0.8	0.2
Don't know/won't reply	53.1	49.6

Also, in the November 2010 study, 12.4% claimed they would never buy a television set of a DTT decoding box, whereas in September 2011 this percentage fell to 6.3%, which is a considerable decrease.

CONCLUSION

Briefly reviewing this selection of the ADOPT-DTV project main results, first it was estimated that about 38% of mainland Portugal population receives exclusively free-to-air, as in September 2011. About the profiles of pay-TV viewers versus free-to-

air TV viewers, individuals with pay-TV in Portugal are more likely to be young and middle-aged adults, more likely to have higher education levels and to belong to higher status groups (A/ B/ C) and less likely to have any kind of disability (visual, hearing or motor). On the other hand, individuals without pay-TV in Portugal are more likely to be over 55 years old, more likely to have lower education levels and lower *status* (D/ E) and, finally, to possess some sort of disability (hearing, visual or motor).

The reception of analogue terrestrial TV remains largely dominant on Portuguese people without pay-TV, and access to DTT has little expression: in September 2011 it is estimated that 35% of the population in mainland Portugal may be affected by the switch-off of the terrestrial analogue TV transmission system.

Also, it is estimated that the majority of Portuguese people have already heard of digital TV and DTT, but in most cases they find it difficult to define or characterize these technologies. The limited perception of the advantages and disadvantages associated with digital TV and DTT is the most commonly observed situation. Free-to-air TV viewers identified cost as the main disadvantage concerning the adoption of digital TV, and the most commonly named advantage was the improvement in image and sound quality.

It is estimated that the majority of Portuguese population is unaware of the set date for the switch-off of analogue terrestrial TV, merely 3 months from the beginning of the switch-off. It was observed that there is a low level of knowledge regarding the practical issues connected to DTT reception, especially in the case of Portuguese people without pay-TV in their homes. Finally, it is estimated that nearly half the Portuguese people without pay-TV are undecided as to obtaining equipment or services for digital TV, just 3 months before the scheduled beginning of the analogue terrestrial TV switch-off.

In short, considering the profiles of TV viewers without pay-TV at home and considering the responses to questions related with awareness and knowledge about the switchover process, as well as the intention of obtaining digital TV, **the elderly, people with low educational levels and with some degree of disability have a higher probability of rejecting digital TV and, therefore, have a higher risk of being left without TV after the free-to-air analogue TV switch-off.**

As part of the final report delivered and published on October 2011, the research team recommended that postponing the switch-off date should be considered by those with responsibility on this matter, particularly considering the profile of the free-to-air TV viewers with access to analogue terrestrial TV, since it is estimated that there is a high risk of a substantial part of this population no longer being able to watch TV after the switch-off - if current deadlines are maintained.

To backup this recommendation, it was also mentioned that, in the USA, the switch-off was postponed three times: from 2006 to December 31st, 2008, then to February 17th, 2009 and, finally, to June 12th, 2009 (Hart, 2009). In January 2009, about one month before the switch-off deadline, the market research company Nielsen estimated that almost 7% of all the American households were not prepared for the end of the analogue terrestrial TV (7,8 million homes), since they did not have a TV set with an integrated DTT decoder or a DTT set-top box (InformiTV, 2008). This way, the recently elected president of the USA Barack Obama launched the proposal to postpone the switch-off, declaring that "millions of Americans, including those in our most vulnerable communities, would have been left in the dark if the conversion had gone on as planned" (cit. in Hart, 2011). Less than two weeks before the deadline for the switch-off – set to February 17th, 2009 – the House of Representatives approved Obama's proposal to delay this date, which was a proposal previously approved by the Senate (Stelter, 2009). In the perspective of the north-American researcher Jeffrey Hart (2011), this decision to delay the switch-off from February to June 2009 helped to avoid serious disruptions on the daily lives of many citizens.

Up until now, it is not publicly known if the lessons learned in countries such as the USA - and other countries that already completed the switchover process - are being taken into consideration by the responsible institutions in Portugal. After April 26th, 2012 - in case this deadline does not change - it will be clearer how successful was the switchover in Portugal, particularly considering the impact on the most vulnerable populations in this process. As Jeffrey Hall observed (2011), in the case of wealthy democratic countries "there will generally be a combination of governmental mandates and reliance on the market and consumer choices". On the other hand, in poorer countries, "authority may be more centralized on the government and consumer interests may be ignored" (Hall, 2011), so consumers may have to deal with

the burden of transition, being forced to pay for services that they had for free, whether or not they can afford it. It remains uncertain whether any of these issues will occur in Portugal or not: the outcome of this process will surely shed some light about the quality of democracy in this country in the early XXI century, for the better or for the worse...

Acknowledgements

References

Anacom (2011) *"Serviço de Televisão por Subscrição - 2º trimestre de 2011"*. Available at: http://www.anacom.pt/render.jsp?contentId=1096827

Anacom (2011) *"Decisão sobre a atribuição de subsídio à aquisição de equipamentos TDT"*. Available at: http://www.anacom.pt/render.jsp?contentId=1079309

ERC (2009) *"Concurso Público do '5º Canal'"*. Entidade Reguladora para a Comunicação Social'. Available at: http://www.erc.pt./index.php?op=vernoticia&nome=noticias_tl&id=242

Hart, J. (2011) *"The Transition to Digital Television in the United States: The Endgame"*. *International Journal of Digital Television* 1 (1): 7–29.

Hart, K. (2009) *"Congress Delays Troubled Switch To Digital TV"*. Available at: http://www.washingtonpost.com/wp-dyn/content/article/2009/02/04/AR2009020402584.html?hpid=topnews&sid=ST2009020402856&s_pos

INE (2011) *"Main Indicators"*. Available at: http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_main

InformiTV (2008) *"Calls to delay American analogue television switch-off"*. Available at: http://informitv.com/news/2009/01/11/callstodelay/

Quico, C., **Damásio**, M.J., **Henriques**, S.& **Veríssimo**, I. (2011b). *"ADOPT-DTV: Relatório Final de Projecto"*. Available at: http://adoptdtv.ulusofona.pt/

Quico, C., **Damásio**, M.J., **Henriques**, S.& **Veríssimo,** I. (2011a) *"Profiles of digital TV adopters in the switchover context in Portugal"*. In Proc. of IAMCR 2011. Kadir Has University, Istambul/ Turkey. 13 - 17 July 2011.

Quico, C.& **Damásio**, M.J. (2010) *"Understanding Barriers to Digital Television Adoption in the Context of the Digital Switchover in Portugal"*. In Proc. of IAMCR 2010 – Digital Divide Working Group. Universidade do Minho, Braga/ Portugal. 20 July 2010.

Stelter, B. (2009) *"Switch to Digital TV Wins a Delay to June 12"*. Available at: http://www.nytimes.com/2009/02/05/business/media/05digital.html?adxnnl=1&adxnnlx=131 9450480-3+OM5d74gbWgkmH1F

The Development of Digital Television in Ireland: the tension between distribution and content policy goals

Kenneth Murphy[11]

Introduction

As member states approach the European Union's preferred analogue switch off date in 2012, there has been mixed results in the overall transition to digital television (Iosifidis, 2007). In Ireland, the free to air digital terrestrial television platform (DTT), launched in 2011. With a potential audience share of 25% of non-cable/satellite customers, the DTT offering, named Saorview, is playing catch up in a market dominated by cable and satellite providers. This chapter will recount the trajectory of Ireland's digital television transition and illustrate some of the challenges faced by small states as they have attempted to implement Europe's competitive platform model that, at times, has appeared more suited to the larger European audiovisual markets which have helped shape its development. It will also illustrate the pitfalls of adhering to a strictly market driven agenda when forms of neo statist intervention are necessary to ensure social and cultural goals are realised in public policy. In the case of Ireland, regulatory struggles over the model of digital television, political caution over competitive dynamics and vulnerability to corporate policy demands contributed to a long delayed DTT launch. However, policy actors and stakeholders in Ireland were operating within a wider set of dynamics in relation to shifting power relations in television. In the 1990s the cable and satellite operators and the emerging telecommunication companies and their regulators became much more effective actors in defining digital television transition. In Ireland, a shift in the power relations of television at European level and the articulation of that shift in broad policy endeavours were both the contexts and outcome of the digital transition.

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Centrally, this chapter will argue that the policy adopted for the digital transition reflects the European Union's agenda of diffusing digital infrastructure in partnership with private/commercial media and communication interests. Tied to a vision of a market driven information networks, concerns over the maintenance of content diversity and plurality became secondary in the digital transition.

DTV Policy

DTV policy can be understood as a component of the European Union's Information Society project. The political economy of DTV has emerged from a wider agenda that favours developing an Information Society through market dynamics and regulation that is minimal, horizontal and co-regulatory. As described by Hernan Galperin:

"DTV is part of a larger process of change in the way information is produced, aggregated and distributed in contemporary societies. This involves fundamental changes in the economics of the communication industry that has created new competitive advantages, eroded others, and altered the balance of power between different market actors. It involves new ways of thinking about the implications of information infrastructure for economic growth, cultural development, and for political participation" (Galperin, 2004, p4)

In relation to digital television policy, the initial policy endeavour from the EU was to allow an assembled consortium of public and commercial terrestrial broadcasters, satellite and cable broadcasters, reception manufacturers and national regulators (the Digital Video Broadcasting group), to coordinate policy towards digital television. Within this group the presumption of platform neutrality emerged as a central principle in its memorandum of understanding (DVB, 1995). All platforms would be regulated equally in the digital television future. This competition model was, by various mechanisms, promoted as the European Commission's preferred route to the development of digital networks that would provide the carriage for digital television.

The approach was also manifested in policy towards Convergence when the 2002 Framework Directive created a horizontal regulatory regime for all communications networks (European Commission, 2002). At European level, the infrastructure of

'convergence' was to be developed by market forces, competitive and de-nationalised. However there was still some room for manoeuvre for support of any given platform in the general interest and through transparent measures (Schoser and Santamato, 2006). This model of head to head competition sought to ensure that national protectionist policies would be eased out of the regulation of infrastructure by member states and a level playing field would result for the mixed market of commercial, public, and commercial/public distribution entities. The analogue, cable and satellite platforms would compete head to head as digital platforms. Technocratic regulatory authorities would be entrusted with ensuring that both the Commission and DVB group's preference for open competition in digital television delivery would be favoured.

The model of head to head competition between platforms ran into difficulty early on in those states that had taken a lead in digital television development. The failure of OnDigital in the UK and Quiero in Spain in 2002 demonstrated that all digital platforms could not compete on the basis of the same services. From this there emerged a pattern of differential service competition with cable companies leveraging their capability in delivering triple play broadband, telephony and television delivery and satellite firms concentrating first on television services, premium content and developing advanced technology in their set top boxes. For some states, the terrestrial platform would become the free to air offering with a basic tier of free services, low technology costs and no ongoing costs for subscription. All of these platforms would compete offering different advantages for the user.

Platform Diffusion

The factors that have shaped the patterns of digital television platform diffusion are varied. In the smaller European states, market size has been a significant factor in deciding the pattern of platform diffusion. In states with populations under 5 million the potential fragmentation of audiences amongst three platform entailed relatively tight margins for the viability of any given platform. Thus, in any given state, early launch of a given platform was considered of key importance. This placed untested platforms into direct competition with established distribution platforms

that, in many cases, were integrated into global media concerns with deep pockets and content rich resources. Platform neutrality, however, did not acknowledge this asymmetrical balance of power. The model also had implications for the resource bases of the indigenous content producers in each state. For some public broadcasters, control over distribution infrastructure was a means of generating revenues and retaining them within the television production sector. The competitive platform model would also entail additional costs for television channels seeking distribution across all platforms. The development of interactive dimensions to content would also need to take into account the differential technological architecture of each platform. Lastly the proliferation of multichannel television and digital multichannel would have significant impact on the viewing shares of indigenous television channels. These changes would have significance for the fragile broadcasting ecologies of smaller European states.

Whereas state size is a constraint in the development of a multiple transmission platforms, there are other factors which partially determine the pattern that multiple platform diffusion takes. Firstly, the ability of governments to marshal market interests, coordinate their own varying policy strategies and prioritize policy goals has varied widely across Europe. Secondly, because high levels of multinational investment and concentration characterize media distribution systems, patterns of global corporate investment in communications infrastructure (which is partly shaped by a given state's receptiveness to the global economic system) have helped determine platform diffusion. Thirdly, a state's positioning within transnational television markets can have implications in relation to the presence of non-national distribution platforms (Chalaby, 2005). Lastly, the pre-digital structure of television distribution will have a legacy effect in relation to digital switchover (Starks, 2007). In the following case study of the trajectory of competitive platform development in Ireland the inter-relationship of all of these contextual factors will be explored.

The Digital Television Transition in Ireland

As a flexible competitive state, Ireland has developed an economic model based on foreign direct investment and export oriented growth. One characterisation

of Ireland's state style is that of a neo-liberal corporatism (Boucher and Collins, 2003). Whereas the global financial crisis has changed this dynamic, from 1997-2007 state economic policy was characterised by partnership style governance to ensure inclusion in economic adjustment and reliance on market making mechanisms and private social services to retain competitiveness in the global economy. This was the broad governance style and economic policy that was the context for digital television development.

Ireland's pre-digital television structure was characterised by the availability of multiple channels to complement the four free to air terrestrial channels. Approximately 50% of the population received 10 additional channels through cable services whereas 33% of free to air households could also receive additional channels from the UK, off-air. The availability of the UK's channels point to the overlap of Britain's mediascape with Ireland's. Cultural, linguistic and geographical proximity has meant that the UK's broadcasting ecology has always been co-present with Irelands, and as it has become more liberalised and international, it has incorporated the Irish broadcasting ecology into a larger cultural linguistic market. However, historically, Ireland has always been part of a wider Anglophone media market with significant imports from the UK and US in film, broadcasting and publishing yet has managed to retain relatively strong indigenous media industries (Morash, 2010).

Government Ministers turned their attention to the changes in the technological base of television broadcasting in Ireland from 1994. One initial proposal for addressing the digital transition was the early development of a national platform (either terrestrial, cable or satellite, or a combination of all three) twinned to an overarching broadcast regulator to co-ordinate public and commercial broadcasters adjustments. However, a change of government in 1997 signalled a more market led approach to digitalisation overall. The telecommunications regulator, working in partnership with the Department of Public Enterprise, developed the plans for the transition to digital television. The European model of competitive platforms would be adopted. Cable, satellite and terrestrial would compete with each other on the basis of a level playing field. A model for DTT would be developed to allow its early launch.

The cable infrastructure was fully privatised and concentration of ownership was enabled in order to improve its economies of scale. From 1998, Sky, operating out

of London, began to offer the same 'direct to home' digital services that where available in the UK via a subsidised set top box to hasten take up. In general, policymakers tended to see this as a positive contribution to the digital transition (Corcoran, 2004). By 1998, a DTT system was sanctioned as a potential competitive platform, a means of releasing valuable spectrum and a means of sustaining the existing analogue national broadcasting ecology into the digital age.

Sky's decision to enter into the Irish market was informed by its consolidation in the UK market and its need to develop its economies of scale to help fund its digital strategy there. Sky's move into the Irish market was facilitated by the Television Without Frontiers directive. Accountable to the UK regulator Ofcom, under a non-domestic satellite license, Sky had significant regulatory advantages over operators based in the Irish state. The Irish government subsequently, through the Irish communications regulator, Comreg, made three attempts to develop regulatory sway over the satellite broadcaster but to no avail (Murphy, 2004). In 2003, at a high level European Ministerial meeting, the Irish government attempted to stake its claim for some regulatory competence over Sky, but with no success. Sky's lack of regulatory burden in Ireland prompted the cable platform operators to protest their own regulatory commitments framing them as opportunity costs.

The cable infrastructure had seen a succession of corporate investors including NTL, Liberty AT&T and Independent News and Media until it was finally consolidated in 2006 under the ownership of UPC, a subsidiary of US conglomerate Liberty Global Media. UPC upgraded the cable network in order to provide multichannel, telephony and broadband services as a series of bundles. UPC's investment in Ireland was part of Liberty Global's European strategy to develop a critical mass in cable distribution and use this as a source of demand for its content production divisions and its other synergies in content distribution.

In the period between 2001 and 2007 the transition to digital television in Ireland could, in terms of digital take up, be characterised as being relatively successful. But, it is also characterised by the failure to launch the DTT platform for early diffusion. By December 2007, in a market of 1.4 million television households, Ireland had 841,000 digital television subscribers. Of this number, 64% subscribe to the satellite digital service (Sky) and 36% to cable (UPC). 58% of all television households in

Ireland thus subscribed to digital television. Yet, by 2009, the DTT option had still not launched.

The DTT Platform

First proposed in 1998, and legislated for in 2001, it was always crucial that DTT secure an early launch. Since then, policy makers and stakeholders have undertaken numerous attempts to develop a digital terrestrial business model and strategy. The platform was finally launched in 2011. In outline, the first DTT model suffered from political uncertainty over competition dynamics as the Government initially baulked at giving the public broadcaster, RTE, substantial share in the original integrated distribution/multiplex model. Following the dot.com crash of 2001, economic and regulatory uncertainty prevented the launch of a hybrid DTT model similar to that which had been successfully launched in Finland. Regulatory uncertainty also arose from the lack of co-ordination between policy fields, with broadcasting and telecommunications policy makers failing to agree on a co-ordinated approach to proposed spectrum allocation until late in 2001. This led to the only bidder for the multiplex licenses losing its backing from international financial investors. The lack of a coordinated policy approach in a situation of hyper-competitiveness was a significant factor leading to the early delay for the DTT platform.

The earliest approaches to DTT were characterised by antipathy between the government and RTE and an unwillingness by government to be seen to be overly compensating RTE for its role in DTT. Having taken on the competitive platform model, the government was unwilling to test the boundary of legal state intervention in the DTT model. Concern over 'reputational damage' to Ireland's competitive status was a significant context for policy makers. Added to this, as attested to by Corcoran, government ministers appeared to be content with the role played by BSkyB and the cable companies in diffusing digital television. Private sector diffusion of digital television meant Ireland regularly appeared in the upper quartile of digital television nations (Corcoran, 2004). However, by 2003, the potential of public broadcasters in launching the DTT model had become clearer to national governments (Iosifidis 2006). The importance of this resided in the overall potential of DTT in preventing a duopolistic model (cable and satellite) of digital television distribution. A change of

approach and a more proactive Ministerial involvement from 2003 witnessed increased financial support for RTE as a potential driver of DTT policy and a stepped policy strategy for the development of DTT. However, the constraints placed on government action through its dependence on corporate investment in infrastructure development also became clear.

The switch to a Freeview model (free to air digital terrestrial/satellite service) in the larger European markets arose as recognition of the limits to the Pay TV revenue model and the legacy advantages of satellite and cable in this regard.

In 2003, the Minister for Communications proposed that the freeview model would be pursued in Ireland. However, it was acknowledged that such a model would only be acceptable to viewers if it offered a combination of both Irish and UK free to air terrestrial channels. For a large portion of the country, UK channels had been available off air as a consequence of analogue overspill. With the UK digital transition these channels would no longer be available off-air. This entailed a situation whereby analogue switch off could lead to many households having less services 'free to air' than previously had been available to them. Following the Ministers announcement of the desirability of a Freeview model carrying both Irish and UK free to air channels, the two major cable companies at the time (NTL and Chorus) lobbied the government to drop the strategy. They posited that a Freeview model would undermine their basic multichannel offerings and may lead them to re-consider their investment in infrastructure in Ireland. Further to this, the UK terrestrial channels were all bound by contract with the satellite and cable platforms not to offer their channels free to air in Ireland. If they did, they would have to pay carriage fees to cable and satellite operators (RTE, 2007).

Given the various obstacles to the freeview model, the government attempted to find a model that would rely primarily on a combination of free content and pay/subscription services. Trials began in 2006 with a limited pilot trial launched to test the network and technologies followed by a phase two trial, involving the public in 2007. The pilot network was developed by BT (multiplex technology), NEC (transmission systems) and RTE NL (transmission sites). Content providers were then invited to contribute to the phase 2 public element. Phase 2 consisted of an initial panel of 500 public participants in the Dublin and Louth areas of the country. The trial

involved the distribution of set top boxes and the digital delivery of 16 TV channels, 12 radio channels and one high definition television channel. Content on the trial was provided by RTE, TV3, TG4, Today FM, Channel Six, Sky, BBC, Setanta, Extreme Sports and UKTV History.

The trials were accompanied by new legislation in 2007 that created a legal basis for a new DTT structure. The legislation delegated responsibility to RTE, the BCI and Comreg for the development of DTT in Ireland. RTE would upgrade its network to digital capacity (and therefore become the DTT carriage provider) and manage a multiplex made up of RTE, TG4 and TV3 (free to air terrestrial) channels in digital form. The BCI would define and award the licences for three multiplex providers, the winners of which would oversee the commercial roll out of DTT in Ireland. Comreg would allocate spectrum capacity for DTT and licence RTE and the BCI for their respective use of spectrum. Whereas the central offering would be no less than 24 television channels, capacity was also reserved for epgs, interactive services, digital teletext and high definition television.

In 2008, the broadcasting regulator the BCI held a tender for the commercial DTT multiplexes. However, the winner of the auction for the pay element, Boxer TV, returned the licenses in April 2009 citing 'prevailing and anticipated economic difficulties' as the key reason. The runner up, One Vision, a consortium owned by Eircom, Setanta, Arqiva and TV3, also declined the license. Financial difficulties at both Setanta and TV3, had led to a restructuring of the consortium with Eircom (the main fixed line telecommunication operator) emerging as the majority shareholder. Eircom, owned by Singapore Telecommunications, did not relish taking on extra risk especially as its partners were already in difficulty. Finally, the last bidder, EZ-TV, made up of RTE and Liberty Global, also declined the license. As the depths of the financial crisis became clearer, none of these bidders considered it prudent to invest in a platform that promised such a limited potential market share on the basis of pricing and spending commitments made in different economic circumstances.

RTE was bound by legislation passed in 2007 to achieve digital switchover by 2012 and was thus under pressure from government to persist with the planned launch of the 'free to air' element of DTT, independent of its commercial counterpart. However, the deepening economic crisis had greatly reduced its ability to spend on

network digitalisation and additional content creation. RTE needed the potential transmission fees that would have been generated by the launch of a commercial DTT option to meet its own digital strategies. However, despite these difficulties, Saorview, officially launched in the Irish Republic in 2011. The 2011 channel line up was as follows:

RTE 1 (psb generalist)

RTE 2 HD (psb generalist)

TV3 (commercial generalist)

TG4 (Irish language channel)

3E (commercial entertainment)

RTE News Now (psb news)

RTE Jr (psb kids)

RTE 1 +1 (time shifted)

RTE Aertel (teletext)

In general, as of 2011, there was a lack of compelling or value added content on the DTT platform. RTE has generated 4 additional channels for the platform. One of these, RTE Jr, is not available elsewhere but the other additional channels are versions of already available content. Two proposed additional publicly funded channels (an Irish Film channel and a Parliamentary coverage channel) have been put on hold due to the deepening of the global financial crisis. With the added policy burden of managing the digital transition, RTE has not been in a position to develop planned additional channels and services. So far there are no official figures for the sales of Saorview set top boxes. However, the forced migration of non multichannel television households to digital, following analogue switch is likely to be the biggest driver of DTT take up.

Conclusion

In the Irish context there has been recognition of the public interest in DTT but the policy makers and industry segments that supported that approach where continuously outmanoeuvred by the policy communities and stakeholder groups aligned to the rhetoric and strategies of increasing market competition and rolling out

the infrastructure of the information society. The consequences of this have been most keenly felt in national broadcasting policy domain where the platform that remains a central plank of public policy is a weak and underdeveloped entity. The potential of linking content development to the control of domestic distribution networks has not been realised. Yet the indigenous content producers face a fragmented television-broadcasting environment as they operate across multiple platforms. The competitive challenges for indigenous television producers is further heightened as they come head to head with channels which are vertically integrated into the dominant distribution systems.

Returning to Galperin's quote regarding the changed relationships of power in the media and communications field, and the new logics underlining infrastructure development, it is clear to see how these have taken shape in the case of Ireland. In relation to the power relations in the field of Television it is the case that the pay television operators that came to prominence in the 1980s helped to define an approach to digital television that emphasised competition and neutrality amongst market actors and shifted policy away from concerns about national cultural, social and democratic content in the media field. This was twinned with wider concerns, at European level, that policy approaches to infrastructure development would be predicated on the diffusion of network infrastructure capable of facilitating Internet access and new digital services. The cultural space of television would have to find its own place within the market driven provision of information services. In the case of Ireland, its market size, negotiated governance style, dependence on foreign direct investment and proximity to larger same language markets has entailed a response to digital television that has seen distribution concerns trump public policy content concerns.

References

Boucher, J.; **Collins,** G. (2003) *"Having One's Cake and Being Eaten Too: Irish Neo-Liberal Corporatism"*, Review of Social Economy, Vol. 61, 2003

Chalaby, J. (ed.) (2005), *Transnational Television Worldwide; Towards a New Media Order,* London: IB Taurus.

Corcoran, F. (2004), *RTE and the Globalisation of Irish Television*, Bristol: Intellect.

DVB Group (Digital Video Broadcasting Group) (1995), "Memorandum of Understanding", Geneva: DVB Project Office.

EC (European Commission) (2002), The Frameworks Directive, 2002/21/EC OJL 108/33, 24 April, Brussels: EC.

Galperin, H. (2004b) *New Television, Old Politics*, (Cambridge: CUP).

Iosifidis, P. (2007), *Public Television in the Digital Era; Technological Challenges and New Strategies for Europe*, Basingstoke: Palgrave Macmillan.

Morash, C. (2010) *History of the Media in Ireland.* Cambridge: CUP.

Murphy, K. (2004), *"Ireland, RTE and the Digital Transition: policy navigation in a small European state"*, *Trends in Communication*, 12:4, pp. 193–210.

RTE (Radio Telefis Eireann) (2007), *"Letter to the European Commission Directorate General for Competition and Directorate General for the Information Society and Media"*, available from:
http://www.rte.ie/about/pdfs/letter_on_digital_switchover.pdf
Accessed 15 February 2010.

Schoser, C.; **Santamato**, S. (2006), *"The Commission's State Aid Policy on the Digital Switchover"*, *Competition Policy Newsletter*, 1, pp. 23–27.

Starks, M. (2007), *Switching to Digital Television; UK Public Policy and the Market*, Bristol: Intellect.

Anatomy of the Italian Web TV ecosystem.

Current issues and future challenges.

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The aim of this article is to provide an overview of the emergent Italian Web TV ecosystem. We begin by sketching a summary of the Italian media scenario, focusing on three related aspects: the Rai-Mediaset duopoly, the Berlusconi anomaly and digital evolution of the TV system. We then switch to the Italian digital resistance scenario and describe some of the most interesting experiences developed in the Italian context. In the third part, we dissect and analyze the phenomenon of Italian Web TVs, exploring its roots, legal status, producers and audiences. We conclude by providing a reflection on Italian Web TVs as an ecosystem, both by pointing out some future challenges it will face within the Italian media scenario and by focusing on the role of active citizens and unprofessional producers in changing the scenario and in advocating pluralism and creativeness.

1. The Italian media scenario[14]

Before we introduce and investigate the Web TV ecosystem, we first begin this article by providing an overview of the Italian television scenario. As highlighted by Ferrari & Ardizzoni (2010) and by Padovani (2007, 2010) the Italian landscape is defined by the following characteristics: close control of the State over Italian media,

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14 The paper has been conceived and discussed entirely by both the authors. However, in compliance with Italian academic conventions, the authors acknowledge that paragraphs 1, 1.1, 1.2, 1.3, 2.3, 2.3.1, 2.4 have been written by Emiliano Treré, while paragraphs 2.1, 2.2, 2.3.2, 2.3.3, 3 have been written by Valentina Bazzarin.

the Rai-Mediaset duopoly, the anomaly of a (three times and recently former) Prime Minister, Silvio Berlusconi, who owns also three of the seven television channels that broadcast at a national level, the difficulties related to the adoption of digital technologies, and the uncomfortable role that Italy plays in the European Union for its lack of clear laws against media monopoly. In this chapter, we focus in particular on the following aspects of the Italian television system: the Rai-Mediaset duopoly, the Berlusconi anomaly and finally the digital evolution of Italian television. We place particular attention on the last topic, the digital evolution of Italian TV system, because our aim is to explain the rise of Italian Web TVs and to help situating this phenomenon inside a broader perspective.

As highlighted by some authors, the television panorama is quickly changing in several contexts, thanks to technological innovation and a general displacement of content from radio frequencies to digital platforms. As Kackman et al. sum up, "If flow challenges the idea of the discrete television text, then convergence destabilizes the notion of television as a discrete object. Television texts overflow onto interactive websites, television content is available on multiple platforms, and television networks are part of multi-media conglomerates" (2011).

In order to analyze the Italian media scenario and then provide a research on the emerging Italian micro Web TV ecosystem, we have relied on different approaches: 1) a review of Italian regulation codes and legislative efforts, debates and results; 2) a series of qualitative interviews carried out with Web TVs producers; 3) observation of actors involved in the production of Web TVs contents and in lobbying activities at national and international level; 4) the available bibliography on Italian Web TVs. This chapter is part of an ongoing investigation where, on one side, we study this new phenomenon, while on the other one we engage and work together with different actors involved in Web TVs production, aiming to offer more pluralism within the Italian media scenario.

1.1 The Rai/Mediaset duopoly

RAI, the public service broadcaster, and Mediaset, the private broadcaster controlled by Silvio Berlusconi, who served three terms (1994–1995, 2001–2006, and 2008–2011) as Italian Prime Minister, dominate the Italian media scenario.

RAI and Mediaset achieve average nationwide audiences of approximately 41 percent and 37 percent, respectively, while the other broadcasters on digital and analogue channels manage no more than approximately 10 percent (Mazzoleni et. al., 2011). This situation is named as the Italian broadcasting duopoly. The Italian national public service broadcasting company, Radiotelevisione Italia (RAI), operates many services, including three national terrestrial television channels: Rai Uno, Rai Due, and Rai Tre. RAI continues to attract a very high percentage of the national television audience along with its main commercial competitor, Mediaset. According to Auditel, during 2010, RAI attracted 41.4 percent of the television audience on average, while Mediaset attracted a 39.4 percent of the total share15

The RAI–Mediaset duopoly (or Raiset as some journalists have originally named it) is the most fundamental feature of the Italian television market, and scholars and commentators have written countless pages on this subject. This anomalous situation is, above all, the result of the lack of adequate legislation regulating the competitive media ecosystem. The duopoly existed *de facto* since broadcasting was opened to the private sector in 1975, but it was legitimised in 1990 by a law which allowed a single entity to hold three national licenses at the same time. In July 2009, AgCom (the Italian Communications' Authority) announced that a third private operator, News Corporation's satellite pay-TV broadcaster Sky Italia, had exceeded Mediaset in total revenues for 2008. The Italian government thus announced the collapse of the traditional RAI–Mediaset duopoly, and the consequent opening of the television market; but, as some authors have noted (Mazzoleni et al., 2011) if we consider other key competitive indicators such as audience and advertising shares, RAI and Mediaset continue to control together around 80 percent of the audience ratings against some 10 percent for Sky Italia.

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15 Auditel is a research company that measures television audience in Italy, on a panel of about 12,000 individuals in more than 5,100 households

In addition, it has to be underlined that Sky Italia's high revenues derive mainly from the annual subscription fees paid by a limited number of people, whereas the other two broadcasters derive mostly from their revenue related to advertising.

1.2 The Berlusconi anomaly

It is almost impossible to discuss Italian media without mentioning Silvio Berlusconi and his media empire, as well as his political key-role, so often used in addressing communication, information and ICT infrastructure policies. A symbiotic relation between the media and politics characterizes the whole history of Italian television. Since the foundation of the public broadcaster RAI in 1944, television in Italy has been shaped by close governmental control. In the two decades following the end of the First World War, the main forces in the Italian political system widely used national broadcasting for propaganda, establishing RAI as an official vehicle for ideological and political commentary. The Italian Constitutional Court officially approved state monopoly for broadcasting in 1960, but at the same time expressed a desire for diversity that resulted in the creation of the RAI 2 channel in 1961. Nonetheless, Italians had to wait until the general deregulation of the European broadcasting system to experience some openness in the media system, through private cable Television and radio. About thirty-five private television stations and about 150 private radio stations began to broadcast without a license in 1976. As Ferrari & Ardizzoni (2010) have highlighted, this dynamics created confusion as well as a decrease in the quality of programming, while suggesting at the same time that diversity had always been lacking in the Italian broadcasting arena. The strong ties that the Italian political parties had developed with RAI were somehow "loosened" and RAI could pass under parliamentary control, as opposed to governmental control.

In this environment, Silvio Berlusconi officially entered the communication arena in 1980, by setting up his channel Canale 5 and by creating the Mediaset Group, which was officially founded in 1993 and offered publicly on the board of trade in 1996. Between 1983 and 1984, Berlusconi added to his main channel, Canale 5, two other channels (Italia 1, and Rete 4) thus acquiring a *de facto* monopoly in the private broadcasting sector.

Using a stream of local stations and a system of synchronised broadcasting, Berlusconi's network was able to broadcast nationwide. This was a direct infringement of the Italian law, which granted the right to broadcast nationwide only to RAI. In 1984, Berlusconi was accused of illegal national broadcast and ordered to close some of his local stations, but Prime Minister Craxi and his government approved a law by decree in order protect Berlusconi's interests. The decree lifted the restrictions on national broadcasting and concentration of ownership, consolidating the foundations of Berlusconi's media empire (Ginsborg, 2005).

Since the 1990s, Berlusconi's influence in both the Italian media scenario and politics has increased exponentially. Berlusconi owns Mondadori, the biggest Italian publishing house, and the film distribution company Medusa. Moreover, Berlusconi was first elected Prime Minister of Italy in 1994, but his mandate only lasted nine months and he resigned at the end of the same year. In 2001, Berlusconi was re-elected until 2006, when Romano Prodi, leader of the democratic opposition, became the new Prime Minister. After two years of Prodi's leadership, Berlusconi was re-elected, in April 2008, following a governmental crisis. His third mandate ended on November 12th, 2011, when Berlusconi resigned after a new budget law was approved in parliament, making way for a transitional government that will try to steer Italy out of a potential economic crisis.

The Italian media scenario reached, under Berlusconi's governments, an unprecedented level of political control over the media and this was pointed out several times by the international press (for example, several covers and articles were dedicated to Berlusconi on *The Economist* during the last 15 years). If we consider the strong duopolistic nature of the Italian media scenario which we highlighted before, and if we take into account the direct influence of the State over the RAI administration, including the fact that Berlusconi owns the Mediaset Group, we reach a 90% level of control over the available information to the Italian population. That is why this situation, where media concentration supposes serious threats to the Italian democratic system, was brought to the attention of the European Union. The EU has been incessantly asking for the Italian government to line up Italian laws with the European roadmap, to empower pluralism. For instance, after the second Berlusconi government, Hibberd wrote:

"A recent Council of Europe-funded report (Venice Commission 2005) heavily criticised the Berlusconi government (2001–06), arguing that two pieces of legislation (the Gasparri Law, which relaxed media ownership rules, and the Frattini Law, that sets out rules relating to conflicts of interest in public life) did little to solve issues relating to Berlusconi's dominance of Italy's broadcasting media. This follows other international parliamentary debates and reports that have been equally condemning the Italian media system (Freedom House 2004–06). Although Berlusconi was swept from power in April 2006, he remains leader of the opposition and could reassume power in some future election. Furthermore, the new centre-left government in Italy faces major hurdles while implementing the current proposed reforms of Italian media law, given its slim majority in the Senate." (Hibberd, 2007: 882).

The last two decades of Italian history have been characterized by the strong presence of Berlusconi, both in the political scene and in the media scene and -above all- in their not so clear intersections. Critical journalists Gomez and Travaglio (2004) have convincingly showed that, since 1984 – whether Berlusconi was inside the Parliament or not –, most of the media laws that have been approved, helped safeguard his personal interests. Gomez and Travaglio (2004) have listed four main characteristics of what they have called the Berlusconi's media regime, explaining in details the effectiveness and the strength of Berlusconi's grip on both media and politics. First of all, Berlusconi's media monopoly is the perfect tool to distribute wealth, grant favours, and help securing the career of many of those working in the media sector. Berlusconi rewards those who support him and are condescending towards him, offering them important positions within his media empire, while he punishes those who oppose and counter him, by excluding them from the media arena (various cases can be cited, like comedian Daniele Luttazzi and journalists Enzo Biagi and Michele Santoro). Secondly, Berlusconi's media control allows him to manipulate information and broadcast only the news that he and his partners approve and allow. Media manipulation in the case of the post-earthquake situation of the city of L'Aquila,

with the construction of a supposed 'miracle' by the Berlusconi government, is just one of many examples (Farinosi & Treré, 2010).

Third, Berlusconi is able to dictate the agenda to the electors/audience that watch national television. In a country like Italy, where the diffusion of TV sets reaches 97,4% of the population and 80,9% of people still use TV news as their main source of information, this is a source of an immense power. Fourth, this media regime is able to "demonize" those who speak of "inconvenient truths" and generally all of those who criticize and oppose Berlusconi and his followers, including judges, comedians, politicians, intellectuals and so on.

In their brilliant analysis of the Fininvest/Mediaset's media strategy in the last 30 years, Balbi & Prario (2010) have pointed out a series of fundamental issues that are of interest to our analysis. The two scholars show that Fininvest/Mediaset has always adopted an effective strategy which has continued to evolve. In particular, they highlight the ability of Berlusconi "to forge deep-rooted relationships with the political system and, second, to acquire the legislative power with which he could decide the make-up of the Italian radio and television system" (Balbi & Prario, 2010). In addition, they underline the dual approach of the group towards broadcasting technology: on one side, Mediaset has always been able to anticipate and follow new trends that emerged in Italian society in the last three decades, such as the demand for entertainment and the centrality of advertising; while on the other side, the company has defended the duopoly and the *status quo* formed over the years and always enjoyed political support translated into favourable legislation, as well as the support of the general public, which, at several moments of its history, has contributed to "rescue" it.

1.3 The more things change, the more they stay the same: Italy goes digital

Digital terrestrial television was first introduced in Italy with the adoption of the Digital Broadcasting Law in 2001. The initial 2006 deadline for the definitive switch-over from analogue to digital broadcasting was repeatedly postponed and switch-over is now set for December 31st, 2012. The switch-off of analogue broadcasting started in 2009, based on the progressive "digitization" of regional areas. Viewers of digital

terrestrial television and web TV increased considerably between 2007 and 2010, whereas viewers of satellite television, after increasing between 2007 and 2009, have since remained stable. On the other hand, analogue television viewers decreased significantly between 2009 and 2010. Some channels that used to be only available by satellite or pay-TV (such as RAI News and Sky Tg24) are now penetrating an increasing number of households, thanks to the digital terrestrial platform. This does not represent an increase of diversity in terms of content, but rather in terms of audience reach. The television set remains the most common media device in Italian households, and national television news (previously available only in analogue) and traditional newspapers are the media sources that are most used by Italians to obtain news about politics and daily news. However, a longitudinal analysis estimates that the percentage of Italians whose sole source of information was television decreased from 46.6 to 26.4 percent between 2006 and 2009. There are two main points that, in our opinion, are worth underlining, regarding the Italian media system and its move to digitization, especially if we are to understand the Web TV ecosystem: first of all, the digital evolution has not helped to overcome the Italian television duopoly; second, the move to digital grounds brought about a crisis of local television channels, because the multiplication of national channels has benefit the traditional duopoly, causing an important decrease in terms of audience and advertising incomes for local broadcasters.

Regarding the first point, it is worth noting that, even if at first the introduction of digital terrestrial television was regarded by many as a fruitful opportunity to break the RAI–Mediaset duopoly, it seems that there have been no substantial changes in the Italian media scenario as a result of the digitization process: the license fee and advertising sources for RAI remain unchanged, commercial digital media continue to be funded primarily by advertising, the market is still characterized by the traditional RAI-Mediaset duopoly, and the entry of Sky Italia into the market has not significantly altered a situation where RAI and Mediaset share around 80 per cent of audience ratings (Mazzoleni et al., 2011). Many commentators and media scholars have pointed out that spectrum allocation policy has favoured incumbents in both broadcasting and telecommunications, and that legislative intervention has repeatedly obstructed the entry of new operators. In 2006, the European Commission opened an infringement

procedure against Italy for violation of the European rules on electronic communications. In January 2008, in a case involving the new operator Centro Europa 7 against the Ministry of Communications and the AGCOM Authority, the European Court of Justice officially acknowledged that the Italian norms, regulating the transition from analogue to digital broadcasting technology, restricted the entry of new operators in the digital market, in favour of the incumbent operators. As Alessandro D'Arma concludes in his analysis of digital television policies in Italy:

> "The center-right successfully used DTT as a means to protect vested economic interests that long since have opposed any real democratization of access to the broadcasting infrastructure in the country, subordinating general industrial and socio-cultural policy goals, associated with the transition to digital television, to personal economic interests" (D'Arma, 2010: 18).

Concerning the second point, the process of digitization is not only undermining Italian duopoly, but at the same time is weakening local broadcasters, who have many times played a pivotal role in Italian history, safeguarding and fighting for freedom of expression (Grasso, 2006). The multiplication of national channels has in fact caused an important decrease in terms of audience and advertising income of local and regional broadcasters. The problem is that, on one side, AgCom's authority has developed a national plan for Italy's digitization, but in the meantime analogue switch-over has continued on a regional basis, without waiting for the approval of the national plan, so 10 regions are already receiving digital broadcasts. Thus, there is a risk that the implementation of the new national plan will subvert the allocation of certain frequencies. That has already taken place at regional level, as many of them are local broadcasting stations (at least 200 local TV stations). Moreover, local television stations are banned from challenging the government's expropriations to the competent administrative courts. It seems that proliferation of free-to-air television channels (through the multiplication of RAI and Mediaset channels) and a controversial allocation of digital multiplexes are contributing not to foster pluralism, but to reinforce the old duopoly and replicate it at a digital level. Furthermore, digital evolution is resulting in a loss of quality of RAI's programmes: the quality of contents is

moving to digital platforms, following a process the media scholar Cinzia Padovani describes as the move "from duopoly to duality" (2007).

The most updated and complete report on the Italian media system (Mazzoleni et al., 2011) concludes with a series of recommendations. In particular, the report calls on civil society the urge to change the Italian anomalous situation and reform current legislation, to monitor the last stage of digital switch-over and the resulting state of media pluralism, and to check to what extent do the actions of both the Parliament and the Government privilege the existing duopoly or help creating new opportunities. In the next section we will see how, in the last decade, an alternative television ecosystem has emerged online, to challenge the television duopoly and tell stories usually neglected by mainstream media.

2. Fissures in the Italian media landscape

2.1 Media resistance below the Alps

The anomalous situation of the Italian media scenario, which we outlined above, is of pivotal importance, but does not tell the whole story. As media scholar Buonanno (2010) has pointed out, Berlusconi and his trash television represent a sort of obsession for those who speak of the Italian media. But this obsession has often obscured the richness of oppositional voices who have been able to create media alternatives and to "resist the tide"16 within this anomalous scenario. The curiosity mentioned by Buonananno does not concern just the economic and the infrastructural sides of the system, but the overlapping of personal and public interests of a single person affects the content of programmes too. Mediaset has a specific linguistic code that shaped both the imagery and the main cultural values of part of the Italian population, and conditioned the content style of some of the public television programmes. This was particularly true in the last period of Berlusconi's governance, where the lack of debate, both at the Parliament and in the media arena, was impressive but slightly detected by public opinion and academics analyzing the phenomenon. As Navarra points out (2008), while Italy has produced various

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16 See Albertazzi et al. (2009) *Resisting the Tide: Cultures of Opposition under Berlusconi* (2001– 2006), New York London: Continuum.

dangerous anomalies, it has also been the ground for testing "experimental antibodies" to contrast such anomalies. In recent years, Italy has witnessed a flourishing of web-based forms of resistance, which include the counter-information blog of comedian Beppe Grillo (Navarria, 2008; Pepe e di Gennaro, 2009), the use of Internet technologies (especially Facebook) by the so-called anti-Berlusconi movement "Popolo Viola" (Purple People), the reaction to the so-called gagging law (a law to limit Internet's freedom which the government aimed to introduce in 2010) through the use of web platforms, several social media groups, and online civil society blogs or the anti-mafia launched in 200517.

Moreover, we should also highlight a recent signal of what can be considered as an awaken interest, by traditional television, for the visibility opportunities offered by the Internet. In 2010-2011, the communicative strategy to manipulate the media arena - as well as the Italian public opinion - made another step forward. Some supporters of private and political interests from Berlusconi's crew, enterprises and party, had been allocated in many management key roles of public television. After the summer of 2011 (the Italian palimpsest traditionally offers new and successful programmes since the end of September until the end of spring; summertime is usually a period for a jukebox of old programmes, serials, replicas, documentaries and so on), many contracts of troublesome journalists and showmen/show-women were not renewed, and their programmes were not scheduled. One of them was Michele Santoro, who anchored a famous political debate arena in the public television. He used to be critical against the Government and in his programme he hosted a journalist, Marco Travaglio, and a comic strips artist, Vauro, that weekly informed, charged and represented with irony the President of the Council, his Ministers, and politicians in general. The programme, despite Auditel success, was suspended several times, and finally closed in 2011. However, Santoro and his group decided not to surrender and kept in touch with their audience: during the summertime, using social media (in particular Facebook), they organized a show called "Raiperunanotte" in a series of major cities, in order to maintain high attention on the destiny of the programme. As Vaccari (2011) pointed out:

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17 www.ammazzatecitutti.org (last accessed April 2012)

"Raiperunanotte showed that digital media convergence can be effectively employed to bypass politically motivated limitations on broadcast television. Santoro realized that the audience of his television programme would be eager to watch it online and through various other narrowcast channels. He also understood that outrage for the cancellation of the show would galvanize his followers to spread the word about the rally. By assembling a convergent network of various small- and medium-scale outlets, Santoro harnessed digital media to garner an audience whose size was comparable to that of his television programme" (Vaccari 2011: 991).

RAI board decided not to reschedule the programme in September 2011, and Santoro counterattacked by organizing the show and using a platform composed of Web TVs, IP TVs, social media, satellite channels and local television on digital frequencies. The show was called "Public Service" ["Servizio Pubblico"] and obtained a great success in terms of audience, showing the power and the capillarity of a network of alternative and independent media in replacing the traditional system. However, this phenomenon is not considered by us the most interesting and significant in anticipating future scenarios for television, because as Giovanna Cosenza also highlighted in her blog[18], the 'Santoro effect' might represent a risk rather than an opportunity for the Italian independent media network. Indeed, Santoro is a symbol of the traditional way of doing television, and he uses both a classic linguistic code and the style of the mainstream media. The creative impulse of independent media in general, and of Web TVs in particular, risks to be affected by the old way of planning and directing a programme or organizing a palimpsest.

2.2 Anatomy of the Italian Micro Web TVs emerging ecosystem

The Italian anomaly is hiding another interesting phenomenon that is growing fast and consistent, far away from the public and academic debate. Opinion leaders,

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[18] http://giovannacosenza.wordpress.com/2011/11/04/%C2%ABservizio-pubblico%C2%BB-il-medium-e-il-messaggio-ma-il-vecchio-si-rinnovera-o-schiaccera-il-nuovo (last accessed April 2012)

politicians and academics are focusing mainly on digital television and the future developments of television, while regions, for instance, are investing resources to migrate all frequencies to digital platforms; in the meanwhile, politicians are discussing how to manage the opportunity to watch television channels and programmes on mobile phones, and television groups are fighting to obtain new broad and central frequencies.

However, at the same time a silent `movement' is working backstage. This movement is based on a new idea, a revolutionary idea, according to some observers, of a sort of television that is growing on neighbourhoods and streets. Even if we briefly mentioned a recent attempt of traditional old-fashioned television to use the Internet as a new platform for the dissemination of mainstream programmes, purged of public or private Italian televisions' palimpsest (the Santoro experiment), the actual resistance scenario is mainly composed by a network of garage TVs, personal TVs, family TVs, community TVs, citizens-journalists and video-bloggers. This network is growing fast and if in 2004 there were just 36 Independent media, 3 years later (also thanks to wider opportunities to access broadband Internet) there were 152 hot spots of resistance, and 463 in 2010 (data collected by AltraTV[19]). This television is described as 'autarchic' and does not need frequencies or big investment because it uses the Internet as a platform for transmission and programmes are created by users, and organized in groups like editorial boards. We already highlighted that digitization is progressively weakening local broadcasters and TV stations whose role as 'bastions of media freedom' has been pivotal within the Italian context: Micro Web TVs are thus increasingly playing the role that traditionally was played by local TVs and radios in the Italian media scenario. Moreover, this new media practices the user engagement line, betting in involvement rather than in engagement. During a Web TV talk show, as well as in all the palimpsest plan, authors are aware that they do not need a simple interaction with the audience, but they have to converse and to share with the users, to generate the content together. Why did WebTVs (or independent media) rise up so quickly, in such a huge growing quantity and with this strong creative power in Italy? Why isn't this happening in other countries? We can find a partial answer to both

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19 http://www.altratv.tv/ricerche [in Italian] (last accessed April 2012)

questions in a private conversation that the general secretary of the FEMI, Simona Salvi, reported us. Simona was in Marseille witnessing the Italian experience and in her speech, she formulated a rhetorical question: "Why in Italy?". Someone from the audience answered: "Because you have Berlusconi!".

2.3 A definition and a brief history of micro Web TVs

What are we referring to when we talk of Web TVs in the italian media scenario? Giampaolo Colletti, the founder of the FEMI (Federation of Independent Digital Media) defines these micro Web TVs as the multitude of online channels created by different kinds of citizens with a passion for video-making, and therefore those who, while not specifically working in the audiovisual sector, have decided to spend their time and money in creating their own webcasting channel. These micro TVs emerge in specific local contexts, but thanks to the possibilities offered by Internet technologies, they are able to engage and to connect at a more global level. In 2004, a team coordinated by Giampaolo Colletti started the AltraTV observatory, in order to monitor a series of online experiences which were taking place in Italy and that were linked to the audiovisual world. Thanks to the possibilities provided by the process of digitization, in particular the opportunity of lowering television production costs, and pushed by the spread of broadband connection, many Italian citizens and local communities had started building their own Web TVs, in different contexts and for different reasons. These online experiences differed from the so-called telestreets, a particular form of Italian local TVs that flourished in Italy from 2002 to 2005. But while producers of telestreets broadcasted their signal on radio waves, using the free 'holes' in the spectrum that other television stations were not occupying (Barca, 2007), these new micro Web TVs are using all the possibilities offered by the Internet to broadcast for free their contents, without any third party mediation. These local Web TV experiences are based on a more structured type of user generated content; i.e., they do not originate from individuals using the Internet to upload and share their videos, but from local organized communities, cultural associations, civic movements, non-profit organizations, universities, etc. In addition, they are uploaded on a regular basis (not necessarily every day but with a certain regularity) and they are all focused on

topics related to local realities, addressing specific themes neglected by mainstream television.

2.3.1 Characteristics and typologies

These micro Web TVs are evenly distributed on the Italian territory, and are usually located in small cities and centres. Their focus is extremely local; for instance, Mosaico TV, from Milan, documents and broadcasts what is going on in the area surrounding the famous Monza street, while Monti TV describes the life in the historical Monti district, close to the Colosseum in Rome. TeleTorre19 is the first condominium TV, talking about the life in a specific building, while Tele-Osservanza is the micro Web TV of a local parish in the city of Cesena, located in one of the Italian regions with the highest number of Web TVs, Emilia-Romagna. Therefore, these micro channels address specific communities, while at the same time they communicate nationally and even globally. Messina Web TV, for example, narrates facts and events related with the Sicilian city, to Sicilian emigrants living in the United States. The Web TVs phenomenon is turning away from an hobby for video makers and professionals' spare time to a structured activity managed by groups of citizens to offer a new content (information, entertainment, education and so on), or a space in which it is possible to learn and debate about all the issues (especially local) that usually are not able to reach the top of the information agenda, or are simply not gripping for the economic interests of mainstream media. For instance, there is a Web TV in Sardinia-born from a shepherd's idea, Emilio Concas, to face economic problems on his farm. He involved his family in filming and taking pictures of the daily routine in the farm and uploaded this content on a website[20]. Concas daily overcomes infrastructural difficulties in order to have enough bandwidth to upload the content, and the website's design is quite elementary. However, he obtained some success and soon the audience started asking how to buy the farm's handmade products. So they had another good idea, they suggest people to adopt a sheep, in order to receive cheese and wool products in exchange.

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20 http://www.sardiniafarm.com/ (last accessed April 2012)

2.3.2 Legal status

To better understand the difficulties that micro Web TVs are faced with, both to affirm themselves as a real alternative to the duopolistic system and to enhance public interest, a brief overview about the legal framework is necessary. The title of this paragraph suggests something of which we are not completely conscious about, but it is something we can be specific about every time someone is talking about legal aspects of Television system: most of the laws are "called" by the names of Ministers and politicians linked with Berlusconi's first, second or third government. There is another aspect to be taken into account: while talking about Web TVs, we have to bear in mind current laws protecting/ruling the internet and, at the same time, traditional television discipline. This fact could be considered anachronistic, but it is also a symptom of political distraction and a lack of interest for this emerging opportunity. Web TVs' influence has probably been underestimated until now, and this fact has left enough room for networks and the links among different communities to consolidate, as well as to learn the specific skills required to effectively operate in a professional new social media, and to invent styles and languages. Web TVs' freedom in producing and disseminating content without any control or role evokes another important issue that actors operating in this scenario could and should advocate in the future: the present lack of rules and laws implies that fundamental rights sometimes are not properly defended. There has been a long history of efforts to undermine freedom of expression on the Internet in Italy, and much more energy was spent in these efforts than in developing infrastructures to foster broadband access. Below, we list the most important laws and decrees regarding the Internet:

- The Pisanu's decree (2005) limited online communications because every connection has to be identifiable and traceable. The most significant impact of this law is to limit the diffusion of wi-fi connections in Italy. This law has been cancelled in January 2011, however for six years it conditioned the opportunity of immigrants to access the internet and traced the movements of everyone who used the Internet in Italy;

- Levi-Prodi's law (2007) compared blogs to any other editorial product and required bloggers to register the name in the list of communication operators. This law was widely criticized and later on cancelled;

- Pecorella's new paragraph (2009), which was proposed to be added to the press law of 1948, suggested applying to Internet's content the entire discipline regarding traditional press. The proposition never reached the parliamentary debate.

- Maroni's (2009) code's goal – in what concerned the Internet - was to give to the government the power to shut down websites containing "threats" or arousing hate.

- Alfano's law (2010) included an Interception Act and some anti-blog measures that only professional organizations could fulfil. Thus, the rule did not take into account the amateur nature of almost all Internet sites.

We could also mention the propositions made by Barbareschi (2009) – who is a deputy, an actor and a producer - for a strict protection against online peer sharing on contents protected by copyright; d'Alia's amendment (2009) for the repression of activities instigating crimes through the Internet; Carlucci's law (2009) - she used to be a showgirl in Mediaset shows before becoming a deputy - to make the Internet a area of freedom of rights and duties through abolishing anonymity; Lauro's proposal (2010) - after a violent physical attack to Berlusconi - to prevent hate speeches and to review the penal code, increasing punishments for crimes committed using the internet.

Internet television (live streaming and webcasting) is only mentioned in the so called Romani Law (2007), which prescribes that rules valid for radio and television are extended to all the television-like services, and in a AgCom (the Italian Agency for Communication) verdict. Nowadays, the universe of Web TVs is ruled mainly by following two laws, the Romani's decree (2010) and the AgCom resolution. Romani's law, which should incorporate a European Directive in the Italian law, was transformed in a radical reform of Italian media legislation. Unfortunately, the same European Commission recently commented on the way in which its directive had been interpreted.   The decree, in fact, in its first version, compared websites with

audiovisual content to television stations. Several communities of bloggers protested against this interpretation, especially considering that traditional websites like blogs, search engines, electronic versions of newspapers and magazines, online games and all the services that "are not in competition with television broadcasting", were excluded by the decree. The new Italian government, lead by Mario Monti, is working to modify another point of the decree, the article 34/4, that imposes a sort of authorization for television to start up and to be on air. Moreover, the AgCom resolution (AgCom, the Italian Agency for Communications, should be a control authority, however often it imposes rules) imposes the rule of 'notice and take down' (in 48 hours) in any case of violation of copyright rules.

2.3.3 Actors and producers: the high-tech bricoleurs

To understand why these laws and codes are slowing down and obstructing the creativeness of small and micro Web TV's entrepreneurs, we highlight that in this ecosystem most of the actors are not professionals (Treré & Bazzarin, 2011). They fit more with the distinction given by Lévi-Strauss, who developed the concept of the *bricoleur* in opposition to the one of *ingénieur*.

> *'Le bricoleur est apte à exécuter un grand nombre de tâches diversifies; mais, à la différence de l'ingénieur, il ne subordonne pas chacune d'elles à l'obtention de matières premières et d'outils conçus et procurés à la mesure de son projet: son univers instrumental est clos, et la règle de son jeu est de toujours s'arranger avec les "moyens du bord", c'est-à-dire un ensemble à chaque instant fini d'outils et de matériaux, hétéroclites au surplus, parce que la composition de l'ensemble n'est pas en rapport avec le projet du moment, ni d'ailleurs avec aucun projet particulier, mais est le résultat contingent de toutes les occasions qui se sont présentées de renouveler ou d'enrichir le stock, ou de l'entretenir avec les résidus de constructions et de destructions antérieures. L'ensemble des moyens du bricoleur n'est donc pas définissable par un projet (ce qui supposerait d'ailleurs, comme chez l'ingénieur, l'existence d'autant d'ensembles instrumentaux que de genres de projets, au moins en théorie); il se définit seulement par son instrumentalité, autrement dit, et pour employer le*

langage même du bricoleur, parce que les éléments son recueillis ou conservés en vertu du principe que "ça peut toujours servir"' (Lévi-Strauss, 1962).

The *bricoleur* is able to use any available tools stocked from previous experiences, in order to complete a project, even if these tools were not intended for the specific goal. When something is lacking in the bricoleur's toolbox, or the work needs more people to be done, they achieve their goal by joining communities in which complementary tools and skills are available.

2.4 Micro Web TVs as networked ecosystem

The absence of a powerful Web TV network has also been regarded as one of the causes for their weakness against traditional media (Treré, 2008). FEMI was also launched to join together local experiences and to build a strong network that could leave a deeper mark on the media scenario. De Biase (2010) has rightly pointed out that the strength of these TVs lies in their network, not in each of them at an individual level. These Web TVs, if taken separately, can only count on a few hundreds of daily contacts, but if they broadcast as a network, they can count on almost one million of contacts per month. FEMI organizes online events that are simultaneously broadcasted on most of Italian MicroWeb TVs, in order to overcome the problem of fragmentation. For instance, in July 2010, Italian Micro Web TVs joined forces and created the LiberaRete (FreeWeb) event to affirm their importance and to communicate their mission to Italian and international audiences. FEMI has also launched the Rita101 TV, in honour of Italian Nobel Prize Doctor Rita Levi Montalcini, a Web project whose topics are related to research, and in which it is organized a live broadcast every year, connecting with other Web TVs. These kind of webcasting events are made possible by the cutting down of costs of digitization: with cheap HD cameras, laptops, and using the Skype software to make video-interviews and receive calls from audiences, different teams of FEMI are able to coordinate and broadcast, creating an 'alternative' online TV network.

3. Challenges and future perspectives: the social network

According to Castells' (2009) distinction between networking power, network power, networked power and network-making power, after our observation of network of independent media (FEMI) we detected that:

- For the *networking power* 21, the cost of exclusion from network increases faster than the benefits of inclusion on the network, because "the value of being in the network increases exponentially with the size of the network" (Castells, 2009: 42). For a single alternative media being part of FEMI has not a prompt impact in its budget or in its ability to engage audiences. On the contrary, outliners are not involved in information sharing, recalls and in programme bouncing, and this implies a quick senescence and loss of weight in the public debate;

- the *network power* implies that participants have to share standards or protocols and have to accept the same rules. This commitment is clear during simultaneous broadcasting and FEMI gives its associates the opportunity to negotiate these rules. "Power is the power of network standards over its components" (Castells 2009: 43) and supports the specific interests of a specific community of social actors;

- the *networked power* implies that "each network defines its own power relationship, depending on its programmed goals" (Castells, 2009: 44). One of FEMI's efforts lies in negotiating. with an increasing number of partners, common aims and a shared perspective of future scenario's developments;

- The *network-making power* could be detected in FEMI's ability to connect several micro realities with policy makers and proper business companies.

According to Vaccari (2011) "Italian parties, however, have generally been slow and cautious in harnessing the participatory potential of the internet (Vaccari 2008), particularly because party bureaucracies have been reluctant to concede control over

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21   "Networking power refers to the power of the actors and organisations included in the networks that constitute the core of the global network society over human collectives or individuals who are not included in these global networks" (Castells, 2009: 42)

message production and distribution". However, in 2011 something changed, and from the Arab spring to the Spanish citizens' movement (indignados), we are witnessing a wider number of people rising up against inequalities, an occupation of debating spaces (i.e. Web and Yes We Camp! movements, which imply that people are occupying both virtual and actual arenas) and a new form of bottom up civic engagement, directed by social networks moved by a common goal. Bazzarin & Lalli (in press), for instance, while observing the community of promoters of a referendum, suggested that "the action itself - of sharing and promoting user-generated-content - is powerful in shaping even a fluid community, as well as in fostering new forms of collaboration. Furthermore, students and citizens involved in these processes become more and more skilled in using these channels, fostering literacy, learning a lot about the possibility to find information and to propose similar actions of sharing meanings."

Despite the strong Italian technological and legislative gap in promoting media pluralism and solving the digital divide, the opportunity to access the Internet enhance the networking power for a growing part of the Italian society. High tech "bricoleurs" are acquiring skills and organizing their activities in an alternative media ecosystem that is quickly filling the gap between the traditional one, in grasping audiences' cultural interests as well as in conquering a key-space in the Italian public debate. These high tech "bricoleurs" are supported by a national network of professionals, innovators that sustain an attitude of rejection or opposition to the mainstream media system (for instance lawyers, researchers, technicians, journalists, etc.). This network is triggering an opportunity to safeguard pluralism and freedom of expression in this multi-media environment.

References

Albertazzi, D.; **Brook**, C.; **Ross**, C. (2009) *"From Parliament to Virtual Piazza? Opposition in Italy in the Age of Berlusconi"*, *Bulletin of Italian Politics*, 1, 1, 111-123.

Ardizzoni, M.; **Ferrari**, C. (2010) (eds.) *Beyond Monopoly. Globalization and Contemporary Italian Media*, Lanham, Maryland: Lexington Books.

Balbi, G.; **Prario**, B. (2010) "The history of Fininvest/Mediase*t's media strategy: 30 years of politics, the market, technology and Italian society"*, *Media Culture Society*, 32, 391.

Barca, F. (2007) *Le TV Invisibili. Storia ed Economia del Settore Televisivo Locale in Italia* [Italian], RAI Roma: ERI editore.

Bazzarin, V.; **Lalli**, P. (2011) *The medium is the community (?) A pilot laboratorial activity at University of Bologna to tell and promote the city*, in **Ciastellardi**, M., **de Almeida**, C.M.; **Scolari**, C. (eds.) "*McLuhan Galaxy Conference Understanding Media, Today - Conference Proceedings*", 323 - 330.

Bazzarin, V.; **Lalli**, P. (in press) Collective tellers. Web collaboration: two examples, in *Collaboration in a Contemporary World*, Novo Mesto 7-8 November, Conference Proceedings.

Buonanno, M. (2010) *Foreword*, in **Ardizzoni**, M.; **Ferrari**, C. (2010) (eds.) "*Beyond Monopoly. Globalization and Contemporary Italian Media*", Lanham, Maryland: Lexington Book.

Castells, M. (2009) *Communication Power*, Oxford: Oxford University Press.

CENSIS (2009) *43° Rapporto sulla Situazione Sociale del Paese/2009* [Italian], retrieved on the 13th of April 2011 from

Colletti, G. (2010) *TV Fai-da-WEB. Storie Italiane di Micro Web TV* [Italian], Milano: Il Sole 24 Ore.

Colombo, F. (2004) (ed.) *Tv and Interactivity in Europe: Mythologies, Theoretical Perspectives, Real Experiences*, Milano: Vita e Pensiero.

D'Arma, A. (2010) *Shaping Tomorrow's Television: Policies on Digital Television in Italy 1996-2006*, in **Ardizzoni**, M.; **Ferrari**, C. (2010) (eds.) "*Beyond Monopoly. Globalization and Contemporary Italian Media*", Lanham, Maryland: Lexington Book.

De Biase, L. (2010) *Introduzione* [Italian] in **Colletti**, G. (ed.) *TV fai-da-WEB. Storie Italiane di Micro Web TV*, Milano: Il Sole 24 Ore.

De Certeau (1984) *The Practice of Everyday Life*, trans. Steven Rendall, Berkeley: University of California Press.

Drusian, M.; **Riva**, C. (2010) (eds.) *Bricoleur High Tech: I Giovani e le Nuove Forme della Comunicazione*, [Italian], Milano: Guerini.

Farinosi, M.; **Treré**, E. (2010) Inside the "People of the Wheelbarrows": participation between online and offline dimension in the post-quake social movement, *The Journal of Community Informatics,* 6(3), from:
http://ci-journal.net/index.php/ciej/article/view/761/639.s

Ferrari, C.; **Ardizzoni**, M. (2010) *Introduction: Italian Media between the Local and the Global*, in **Ardizzoni**, M.; **Ferrari**, C. (2010) (eds.) *"Beyond Monopoly. Globalization and Contemporary Italian Media"*, Lanham, Maryland: Lexington Book.

Gilder, G. (1994) *Life after Television*, New York: Norton.

Ginsborg, P. (2005) Silvio *Berlusconi. Television, Power and Patrimony*, London & New York: Verso.

Gomez & **Travaglio**, M. (2004) *Regime*, [Italian], Milano: BUR.

Hibberd, M. (2007) *Conflicts of interest and media pluralism in Italian broadcasting, in "West European Politics"*, 30, 4, 881 – 902.

Hauben, M.; **Hauben,** R. (1997) *Netizens: On the History and Impact of Usenet and the Internet.* Los Alamitos, California: IEEE Computer Society Press.

Jenkins, H. (1992) *Textual Poachers: Television Fans and Participatory Culture*, London: Routledge,

Jenkins, H. (2002) *Interactive Audiences?* in *"The New Media Book"*, (ed.) Dan Harries, London: British Film Institute.

Jenkins, H. (2006) *Convergence Culture. Where Old and New Media Collide*, New York: University Press, 2006.

Levi-Strauss, C. (1962) *La Pensee Sauvage*, Paris: Plon.

Kackman, M.; **Binfield**, M.; **Payne**, M.T.; **Perlman**, A.; **Sebok**, B. (2011) *Flow TV, Television in the age of media convergence,* New York: Routledge.

Lévy, P. (2000) *Collective Intelligence: Mankind's Emerging World in Cyberspace*, New York: Perseus.

Mazzoleni, G.; **Vigevani**, G.; **Splendore**, S. (2011) *Mapping digital media: Italy. A report by the open society foundations*, London: Open Society Foundations.

Navarra, G. (2008) *Political anomalies and web-based civil antibodies* in Silvio Berlusconi's Bel Paese, *"Recerca, revista de pensament y analisi"*, 8, 1130-6149, 173-192.

Negroponte, N. (1995) *Being Digital*, London: Hodder and Stoughton.

Padovani, C. (2007) *A Fatal Attraction: Public Television and Politics in Italy*, Lanhan: Rowman & Littlefield Pub Inc.

Padovani C. (2010) *Digital Terrestrial Television and its Promises: Framing the Debate on the Transition to Digital Television in Italy*, in **Ardizzoni**, M.; **Ferrari**, C. (2010) (eds.) "*Beyond Monopoly. Globalization and Contemporary Italian Media*", Lanham, Maryland: Lexington Book.

Reporters sans frontiers (2003) *A Media Conflict of Interest: Anomaly in Italy*, retrieved on 13th April 2011 from:
http://en.rsf.org/italy-a-mediaconflict-of-interest-23-04-2003,06393.html

Scaglioni, M.; **Sfardini**, A. (2008) *MultiTV. L'esperienza Televisiva nell'Età della Convergenza*, [Italian], Roma: Carocci.

Treré, E. (2008) *Problematiche e Prospettive delle Web TV Universitarie Italiane*, in **Caprettini**, G.P.; **Denicolai**, L. (eds.*) "Extracampus. La televisione Universitaria. Case-history di un'Esperienza Vincente*", [Italian], Torino: Cartman editore.

Treré, E.; **Bazzarin**, V. (2011) Explorer la Micro Web TV italienne: comment les bricoleurs de high-tech redéfinissent-ils le public?, *ESSACHESS. Journal for Communication Studies*, 4, 1(7), 49-67.

Treré, E.; **Sapio**, B. (2008) *DTV in Italy*, in **Van der Broeck**, W.; **Pierson**, J. (eds.) "*Digital Television in Europe*", Brussels: VUB press.

Vaccari, C. (2008) Research note: Italian parties' web sites in the 2006 elections, *European Journal of Communication*, 23, 1, 69–77.

Vaccari, C. (2009) *Web challenges to Berlusconi: an analysis of oppositional sites*, in "*Resisting the Tide: Cultures of Opposition under Berlusconi (2001– 2006")*, **Albertazzi**, D.; **Brook**, C.; **Ross**, C.; **Rothenberg**, N., *New York London: Continuum*, 135–147.

Vaccari, C. (2011) The news media as networked political actors, *Information, Communication & Society*, 14,7, 981-9

The becoming of media: technical
progress and the constitution of cinema's ontology

Gabriel Menotti[22]

Introduction

Exploring the relational nature of cinema, this paper means to show that the conventional identity of the medium does not exist apart from the technological changes of its underpinnings, such as the digitisation of audiovisual data and the proliferation of electronic screens in domestic spaces. This identity is defined precisely by the means in which the cinematographic circuit organizes emerging technical processes and thus reorganizes itself, as it strives for operational coherence. To understand the development of cinema technology, I will analyse the history of the medium in the light of Gilbert Simondon's theories, by which technical reality is characterized as a form of inter-mediation between human and nature and not as being opposite to culture (1958: 11). In doing so, I will portray the *technical becoming* of cinema, from which its technology emerges as cinematographic.

Roughly speaking, becoming is the means through which a technical object acquires concrete identity and an autonomous mode of operation, thus defining itself in a way that makes it different from other technical objects (Simondon, 1958). Paying attention to Simondon's definitions, I propose that the apparent demise of cinema caused by digital computation would correspond to a discontinuous but major improvement of the cinematographic circuit, through which the new technologies would be accommodated while the medium's conventional identity would be reformed in order to accept them. Thus, once the new technologies become properly localized within the circuit and all of the medium's conventions are reformed, it would be as if cinema had never changed, or had simply been developed in order to *become* what it should always have been.

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Considering the technical becoming of cinema, one could say that it is not the mere novelty of technology that poses a problem to the conventions of the medium, but the disarrangement of old elements provoked by the localization of this new technology within its circuit, which disrupts the established correspondences between apparatus and practices. For instance, digital technologies are already largely part of cinema: they are used extensively in movie post-production, being a standard intermediate for both commercial and independent moviemaking (Rodowick, 2007: 8). Nevertheless, a practice such as p2p film piracy can challenge what is normally considered the ontology of the medium because it uses computers to actually *distribute* movies, *dislocating them* within the cinematographic circuit. This dislocation demands the set up of particular software applications and platforms to integrate PCs into processes of movie circulation, therefore rearranging correspondences both internal and external to cinematographic apparatus.

While the early pirates had to work hard to settle these correspondences, nowadays they seem to have become crystallized within the circuit's standards: the necessary video codecs and applications come pre-installed in every playback device. Digital movie files can be easily acquired from online services that rent or sell them to the domestic market (like the iTunes store) or from companies that transmit them by satellite to screenings venues (such as the Brazilian Rain Networks). Likewise, cinema architecture is prepared for it: digital projectors can be found hanging from the ceiling of most theatres, directly connected to their projection booths and sometimes to networks of online distribution; cables are incrusted in the walls, nowhere to be seen. The apparatus are all in place and what were once laborious procedures have become effortless synergies. Thus the rearrangement of technical processes seems to have been normalized as a part of the medium's apparatus.

The following section will demonstrate how this normalization of technology is not imposed from the outside, but driven from within the circuit. It will also show that, as it congeals technical processes into mediatic operations, the becoming of the medium suppresses certain potentials of technology, creating an "invisible part" of cinema in which dynamics of specification are carried out. The medium is connected to other media and fields of creation through this invisible side. Examining these connections, the second section of the paper will supplement the althusserian concept

of *apparatus* with the foucaultian notion of *dispositives*, in order to underscore all of the suppressed processes that allow and sustain particular cinematographic practices.

1. The history of cinema and its technical becoming

After an emerging technology is localized in the cinematographic circuit and made proper to cinema, the apparatus and practices it entails become normal to the medium. This ensuing normalization allows us to trace the continuous identity of cinema in history, notwithstanding the technological metamorphosis of the medium. In that sense, cinema could be understood in terms of Simondon's definition of a technical object, which is not a given, but "a unit of [its own] becoming" (1958: 19).

Simondon has revealed the complexity of technical objects' mode of existence in his work. For him, these entities are not mere assemblies of material, nor are they self-sufficient subjects (ibid: 12); rather they are relational systems characterized both by the resonance of their inner elements and by the way they are integrated into the outer milieu. By stating that technical objects are "not such and such a thing [...], but something that has a genesis" (ibid: 18), he implies that they possess a fundamental historical dimension. Therefore, instead of speaking about the identity of technical objects, Simondon rather speaks in terms of their *becoming* – the process through which a technical object is rendered *concrete*.

In a similar vein, the aspects of specificity that characterize cinema could be understood as the result of a continuing *dynamics of specification*, which negotiates the medial meaning and value of technological developments. Following this lead, I intend to approximate the idea of specification to Simondon's concept of becoming, in order to highlight the fundamental historical dimension of the cinematographic circuit, which encompasses both continuous and discontinuous improvements.

1.1. The normalization of technology according to the genesis of the medium

Simondon has specified three different stages in the becoming of a technical object: the element, the individual and the ensemble. Seen through his framework, cinema would correspond to an ensemble: a technical object that has attained a greater level of concretization, in which technique can become firmly integrated into

culture (1958: 16). The evolution of the object towards this stage is not driven by increasing automation – which for Simondon represents "a fairly low degree of technical perfection" that has "economic or social, rather than a technical, significance" (ibid: 13). On the contrary, it depends of a certain *margin of indetermination* that makes machines sensitive to outside information, enabling them to be articulated together (ibid: 13). It is in these connections between machines that Simondon places the human being, comparing him to a *conductor*: "it is through him that the members of the orchestra affect each other's interpretation" (ibid: 13).

While pure automation is sufficient to produce an industrial device with its own particular logic, it does not necessarily create margins that allow technical elements to be coordinated into an ensemble. This distinction can shed a new light on the competition of moving image apparatus that preceded cinema. For instance, while a device such as Thomas Edison's *kinetoscope* entailed the successful automation of earlier contraptions, this characteristic was not enough to emancipate it from the pre-cinematographic milieu, so inaugurating a new circuit. Albeit more expensive and sophisticated than other optical toys, the kinetoscope could be handled within a regime of circulation similar to theirs, being shown as a curiosity in exclusive machine parlours and amusement fair-like situations. In that sense, the problem of Edison's invention might be precisely that it was *too automatic*, replicating the one-to-one mode of engagement of its forerunners and integrating the image's physical support into its chassis. The kinetoscope presented itself as a self-contained commodity which could only be modified with difficulty, but could very simply be transported through the already established media underpinnings without interfering with their technical organization.

If the kinetoscope seemed to lack any substantial indetermination, the Lumières' film projector, on the other hand, was full of it. When the *cinématographe* was first created, it had no proper place or audience. Hence, it occupied spaces where it was not meant to be – such as cafés and shops – and borrowed their public (Machado, 2002: 78). Moreover, for the device to work, these spaces had to be constantly adapted to the medium (e.g. keeping the line of projection unobstructed and maintaining the lighting at a low level). Within a few years, the makeshift public would be educated to constitute a movie audience and the spatial adaptations would

be crystallized in the architecture of movie theatre – coincident developments that I have analysed in a previous work (Menotti, 2007). This may lead to the impression that the *cinématographe* co-opted the local public and mobilized the space around it, giving birth to cinema by its own effort. From the perspective of Simondon, however, what happened was the opposite: the projector was fixed at the origin of the medium *because* the adjustments it required from the external milieu were later developed into synergetic correspondences. This normalization, which conflates historical dimensions with conventional ones, could be seen as a primary result of the *genesis* of the medium.

Genesis is the evolution that a technical object undergoes, through which it is made concrete; it becomes "a system that is entirely coherent with itself and entirely unified" (Simondon, 1958: 21). In its most primitive form, a technical object is an abstract organization of *elements*: "each theoretical and material unity is treated as an absolute that has an intrinsic perfection of its own that needs to be constituted as a closed system in order to function" (ibid: 20). Such a statement could be used to describe not only the first Lumières' screenings, in which the "intrinsic perfection" of the projector had to be arranged in relation to that of the café space, but also the early use of p2p networks for film piracy. In the detached elements it is already possible to identify particular physical attributes that would constitute the materiality of the medium. However, at this stage of becoming, the closure of circulation still depends of processes seemingly external to it. On the one hand, for the organizers, it involved finding a power source, installing the projector and the screen, connecting the appropriate cables, and preventing people from sitting in front of the projection light. On the other, for the audience, it meant paying attention and adopting a behaviour that they were not accustomed to, at least not in a café. Therefore, at this first stage of becoming, the physical aspects of cinema could already be specified, but not its mode of operation.

As the technical object evolves, the contingent arrangements that allow its primitive functioning are "fixed and crystallized in functioning structures" (ibid: 18). The processes that used to coordinate the disconnected elements are supplemented by a fixed mode of usage by these structures, giving rise to operations such as "moviegoing" and "film screening." According to Simondon, usage "brings together

heterogeneous structures and functions in genres and species which get their meaning from the relationships between their particular functions and another function, that of the human being in action" (ibid: 18). By the means of these functions, the object seems to attain a concrete *individuality*. In terms of the aspects of medium specificity, this could be translated as the establishment of automatisms such as the mediatic apparatus and practices. This can be perceived in the consolidation of a place such as the movie theatre, whose architecture incorporates the actions previously necessary for projection.

The concretisation of technical objects increases towards the ensemble, in the final stage of which each unit becomes attached to the rest by "reciprocal exchanges" in a way that "it cannot be other than it is" (ibid: 19). In the ensemble, individual principles of operation seem to resonate into one another, according to multiple causes that are external to the different unities, but internal to the ensemble. In that sense, one can appreciate the growing correspondence of operations such as "screening" and "filmmaking" due to standards both physical (such as film gauge and frame rate) and logical (like the movie's average duration and narrative patterns) that become ingrained into their respective apparatus. Attaining such a level of concretization, "technical reality becomes regulatory" and therefore "can be integrated into culture, which is itself essentially regulatory" (ibid: 16). Thus the ensemble also seems to bring about the paradigm of understanding that, promoted by regulating bodies and schooling institutions, provides both methodological and metaphysical coherence to cinema.

While the standards fixate correspondences between different units, they seem to circumscribe a margin of indetermination that is internal to the ensemble. In other words, these standards leave some room for the units to be moved within the ensemble and affected by human agency, through which the whole can achieve meaningful exchanges of information with other ensembles. When it comes to cinema, the pivot of such open interventions is none other than the movie. It is by the means of movie circulation that apparatus communicate with one another in the cinematographic circuit, and even with other media and fields of creation. Hence, the technical indetermination of cinema seems to be nothing other than movie circulation.

In the concretization of cinema as a technical object, it is possible to notice an escalation of the medium's overall resistance to change, as apparatus become fixed and practices congealed, streamlining the meaningful exchanges into the transports of the movie. It follows that cinematographic operations are increasingly restricted to the limits of the movie's means of circulation, such as the final cut. In that sense, as the medium becomes more technically concrete, its operation seems to become more abstract: from the *presentation of the cinématographe in different venues* it moves on to the *projection of films in theatres* and finally to bare *movie consumption.* Thus abstracted, the means of circulation seems to be turned into a norm autonomous from technique, and even preponderant to it: emerging apparatus are localized within or without cinema according to their compliance with this norm. When a device such as the TV appears, it first communicates with the established circuit not by the means of a direct connection to its apparatus, such as the film camera or the projector, but through its capacity to handle the movie's means of circulation.

More than defining *which* apparatus and practices are cinematographic, the means of circulation defines *how* they can be so. This explains why technologies that would otherwise disturb the means of circulation become integrated into the circuit as its supplements. It also clarifies the kind of competition that the cinematographic institution sees in a practice such as digital film piracy, which attempts to create "cinematographic" exchanges in places where there should only be standard connections between apparatus. Optimistically, the drive of film piracy could be explained in terms of what Felix Guattari – writing about free radios – designated as "a post-media era in which the media will be appropriated by a multitude of subject-groups capable of directing its resingularisation" (Goddard, 2011: 9). In other words, as a way to keep the negotiation of the specificities of the medium open to its public. This is precisely what seems to be avoided by the incorporation of digital technologies into movie circulation as described in the introduction to this chapter, in which new technical processes become localized in a way that preserves the definitions of movie production and consumption – the former as the manufacture of an autonomous set of moving images; the later as a purely visual operation. Thus the normalization of emerging elements in relation to the established apparatus and practices seems

relative to the localization of certain technical processes within the circuit, along with their suppression from direct mediatic operation.

As new technologies go from disruptive to normal and become cinematographic, how are they really changed? More importantly, how is the medium changed? In order to examine these transformations, I will now turn my attention to the contingencies that are suppressed in the course of technical genesis.

1.2. The invisible side of cinema and the primacy of multimedia

Simondon states that the evolution of technical structures is driven by their own internal necessities (1958: 21). Upon reaching the stage of ensemble, it seems that these necessities unfold in a topography apparently external to the object, but which overall is consequent to it. In that sense, it would be more than symbolic that the Lumières' projector also worked as a camera (Cubitt, 2004: 32). This bilateral operation would confirm the originality of the *cinématographe*, which already contained a correspondence between the operations of filmmaking and screening, prone to be developed into that between movie production and consumption. Thus, the *cinématographe* would have led to projection booths, film studios, distributing facilities and the like.

It is in this light that the ensemble should be considered as something beyond the mere units from which it is constituted. These units are symptomatic of a logic of territorialisation that expands and sustains technical becoming. As Simondon puts it, "it is not the production-line which produces standardization; rather it is intrinsic standardization which makes the production line possible" (1958: 21). In that sense, the standards that make apparatus possible could be related to the dynamics of specification that allow for the coherence of the medium's underpinnings. While upholding cinematographic operations, the genesis of cinema also carries on the medium's continuing specification.

Considering the similarly technical character of both dynamics of specification and cinematographic operations, one may be led to ask why some of the ensemble's necessities not only become fixed, but are *fixing*, while others are not only open for the public, but actually *require its engagement*. In fact, there seems to be no

fundamental difference between these two classes of processes. Their separation could be explained according to the technical synergies that grow in the course of the medium's genesis (ibid: 30). It is by means of these synergies that the medium either resists or accepts change. Through them, technology becomes the opposite of a mere "physical translation of an intellectual system:" it "approximates the mode of existence of natural objects" (ibid: 46).

Nothing describes the naturalization better than the famous Kodak slogan from 1888: "*you* press the button, *we* do the rest" (Sontag, 1979: 53). This means that the company ("we") took over a number of processes that until then were an inherent part of the photographic operation, reducing the engagement with the apparatus to the emblematic point-and-shoot. This was made possible because of a new camera model the company was promoting among the general public, which used a roll film carrier. This object could be easily loaded into the camera and rewound once completely used. It included in its costs the developing and printing services, which were provided by the company itself: the customer just had to send the camera back to Kodak in order to receive the finished pictures a few days later, along with the camera loaded with a new film. Later versions of the advertisement substituted the slogan for "*it* does the rest," conveniently imputing the suppressed processes to the film carrier, whereas this object did not actually do any of "the rest."

Such advertisements indeed imply that photography, which involves dealing with the automatisms of the apparatus, necessarily depend on dynamics that are external to the device. Kodak had these dynamics streamlined in a large industrial facility, which was kept away from the customers. In its place, it presented the film. With this substitution, the practice of photography also became streamlined; it was promoted as the mere capture of images, as though it was a pure visual operation. One certainly cannot ignore how the *advertisement* itself takes part in this transformation of the public dimension of the practice. The logic of figurative representation behind the photographic apparatus is thus reinforced; concomitantly, the film carrier is isolated as an artefact that stands for a series of fundamental processes of information. Abstracted, these processes are not perceived in terms of the technical infrastructure they demand, but as a certain rhythm and scale imposed

upon photographic practice: the standard number of pictures a film can hold and the time it takes to send the film to Kodak and receive the pictures back.

This logic can be transported to cinema, which is based on principles similar to photography. On these grounds, it is possible to understand why a digital movie screening in a conventional theatre does not seem to break with the tradition of the medium, even though it discards what is normally considered the most fundamental aspect of cinematographic practice: film. The fact is that the digital screening streamlines all of the processes involved in this disruption, disguising them so that the disappearance of film goes unnoticed. The computation is running smoothly in the projection booth; high-quality audiovisual data arrives by an encrypted Internet connection, and the projectionist has been previously trained in the operation of all these devices. The audience does not have to wait for sound speakers to be placed, nor does it risk getting a glimpse of the machine's operational system in the middle of the exhibition because the antivirus' license has expired. Most of those viewing the movie will never know that some movie projectors run on a Windows system which is similar to the one they have in their personal computers (De Luca, 2005: 159). The conventional mode of engagement of the public with the movie is thus promoted; the internal margins of indetermination of cinema are preserved. On the other hand, what is *behind these margins* has changed completely.

The proper operation of the cinematographic apparatus depends on the conscious engagement of the public. In the words of Jean-Louis Comolli, one of the late apparatus theorists, "there is no spectator other than one aware of the spectacle" (1985: 757). Expanding on the socio-economic dimension of cinema, Sean Cubitt has affirmed that "audiences constitute the media that constitute them in a dialectical antagonism of mutual creation, mutual annihilation, and that this is entirely true to the shifting nature of the commodity" (2004: 10). Examining the technical genesis of the medium, one can see how limited this awareness is, and so is the mutual constitution of audience and media.

In as much as movie consumption might presume movie production and vice-versa, neither of these activities fully acknowledges the processes out of which they are constituted, nor the structures that are fixed between them. The awareness of the public seems attached to a certain part of cinema: devices such as the screen and the

camera; practices such as shooting and montage. Another part, which Comolli dubs the *invisible side* of the medium, remains largely ignored: negative film, chemical processing, subtitling, projection, and so on (1985: 745). Not surprisingly, the elements that are "invisible" within cinema are also those that fall behind the margins of indetermination that are internal to the circuit – in other words, the "predetermined" structures and dynamics that are a condition for movie circulation, and not the movie circulation itself. In this way a division between "structural" and "symbolic" processes is promoted. On the one side, there are the underpinnings of the medium and its dynamics of specification; on the other, cinematographic language and the operations of movie circulation.

Is it telling that, almost 30 years after Comolli's text, the visible side of cinema has remained pretty much the same. Maybe the only significant change is the attention now given to digital compositing and special effects (see, for instance, Rodowick, 2007: 6). Meanwhile, a lot has been added to the medium's invisible side: release windows, video codecs, online networks, copyright negotiations and marketing campaigns, etc. In public debate about these elements, they are invariably considered important *to* the medium. However, this simultaneously implies that they are not important *as* the medium. These new issues seem to affect the movie business, historical preservation and cultural significance, but not cinema's ontological definition or aesthetic possibilities, at least directly. This means that the medium's dynamics of specification remain alienated from everyday mediatic practices, in places that are completely external to them – such as governmental bureaus, software companies, darknet forums, courts of law and university yards.

The alienation of such dynamics hints at the complexity of the circuit's borders, which rationalize technological changes within and without the medium. In that sense, so-called "anti-cinematographic" devices have since long been part of cinema. Even before the complete substitution of the movie's physical support, the "new" technologies are already old as far as the medium is concerned. They started by influencing its operational principles and means of circulation. Although video was not regularly used to record feature footage until recently, it has had a strong effect in the practices of shooting and editing since the 60s because of the incorporation of the video assist to the film camera (Machado, 1988). Likewise, it was in response to early

competition with TV that some characteristics considered intrinsic to cinema, such as the screen size and horizontality, have been intensified (Greenberg, 2008: 138). Certainly, it is not necessary to wait for the complete disappearance of celluloid film for cinema to become computerized: virtually every movie since 2004 has passed through a digital intermediate (Rodowick, 2007: 7-8).

By paying attention to these examples, we come closer to understanding the heterogeneous nature of cinema. It means that so-called "multimedia" or "transmedia" processes coexist within the single medium. More precisely, they exist even prior to the concretization that separates the dynamics of specification from cinematographic operations. What still does not exist is a parameter to qualify these processes as cinematographic, and even less as multimedia. Before "proper" digital cinema appeared, there were peer-to-peer networks, codec packs, subtitling communities and so on. After digital cinema, there is just movie distribution and exhibition, which must comply with appropriate standards. In other words, once the conventions of the medium are reformed, these processes are made contingent, suppressed from mediatic operations or cast out into other fields.

Along with the suppression of technical contingencies, the full possibilities of the technology are also denied. Within cinema, processes such as developing negatives, transferring files, advertising a screening and setting up a projection are just a structural burden; these operations can only fulfil any poetic potential they might have outside of the cinematographic circuit. Whenever such potentials are to be acknowledged within the medium, it must be through its normal means of circulation – that is, turned into a movie. If such acknowledgement is not possible or sought after, the practice often finds its place in some sort of "expanded" field or in the art world.

In conclusion, I hope I have demonstrated that the genesis of cinema separates technical processes into the dynamics of specification and mediatic operations. The synergies that constitute the former pose a certain resistance to the normalization of new technologies within the medium, as long as these technologies are not rearranged according to this separation. The conventional cinematographic apparatus and practices are kept in place at the expense of such displacements of emerging elements. In that sense, the apparatus should not be considered the cause of the medium's becoming, but one of its *continuing consequences.* As Simondon explains, the machine

is a result of organization and information (1958: 16). Thus, just as a movie results from and stands for its circulation, the apparatus result from and stand for the dynamics of specification that are consolidated by the becoming of cinema. In that sense, apparatus are likewise inferred from the superficial effects of the circuit, as a sort of background over which the movie as a figure stands, or the material from which the movie as a form is made. Naturalized, the conventions behind this division remain overlooked.

1.3. How cinema is constituted in history

Technical synergies can be acknowledged as the essential drive of the medium's becoming. As they get established, separating the dynamics of specification from processes of circulation, these synergies produce the mediatic coherence of the circuit. They do so by abstracting some essential processes from public engagement, while revealing others as specific to the medium. This creates an "invisible side" to cinema, which grows exponentially as new technologies are normalized within its circuit.

This subsection examines in further detail the ways in which this normalization of technology happens. In other words, it addresses how technological change can be absorbed by the medium and rationalized through its genesis. This will allow a more comprehensive perspective about the differences between the use of digital technologies in digital film piracy (which goes against the medium's conventions) and their current standardization (which preserves these conventions).

Once again, I will resort to Simondon's framework, which establishes that technical progress occurs in a twofold rhythm, alternating *continuous and minor improvements* with *discontinuous and major improvements* (1958: 32). Whereas the former preserve the organization of the technical object, merely "lessen[ing] a disadvantage which could not be converted into a positive aspect of the functioning of the whole" (ibid: 33), the later provoke its complete rearrangement, "increasing in an essential manner the synergy of functioning" (ibid: 34).

Minor improvements would account for those that, respecting the established positions of the cinematographic apparatus, facilitate their connection. As an example,

Simondon cites the "self-lubricating bearings" that would reduce the attrition between different parts of an engine, making it run smoothly (ibid: 34). One could propose a similar definition to the minor improvements of cinema technology: they are those that lubricate the circuit so that the normal processes of movie circulation become progressively unobstructed. Examples would include higher resolution cameras and new codecs, which increase visual fidelity and favour the production, distribution and consumption of the movie as a visual form (i.e. without altering its definition).

However, as they diminish the "harmful effects" of residual oppositions between already localized processes, minor improvements do not contribute to their synergetic coupling, which would eventually lead to the concretization of a technical whole. In fact, Simondon proposes that minor improvements *prevent* this concretization, by "blind[ing] us to the real imperfection of a technical object" (ibid: 34). Paying attention to this point, it could be said that the rationalization of digital technologies only in terms of the visual resolution of cameras and screens overshadows the most critical effects that these technologies may have on cinema. While the industry is concerned with these minor improvements, the real transformations that digital technologies could effect on the processes of movie circulation are avoided.

Major improvements, on the other hand, would transform the scope of conventional mediatic operations, redefining the limits between movie production, distribution and exhibition. This rearrangement of circulation, followed by fundamental changes in the structure of the circuit, would promote further concretization of the technical ensemble. This means that, besides allowing for the localization of a new technology within the medium's circuit, major improvements would reform aspects of the specificity of the medium so as to comply with such localization. For that to happen, Simondon states that "what was an obstacle should become a means of achievement" (ibid: 25). The technology that was disrupting the organization of the medium becomes integrated into its dynamics of specification in such a way as to push its evolution forward.

Thus major improvements would account for all of the technological turnovers that have changed the nature of cinema, such as the active integration of sound and colour to film or the reform of theatre architecture in reaction to electronic

transmission. These turnovers represent the resolving of technical antagonisms and their ensuing normalization in the course of the medium's genesis. In this sense, they also represent the transformation of a synchronic tension between different models of cinematographic operation into the diachronic development of media technology. Once digital computation is properly localized within the cinematographic circuit, it will probably inaugurate another stage in this evolution of the medium. When this happens, the idea of "digital cinema" will be turned into an oxymoron that highlights the historical condition of a previous "analogue cinema," much as "sound cinema" does to "silent cinema."

By the means of major improvements, the medium seems to become what it was always meant to be. The most drastic changes in its underpinnings are thus accepted as the ultimate fulfilment of its ontology – even if the same changes had earlier seemed to threaten this ontology. While the reason these improvements are *major* might be obvious, it may still not be clear how they can be *discontinuous*, since they seem coherent with the medium's technical evolution. In fact, as I intend to demonstrate in the following paragraphs, these improvements are only made coherent through the perspective created by the evolution of the medium which they provoked.

I could start by unpacking Simondon's declaration, which characterizes a major improvement as a double movement: in order for an *achievement* to occur, an *obstacle* must first be highlighted. In other words, there needs to be some element that brings the antagonism between technical models to the surface of the medium, so that this antagonism can be resolved. Framed according to this formula, unauthorized practices like the p2p sharing of films should be understood not in opposition to the later standardization of digital technologies in cinema, but actually as leading it. This seemingly paradox can be made clearer by the means of a comparison between the reforms of mediatic conventions and the vicissitudes of normal science. In order to do this, I will correlate Simondon's framework to Thomas Kuhn's ideas about scientific progress, demonstrating how the development of media technology is understood through cinema's own epistemological conventions (meaning both the everyday engagement with the medium and the analytical discourses that make sense of it).

Kuhn states that the practice of normal science, bounded by the institutional directives of its paradigm, could be compared to a puzzle-solving enterprise, in which

experiments always depend on "the assured existence of a solution" (1996: 37). Thus, normal science "does not aim on novelties" and "when successful, it finds none" (ibid: 52) – an approach that drives practitioners away from questioning the limits of the paradigm. In that sense, normal science would be analogous to Simondon's minor improvements, which overshadow technical antagonisms and prevent any fundamental transformation in the underpinnings of the medium.

In order to escape from the self-absorbing loop of normal practice, the scientific field has to go through a *revolution*: a complete transition from one paradigm to another (ibid: 12). In a way similar to a major technical improvement, a scientific revolution has a critical outcome: it simultaneously produces a new gestalt over the field (ibid: 112), transforms the perception of its history (ibid: xi) and rebuilds the commitments of professional groups (ibid: 181). Examining the structure of a revolution, one is in a better position to describe the constituents of the discontinuity of the major improvements. The transformation of a paradigm does not happens all at once, in a "eureka moment," as the myth of scientific discovery would have it. It is a long-term process brought about by *anomalies.* Anomalies are the inadvertent results of scientific experiments that violate the expectations that are "implicit in the design and interpretation of established procedures" (ibid: 59). In other words, they contradict the paradigm, exposing its limits.

In cinema, anomalies would account for modes of engagement with technology that reveal the conventionality of mediatic practices and apparatus – for example, when p2p filesharing shows that computer networks could have other cinematographic uses than being a channel for film reviews. As it does so, anomalies not only appear to highlight the hidden potentials of the technology, but also challenge the established aspects of the specificity of the medium. As anomalies recur, Kuhn says that they lead to a *crisis*: a scenario in which "the existing institutions have ceased adequately to meet the problems posed by an environment that they have in part created" (ibid: 92). In a crisis, the established circuit seems no longer to be able to preserve the norms in which its organization is based.

For movie circulation, which like science is what Kuhn characterised as a community-based activity (ibid: 179), a crisis only happens when anomalies acquire a certain public dimension. One person alone, ripping movies from DVDs and storing

them in her personal computer, does not pose any threat to the specificity of cinema. Thousands doing the same thing and exchanging the results, on the other hand, probably do. In that sense, a crisis becomes marked by the proliferation of what Michael Warner calls *counterpublics* – collective participants of the public sphere that are "defined by their tension with a larger public," and whose "exchanges remain distinct from authority and can have a critical relation to power" (2002: 56). A similar notion of *counter-apparatus* could be used to address those structures that, while participating of the cinematographic circuit, are defined by their tensions with the norms of movie circulation, such as the filesharing networks.

However, at the same time as they challenge the medium's norms, such counter-apparatus could be seen as essentially propositional. Just like a counterpublic, they "[enable] a horizon of opinion and exchange" (ibid: 56) that would account for the plurality of "speculation and tentative hypothesis" that Kuhn states is necessary to give rise to a new paradigm (1996: 61). In that sense, a practice such as p2p film piracy is not a mere critique of the economic model of the medium or of the social constraints of movie distribution, but an attempt at another cinema, whose conventions would be able to accommodate certain potentials of digital technologies within its specificities.

The proliferation of counter-apparatus would explain the discontinuity involved in the introduction of major technical improvements. Just as a scientific paradigm must be broken in order to assimilate anomalies and re-enable normal science (ibid: 53), the cinematographic circuit must be thoroughly disarranged in order to accommodate the new technologies and reorganize movie circulation. It is as if the circuit had to be *liquefied* before crystallizing once again. What follows is an overall depletion of the medium's impedance. Nevertheless, in the aftermath of a so-called "revolution," a new paradigm appears as the natural heir to the outdated one. Impedance rises again, as the technical ensemble becomes further concretized. Anomalies that once put the medium at risk are now fully integrated into its circuit, preserving the specificities of the medium. The preceding crisis is seen as an expected modification of the medium's individuality occurring in the course of its technical genesis (ibid: 18).

Such is the prerogative of history: as soon as the messianic promise of revolution becomes *actual*, it is immediately *secularized*, "marking human time without fulfilling it" (Buck-Morss, 1991: 242). At such a moment, extraordinary

possibilities that were available during "revolutionary now-time" become lost. Hence, the technical evolution of cinema is as exclusive as it is cumulative, and can only be understood if both perspectives are joined, which enables all that is being left out of the medium to be considered: those cinemas that have been despised, forgotten or isolated in "expanded" fields of their own. In practical terms, this would mean understanding cinema "in the light of the openness promised by early film" and see its specificity as *self-differing* (Krauss, 1999: 44).

Walter Benjamin believed that social forms and technological processes are closer to a *Messianic dimension* in their birth as well as in their decay (ibid: 41). These moments allow a double focus that "illuminates both industrial nature's utopian potential and, simultaneously, the betrayal of that potential" (Buck-Morss, 1991: 245). Paying attention to the structure of scientific revolutions, one could say that this is because, during these breakthroughs, the hidden side of the medium is brought to its surface. In other words, in the course of major technical improvements, the dynamics of specification suppressed within the circuit are made public. Thus, before the medium that-is-to-be is defined, one has a glimpse of other media that-could-be – all the failed cinemas that, after the period of crisis, are prone to be rationalized by the means of the progressive history of the medium.

These tentative cinemas, based on the anomalies that are suppressed from the medium once its conventions are reformed, could equally be appreciated as uprisings, in accordance to Hakim Bey's concept of *temporary autonomous zones* (T.A.Z.) (1991). In its failure to fulfil revolutionary intentions, an uprising "suggests the possibility of a movement outside and beyond the Hegelian spiral of that 'progress' which is secretly nothing more than a vicious circle" (ibid). As a violation of the "law" behind the medium's technical evolution, a T.A.Z. refutes the apparatus that stands both as its historical result and primary cause. In that sense, p2p film piracy momentarily allows the practice of cinema to be utopian exploration. In doing so, it reveals the conventional circumstances of the medium – the same reality that cinema, projecting its own history, suppresses: that its apparatus are not the cause of the specificity of medium, but the by-product of its specification.

2. Apparatus and *Dispositives*

The effect of cinema should not simply be understood as the production of a presence (that of the movie), but mainly as the suppression of different other ones (of the many processes that constitute circulation). What this implies is that the actual experience of the medium perpetuates the separation between its visible and invisible processes and, therefore, its specificity. The effect of every cinematographic experience, situated and relational, is to sublimate circulation even in its most obvious traces (e.g. scratches in the film; subtitles; letterboxing; etc), projecting the movie as a stable, autonomous form. Its intended result is to create in the audience the impression that they are watching precisely what the author has created, which is the same thing that other people had watched before and will always watch, across all the nations, ages and technological platforms. But are they?

The projection of the movie as an autonomous form depends on the awareness of its situation as the cinematographic apparatus. The existence of the movie is never *by-itself*, but always *negative to* the cinematographic underpinnings. In that sense, the apparatus is never suppressed from the mediatic experience, but inferred from it along with the movie. However, it is always inferred as a sort of abstract, ideal mechanism, despite the most intrusive burdens of specification (e.g. the theatre's isolated location, the unavailability of codecs; etc). As Flusser explains, the word "apparatus" comes from the Latin verb *apparare* ("to prepare"), and can be roughly translated as "an object which makes itself ready for something" (2000: 21). Thus the term implies that this "something" existed before technique – an operational reason beyond the cinematographic structures, which would enable and organize them.

Nonetheless, what an activity such as p2p film piracy demonstrates is that cinematographic apparatus are no more abstract than the movie is autonomous. They have no operational reason outside of the medium's evolution: like other aspects of its specificity, the apparatus are produced by cinema's becoming, which culminates in every single experience of the medium. This means that apparatus are not abstract, but *abstracted*. They do not provoke cinematographic experience, but are prompted by it.

Essentially informed by the medium's technical progress, an apparatus is not able to be critical about it. That is, it cannot account for its own situation: the complex arrangement that, coordinating visible and invisible processes, produces the apparatus and suppresses contingencies so that it appears natural. If both movie and apparatus are secondary to this mediatic dynamic of presences, then what exactly provokes the experience of the cinematographic work? For instance, how to call the different elements in the activity of film piracy that can make it *cinema* instead of another media? In other words, how to identify the particular synergies and connections within the circuit that, cutting across various apparatus and practices, result in a given cinematographic experience?

To analyse the constitution of these experiences further, it is useful to draw from the work of Siegfried Zielinski. In an attempt to localize modern media in a larger history of "audiovisions," Zielinski evokes the Foucaultian term *dispositif* to identify the arrangements in which audiovisual discourses are reified (1999: 18). In such arrangements, "the audiovisual overlaps other specialist discourses and partial praxes of society, such as architecture, transport, science and technology, organisation of work and time, traditional plebeian and bourgeois culture, or the avant-garde" (Ibid: 19) – in other words, mediatic operations are situated amidst the various processes that constitute its circuit.

For Zielinski, *dispositives* provide media studies with a more comprehensive perspective than "isolated types of apparatus" (e.g. devices such as a praxinoscope, film, the TV monitor, etc). Because a *dispositif* is "an identifiable historical concretion where fractures and fissures are visible" (Ibid: 18), one could say that it allows us to grasp the outlining of the internal margins of invisibility that result from the medium's technical progress. In other words, a *dispositif* makes perceptible the interactions that constitute apparatus and keep them separate from movies, as well as cinema from other media and "partial praxes of society."

The term *dispositif* also carries an interesting etymological appeal. It is rooted in the Latin verb *dispositus*, which can simply mean "to arrange." Hence, while "apparatus" evokes an a priori reason, *dispositif* focus on the present organization of things. It turns one's attention from the isolated elements to the way they are situated in relation to one another in time and space. Given that perspective, one is able to

contemplate not only the overt interactions between the given elements, but also the hidden connections that, running through ancillary fields and resorting to seemingly collateral processes, sustain the given elements (cinematographic apparatus and practices) in place.

In his work from 1999, Zielinski enumerates four *dispositives*: a "heterogeneous ensemble of picture machines," cinema, television and the complex kit of "advanced audiovision" (1999: 19). This classification certainly reveals the focus of his research interests back then, and it should not be taken as exhaustive. There is no reason to limit the idea of *dispositif* to these pre-established, conventional stages of mass media. Analytically, the term could be employed to address any arrangement that allows a given mediatic experience, regardless of its rhythm or scale, and from which such experience cannot be abstracted. In other words, a *dispositif* could refer to the pure situatedness and relationality that a particular experience is the effect of.

In an attempt to understand how cinema and technology organize one another, the primary *dispositif* to consider is the entire cinematographic circuit, whose surface effect is the medium itself, and whose duration is the medium's history. This seemingly totalizing arrangement could be taken as a complex vector upon which other *dispositives* partially superimpose and reinforce, and partially cut across. For instance, the arrangement involved in the screening of a commercial feature in a multiplex theatre would mostly coincide with synergies already established within the cinematographic circuit (making it an obviously cinematographic situation). On the other hand, a video festival or the exhibition of a film like *Grindhouse* (Quentin Tarantino & Robert Rodriguez, 2007) would dispose conventional elements in a slightly uneven way, while still respecting the medium's technical margin of indetermination (therefore, stressing their own particularity as special events). On a further side of this spectrum, one could find a piece such as Rafael Lozano-Hemmer's *Body Movies* (2008), an interactive installation that employs procedures that are invisible within cinema as a direct way to engage the audience in its poetic interplay (so that, as integral as it can be to the cinematographic circuit, the installation remains outside of the medium).

Besides allowing the apparatus to be classified according to their degree of belonging to cinema, a *dispositif* also does the opposite: it exposes which synergies in the circuit are actually relevant to a given surface, demonstrating that what is most

essential to a movie's meaning and value sometimes extrapolates the range of conventional cinematographic operations. This perspective would give the necessary importance to the cult following of *The Rocky Horror Picture Show* (Jim Sharman, 1975), which – with its props, rituals and websites – cannot be contained by normal means of circulation.

Above all, this approach creates the condition for a transversal understanding of cinema, attentive to the medium's genesis and the primacy of multimedia. As a *dispositif*, the cinematographic circuit seems to be in constant interaction with others, which simultaneously include and are included within it. Disregarding how these other *dispositives* are understood through the medium's own conventions (as tentative, pre- or post-, expanded or live cinemas), one gets to see the dynamics of specification not simply as processes that maintain cinematographic apparatus, but also as the continuing promotion of the medium as a parameter for other media.

In other words, the *dispositif* is precisely where media differ from one another. The belief in the a priori specificity of cinema frames a practice such as p2p film piracy as its unauthorized emulation; a clumsy copy of real movie distribution. When, on the contrary, such specificity is considered collateral to cinema's technical becoming, piracy appears to be a side effect of the normalization of emerging technologies within the medium. However, once p2p filesharing is accepted as being as much a *dispositif* as any of cinema's conventional operations, the normality of one over the other is denied altogether. According to this final perspective, one is the writing – or arrangement – of the other in the history of its own practice. As much as the p2p film piracy takes part in the genesis of cinema, so does the medium take part in the genesis of Internet filesharing.

Pointing towards the *ungovernable* that originally concerned Michael Foucault (Agamben, 2009: 24), a *dispositif* accounts for everything that cannot be fully represented, abstracted or normalized. By adopting this notion to frame one's engagement and experience of cinema, an incommensurable horizon of possibilities for the medium appears. In the light of all of these possibilities, every effort to escape and even overturn the limits of a media-specific understanding becomes especially pertinent. To get a hold of the complexities of the cinematographic circuit, it might be relevant to frame cinema as a mere stage in the history of other devices or to analyse

the medium according to foreign parameters. Cinema could be approached as a post-magic lantern or a pre-video; as too slow for the Internet or too flat for real life. Such a method would benefit a research aimed at investigating the vicissitudes of the medium without becoming subjected to them.

References

Agamben, Giorgio (2009) "What is an Apparatus," pp. 01-24 in **Agamben**, G.; **Kishikm** D.; **Pedatella**, S. (eds.) "*What is an apparatus?: and other essays*", USA: Stanford University.

Hakim, B., (1991) *T.A.Z. - The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism*, Brooklyn: Autonomedia [online]. Available: http://goo.gl/MzOtZ [14 Aug 2011].

Buck-Morss, S., (1991) *The Dialectics of Seeing: Walter Benjamin and the Arcades Project*, Cambridge: MIT.

Comolli, J., (1985) *"Machines of the Visible"*, pp. 741-760 in **Mast,** G.; **Cohen**, M. (eds), *Film Theory and Criticism: Introductory Readings*, 3rd ed, New York, USA: Oxford University.

Cubitt, S., (2004) *The Cinema Effect*, Cambridge: MIT.

Flusser, V., (2000) *Towards a Philosophy of Photography*, USA: Reaktion Books.

Goddard, M., (2011) *Towards an Archaeology of Media Ecologies: "Media Ecology", Political Subjectivation and Free Radios, Fibreculture*, 17, Apr 2011 [online]. Available: http://goo.gl/gqEzz [14 Aug 2011].

Greenberg, J., (2008), *From Betamax to Blockbuster*: *Video Stores and the Invention of Movies on Video*, Cambridge: MIT.

Krauss, R., (1999) *"A Voyage on the North Sea": Art in the Age of the Post-Medium Condition*, London: Thames & Hudson.

Kuhn, T., (1996) *The Structure of Scientific Revolutions*, 3rd ed, USA: University of Chicago.

Machado, A., (1988) *"A Arte do Vídeo"*, São Paulo: Brasiliense.

Machado, A. (2002) *"Pré-Cinemas e Pós-Cinemas"*, 2nd ed, São Paulo: Papirus.

Menotti, G., (2007) *Através da Sala Escura: Aproximações entre a Sala de Cinema e o Espaço do VJing*, Unpublished MA, São Paulo: PUC-SP.

Rodowick, D. N., (2007) *The Virtual Life of Film*, London: Harvard University.

Simondon, G., (1958) *On the Modes of Existence of Technical Objects*, Paris: Aubier, Editions Montaigne, transl. Ninian Mellamphy, Canada: University of Western Ontario, 2008 [online]. Available: http://goo.gl/7zEmg [14 Aug 2011].

Sontag, S., (1979) *On Photography*, London: Penguin Books.

Warner, M., (2002) *Publics and Counterpublics*, USA: Zone Books.

Zielinski, S., (1999) *Audiovisions: Cinema and Television as Entr'actes in History*, Amsterdam: Amsterdam University Press.

Tuning with listeners: portrait of citizens' participation in the public opinion programmes Antena Aberta and Fórum TSF

Fábio Ribeiro[23]

Introduction

Today's radio is profoundly connected with certain new technology devices. This is actually where some academic research has started from. Several approaches haven't granted a specific overlook to the mechanisms in which radio has been working so far. Some of those perceptions are shaped by a strong belief in the potential of radio's adaptability to the digital landscapes and by some fearful acknowledgement regarding the future of radio, arguably due to some nostalgic feeling related to the old times of radio. Taken into account these perspectives, we will draw upon several researches which have been conducted to analyse the actual state of radio, described generally in a twofold basis, although we might admit several others in this regard.

In the first perspective, we could underline some works which have pointed out the eventual crisis of radio or even its death. Raul Garcés (2007) emphasizes the 'trilogy of alarm' in the current living situation of radio: technological alarm (as a new paradigm which symbolizes the attraction to the most popular digital features); intellectual alarm (which dismisses the potential of advertisement in the radio as those investments go straight to television productions); and finally a scientific alarm, which has basically been trying to relegate radio into the shadows of the academic productions, where there is a concerning lack of studies related to radio, as well as low levels of students who are interested in following a professional career in radio journalism. Emma Rodero e Chelo Serrano (2007) also follow some sort of radio crisis perspective, alongside a set of plausible explanations, starting from the same choices

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for the programmes, in terms of formats and contents, as well as lack of visibility of those radios[24].

The last point clearly connects radio to the present standards, especially with online techniques. In this context, Ibarra considers that «the digital phenomenon is no Armageddon» (2007:1), which means that radio should not fear its future in the online domains. This researcher believes that digital possibilities provide new sounding landscapes (Jensen, 2008) and new audiences, through democratization in the access to technologies. Although it still remains blurred the borders of the digital divided, a popular expression put forward by Robert Putnam in several of his works (2000), radio should not be absent from these new features. Laurent Gago has also worked in this similar topic, arguing that radio is becoming a media which grants «new listening contracts», although in addition to his analysis we should include the economical constraints that prevent radios, especially smaller ones, from following the same demanding.

In this present state of radio, we might argue that the digital landscape is able to guarantee two sorts of interpretations, among those who foresee and expect several positive implications in this industry, creating new sounding contents, new audiences, eventually a young one, and those who feel quite negative about the constraints that a new digital era may bring to the industry of radio.

Participation as a radio genre

In the context of our present discussions towards radio at this current time, we may acknowledge one of its unique characteristics, which has also been one of its landmarks: its connection to the telephone and its listeners. Although we easily recognise that its format has been changing throughout the last decades, the telephone symbolises, almost in a nostalgic point of view, a particular relationship between radio and their audiences, in terms of what we could entitle as listeners'

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[24] We may underline other perspectives. A 2008 Report from the Portuguese OBERCOM (Communication Observatory) points out that the radio has been the most effective media in terms of taking advantage of the online possibilities for its work. As the main research has admitted «radio has been the most successful media in investments online. There is a solid effort in captivating people through this platform. Radio is alive, more than ever» (http://jn.sapo.pt/PaginaInicial/Media/Interior.aspx?content_id=1527471).

participation. Given this paradigm, we will assume that 'participation' will be our key concept in this paper, as we will focus on the strategies drawn by radio institutions in Portugal to create real opportunities for people to interact in their formats.

In this context, Mariano Cébrian Herreros has been interested in summing up the radio genres in five types: fiction, realistic or informative, advertisement, musical and, finally, humorous and educational. For this author, «the most developed genre is, all doubts aside, the informative one, especially by its unique characteristic of expositive attitude or even for its persuasive broadcasting style, alongside appellative witnesses» (2001:123). In addition to this perspective, Merayo Pérez suggests participation as a radio genre: «it has modalities, structures and defined objectives, as it operates autonomously in relation to other genres and it is pretty established in the radio production in several countries» (2000:223). This researcher explains this idea better by proposing participation as a structure of radio discourse in order to engage the audience, making it the main force of certain programmes. After being able to underline the role of voice as key element of participation, Merayo Pérez states that as a specific genre, participation can act as symbol of one single radio, becoming part of the a marketing strategy in this sector.

Taking into account some considerations of Mariano Cébrian Herreros, in which we can perceive a strong support to the idea of a 'participated radio', this researcher reminds us the theoretical assumptions put forward by Bertold Brecht and his book *Theory of Radio* (1927-1932). In this framework, the author underlines a 'democratic radio', «a space filled with communicative processes to the citizens, through dialogue and debate, focused on its plural relationship with social, political, economic, ideological or cultural contexts, compromised to bring this service from main sectors to minorities, proposing relevant topics for the society» (Herreros, 2007:205).

Our research paper stands from the basic support of participation as a key element in democratic societies. Drawing our thoughts into the media landscape, we will try to evaluate how is participation perceived by Portuguese radio, and those strategies to include several sectors of our society in some public opinion programmes, aiming to frame what kind of dynamics are being held by one public service radio and a private one.

Comparative study of two public opinion programmes in the Portuguese radio

Taking advantage of some previously pointed out knowledge, we are going to present two spaces that will try to illustrate how participation is being treated in two public opinion programmes in Portuguese radios. The first audience discussion format is *Antena Aberta*, from the public radio broadcaster Antena 1, and the other one is *Fórum TSF*, from private radio TSF - Rádio Notícias. These two spaces represent the most popular formats within Portuguese radio productions towards public intervention, a particularly and relevant aspect which has been fundamental to put our theoretical assumptions in this empiric approach.

In a general overlook, we could distinguish these programmes in terms of property, as we have stressed out before. The public one was founded in 1977 and the private ten years later. After this basic acknowledgement, we shall present some criteria which contribute to our analysis. Thus, our observation has chosen a one-week regular set of programmes, from 11th April to 15th April 2011. Prior to the description of such levels of comparison, perhaps it may be relevant to recognize some important details which guarantee total independency and reserve to our research as a circumstantial point of view. The observation period is, though, very short in time to perceive clearly all the differences and common aspects between the two formats. Is it highly predictable that the subjects discussed and the way participants are selected by the production teams somehow constrain the data that we have been able to gather from those broadcastings. The current situation in Portugal, especially at political and economic levels, has been on permanent focus from the media coverage, right after the Prime-minister José Sócrates has resigned from his position, helping to draw the beginning of a serious economic crisis which would reach probably its higher point with the confirmation of the financial and economic support package for Portugal in the first semester of 2011. In this regard, our study has been conducted during this period, which could have created an important bias, even in terms of the commentators chosen by media productions to interfere in such programmes.

It seems pretty clear that these kind of spaces – and maybe this is the reason why they exist – totally depend on what is really happening in one community or society, and that is a perfectly legitimate working basis. However, these circumstances

must be acknowledged, in order to provide a concrete analysis as it is intended that this kind of studies could be the starting point and motivation to following ones.

Criteria to establish the comparison between the two programmes

Schedule

There are no significant differences towards the period reserved for broadcasting. Both programmes are transmitted in the morning period, although we might underline some deviations, in terms of their length, and in terms of the time at which they go on air. *Antena Aberta* starts right after the 11 am newscast, and ends almost at noon, giving place to another informative section. *Fórum TSF* starts to broadcast at 10:15 am finishes almost at noontime[25]. Taking into account all the programmes analysed, the duration of *Antena Aberta* does not exceed 55 minutes, whereas *Fórum TSF* is longer, reaching almost one hour and a half of duration.

Checking out the programme when it is over: podcast?

Both radios offer the possibility to listen to all the past and ended programmes in a very fast and easy way. Bearing in mind that these spaces are broadcasted during the morning, it is likely to find them in the programmes' section online within the afternoon of that same day, either through their websites[26] or in the feeds[27] section, in mp3 formats.

Moderation/Hosting

Concerning this subject, we have once again observed another coincidence, as a journalist is always chosen to host the debate. This could be explained by the journalistic framework for which both programmes stand, with this kind of neutral

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[25] Please, do note that *Fórum TSF* is interrupted for the 11 am newscast and starts its 2nd part expectedly at 11:10 am.

[26] *Antena Aberta* - http://tv1.rtp.pt/programas-rtp/index.php?p_id=1040&e_id=&c_id=1&dif=radio
Fórum TSF -
http://www.tsf.pt/PaginaInicial/Interior.aspx?content_id=1827724&tag=F%3rum%20TSF

[27] *Antena Aberta* - http://ww1.rtp.pt/web/podcast/gera_podcast.php?prog=1040
Fórum TSF - http://feeds.tsf.pt/TSF-ForumTSF

element. In *Fórum TSF*, Manuel Acácio is the host, as in *Antena Aberta*, there is a regular switch on the host between journalists Eduarda Maio and António Jorge.

Broadcasting

There are some particular aspects regarding the broadcasting of *Antena Aberta*, which actually bring interesting options to this context. This programme has been born in radio, nonetheless with the latest technological developments, in terms of communication, the public service of radio has decided to broadcast this format both on radio and television, in this case simultaneously on RTP-N, the cable television of the state television RTP, an exclusively dedicated to news and information channel. This complementary broadcasting shows other curious aspects in terms of the representation of the participants, which are more visible in the TV screen than through radio: in the television broadcasting, the audience is informed about the ways to participate (telephone numbers, emails, besides information related to the age of participants). If we just listen to the programme through the radio, we will be not able to be informed with these details, as the host/ess neglects those data as well. In TSF, the programme is broadcasted in the herztian space as well as online, as in Antena 1.

Rules to participate

In this point, we have been able to observe different choices. In *Antena Aberta*, throughout their website and even on air, there are absolutely no references to the rules which should guide people to interact and participate. This is actually a different option if compared with *Fórum TSF*. In this programme those rules are pretty clear, as they are posted online, although we might recognise that this strategy can, in fact, be limited. Nevertheless, this radio points out that, «due to the high number of participants in *Fórum TSF*, not every contribution will be broadcasted. The online *Fórum TSF* [a direct panel which occurs at the same time when the programme is being broadcasted live, on air] has a stricter comment policy than in other spaces in TSF online, broadly speaking. According to this idea, and in total harmony with the rules understood for the live broadcasting on radio, we remind that: the commentaries in the online *Fórum TSF* should always be identified by the first and last name;

anonymous commentaries will be not considered; commentaries filled with inappropriate, slang, obscene, insulting language will not be considered, as well as criminal charges towards individuals, companies, violations of privacy, appeals for hate or violence, or violations of human rights»[28].

Appealing to participate

This is another item where it is possible to examine different options as well. As a matter of fact, in this point we tried to evaluate how these two programmes are working in terms of captivating their audiences to participate in the programme. What kind of strategies are we considering, from the online tools and the live broadcast, from the radio?

Thus, another difference has been observed, as TSF insists more in those appeals, both online and on air by the hostess, while Antena 1 remains somehow in silence. However, in the online scope there are some differences: in the *Antena Aberta's* webpage, the production just reminds that «in Antena 1, the opinions from our listeners are very appreciable. Day by day, the programme *Antena Aberta* suggests an actual and relevant subject, analysed by specialists and listeners of the public service of radio. *Antena Aberta* is a plural platform, keen to register the opinions of listeners»; in TSF online, there are expressions such as «in *Fórum TSF* we want to listen to your opinion» or even «comment» here, in the comment section posted online.

Opening the gates: tools to participate

A critical point to understand the relevance and the dynamic of these two programmes is probably related with the set of interactive possibilities that each format gives to the audience in order to participate or at least, to intend to. Once again, the options diverge quite a bit.

In *Antena Aberta* there are just two ways of participating: using the telephone to proceed to inscription (800 220 101 / 223 399 912) or e-mail (antena.aberta@rtp.pt). *Antena Aberta* seems to still dedicate their main attention to

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[28] http://www.tsf.pt/PaginaInicial/Interior.aspx?content_id=1835313&tag=F%F3rum%20TSF

the telephone, as they promote email as a tool to interact, but this kind of participation is almost absent, because the host/ess neither calls the audience attention to that platform, nor reads any received messages. Comparatively to *Fórum TSF*, we can find several options here: the telephone (808 202 173), TSF's Facebook page (https://www.facebook.com/tsfradio) and the online forum[29] in the web page of *Fórum TSF*. It looks clear that TSF exposes participants to a wider plethora of interactive means. This radio, especially in these formats, understands cyberspace as a way of gathering people together in one participative aura, although we may acknowledge that the high number of participants that want to be a part of it contrast with those who actually intervene live in the programme.

Subjects discussed and commentators invited to the debate

Bearing in mind the current context of our country, we should recognise that those conditions may interfere in the discussion of public affairs during the week we focused our observation on. The Portuguese economic crisis of 2011 was fostered by a political one, as José Sócrates resigned on March, thus leading the actual President of the Portuguese Republic, Aníbal Cavaco Silva, to the dissolution of the government and parliament. This has been the political landscape that has anticipated the financial supporting programme, established between Portugal and the European Central Bank, the International Monetary Fund and the European Commission. Hence, this political and social framework has inflected in how media coverage has understood reality during this one-week observation study.

Even so, it was possible to confirm this scenario throughout that week, because all the subjects have focused mainly on the political and economic scopes. In *Antena Aberta*, from Monday to Thursday, these were the topics, established in terms of general questions: 'what do you expect from the political parties [about an eventual financial support]?'; 'what kind of measures are keen to be held in exchange of this financial support?'; 'what sort of negotiation can Portugal handle with while establishing the parameters of the external financial support?'; and 'Voices against the external financial support to Portugal are expected to grow as Germany, Netherlands

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[29] http://www.tsf.pt/PaginaInicial/tag.aspx?tag=F%F3rum%20TSF

and Finland seem interested in jeopardizing this solution for the Portuguese economy. Is Portugal another victim of the market fundamentalism?'. On Friday's programme, after some Portuguese football teams have been through to the semi-finals of the European competition Europa League, the programme has focused in this sports event with the subject entitled 'Portugal in majority in the Europa League's semi-finals'. In this regard, it is very difficult to clearly separate all the topics within static areas, with the only exception to be made in the last programme's issue. Nevertheless, we could assume that during this week there were three subjects dedicated to financial and economic themes, one related to the Portuguese policy, especially within political parties, and the last one which debated football.

It is curious to observe that *Fórum TSF* has followed an identical philosophy in terms of choosing its subjects. We do not claim that both programmes follow each other's options mimetically. Nonetheless, we have registered in the subjects' list: two oriented to a political framework ('Is it possible to be a citizen besides one's own political idiosyncrasy?' – on Monday; ' The need for an political agreement' – on Wednesday); two more towards finance and economy ('The future and its solutions to avoid a new crisis' – on Tuesday; 'The consequences of the crisis' – on Thursday); and, finally, as it happened with *Antena Aberta*, the last day of the week's programme, football has dominated the subject on Friday's show, discussing 'The success of the Portuguese football teams in Europe'.

We shall focus in another fundamental topic in this scope, which is the commentators that were invited to participate in these formats. Their presence may arise different questions from a theoretical point of view, either about their importance, pertinence or even about how people actually perceive their presence. Nonetheless, we may observe other formal questions as we have noticed in several distinctive options regarding this item. After collecting the data from 10 programmes, we have concluded that *Antena Aberta* invites more commentators (13), that is two more than *Fórum TSF*. It remains somehow obvious that in the first programme, there is more time to talk, although we may underline that we have not conducted any experimental research to acknowledge that in a scientific or rigorous way.

In *Antena Aberta*, the colleague teachers have been the most invited group (4) both in economic and financial areas, plus three journalists (Diário Económico -

economy, Record e A Bola – both sports) and other three home political commentators. The same criteria is likely to happen in *Fórum TSF*: five colleague teachers (from economy to finance), two home commentators (politics and sports), one journalist (the TSF sports editor), a sociologist, an economist and a politician[30].

Concerning the presence of journalists in public opinion programmes, we shall remind that are several studies which have claimed that this group has been a fundamental part in this scope, as it seems that media productions are not keen to let the media discourse outside journalistic borders. The research project 'TV journalism and citizenship: the struggle for a new digital public sphere' has followed some of these perceptions[31].

Listeners and participants[32]

In a social and demographic level, it is also possible to describe our sample, in terms of gender, residence or employment. By participants we mean the group of listeners who have, in fact, interfered live during the programmes, via telephone or online platforms. The host/ess is crucial on this issue, as we will just consider those who have been called for the discussion, for an empirical point of view.

The number of participants observed on these two formats is quite different. As we have not seen any repetition, in *Antena Aberta* we have counted up to 38 participants, whilst *Fórum TSF* registered the exact triple, with 114 listeners and participants. Gender distribution is the same in both cases, men are the most participant ones: *Antena Aberta* (28 men, 10 women) and *Fórum TSF* (106 men and just 8 women)[33].

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[30] In Monday and Wednesday programmes, there were two commentators who have participated in both formats.

[31] http://www.jn.pt/PaginaInicial/Media/Interior.aspx?content_id=1759341

[32] A small note: as we have noted earlier, *Antena Aberta* is broadcasted both in radio and television and this may have lead to a methodological dilemma. In this case, the observation has registered from the radio broadcasting, although we should question whether the participants were listeners or television viewers. However, we assume that this does not compromise the characterization of the participants in this programme.

[33] These data justify and give importance to other studies which have focused in the same topic. 'Radio and listeners, a formula of a bipolar relationship' has proved also that men are the most representative gender in this media discourse (Ribeiro, 2008).

Towards the residence of the participants, it is interesting to analyse some differences, as suggested in Map 1[34]. In a general overlook, there is a clear predominance of participants from coastal areas (28 out of 36 in *Antena Aberta*; 55 in 67, in *Fórum TSF*), as there are almost no interventions from the Azores or Madeira islands (just one listener from Madeira, in *Antena Aberta*). The south districts of Portugal (Faro and Beja) are among the most absent ones, in terms of representation of participants, in both media spaces (see Map 1).

This data may actually convey to a misleading analysis, as we conclude that the subject determines, in fact, the mobility of the audiences. In this sense, the success of the two football teams, both from the north of Portugal, has conducted to a significant growth in the number of participants from that part of the country, especially in the last day of both programmes. After checking this situation, one may think that, in the absence of this subject, a more atomized distribution of participants around Porto and Lisbon (where the great majority of participants studied live [35]) could have occurred.

In the employment section, we have been able to find more similarities. In Antena 1's programme, we have organized them in terms of 11 categories, among business man (5), teacher (4), student and engineer (3) as the most representative ones. In *Fórum TSF*, the three most observed employments were again business man (10), salesman (5), engineer and public worker (4), in a 34 employment selection row. Although this item does not clearly show how the sample is in terms of instruction, we could argue that the typical participant has an academic degree, once taken into account the limited description of such analysis.

Listeners' participation during the programme

After the characterization of our sample in terms of gender, residence and employment, we shall focus on some trends that have conducted the participation

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[34] It is important to note that online participants in *Fórum TSF* are not considered in this statistic because they did not need to answer to this item to participate. In Map 1 the red numbers indicate how many participants have been part of the programme in that specific area or district.

[35] If we join the two maps, we could argue that 57 of 103 participants is from these two regions. In *Antena Aberta*, Lisbon takes the lead, in *Fórum TSF*, Porto is on top of the participants' residence.

flows during this week of observation. Comparing the two formats, we are able to establish differences and resemblances on both.

As it is suggested by Chart 1, we monitored the daily progress on the number of participants on each day of observation. It looks like in *Antena Aberta* the number of participants does not diverge that much, from five to twelve interventions. In *Fórum TSF*, this flow is a little unusual, since we have observed a minimum of 11 participants up to a maximum of 35. In addition, the possibility of multiple choices posed to the online participation in *Fórum TSF* has brought interesting approaches to this analysis, on the contrary of what is conceived by the *Antena Aberta* production.

In this sense, we shall study *Fórum TSF* as it provides plenty of possibilities for a more interesting analysis. Gender distribution between the two ways of participation (telephone and internet) tells us that men call more often to the programme than women, who prefer online platforms to interact with this media[36] (see Chart 2). How is the production working in terms of combining the radio broadcast with the online one? Minutes before the programme is transmitted live, the production team posts in Facebook a short information about the subject to be discussed, not only to promote the day topic, but also to call for people's attention so that they feel motivated to participate.

As presented in Chart 3, we have described how gender is distributed by the two ways of online participation. According to this analysis, we have seen that people do prefer the online *Fórum TSF* to try and participate. In Facebook, it is possible to see once more the predominance of male participation (9), whereas just 2 women have actually been involved in the discussions. In *Fórum TSF*[37] we have also checked the daily evolution on the online platforms, as it is described in Chart 4. It is possible to see that in Thursday's programme the number of participants has shrunk, as it was interrupted for a special news event about the political crisis that was taking place in

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[36] We shall underline that the editorial options of the programme are the responsible for this distribution, therefore it must be acknowledged that this is one fundamental step to understand critically what kind of data are we dealing with.

[37] One of the reasons to explain the predominance of telephone as main tool to participate could be explained by the general editorial option of the production which gives it almost full role of protagonist. As we might be able to pose, it can be understood as a faithful feeling to the origins of radio and with listeners.

Portugal. These kinds of programmes are dependent on unpredictable situations that might happen during these formats. In this period of instability in Portugal, it was likely to observe that press conferences and other events could harm the normal functioning routine of the programme, which concurs with the fact that we have observed a decrease on participation in this particular day.

Participants' selection is a decisive step to understand part of the dynamic of the programme, as well as to comprehend that there are a lot of people who wishes to interact with media. As it is described above, our analysis could not access to the global number of people who have signed up for participation through the telephone. However it is possible to see the total comments posted in the online platforms and then compare with the actual comments brought on to the live broadcasting, as it is explained on Table 1. There is a tendency which leads people to participate more in the online Fórum TSF than in the Facebook's page of the radio: we have seen that 11,3 % of the total comments in the first online tool are broadcasted in the live transmission, slightly more than those from Facebook (11,1%).
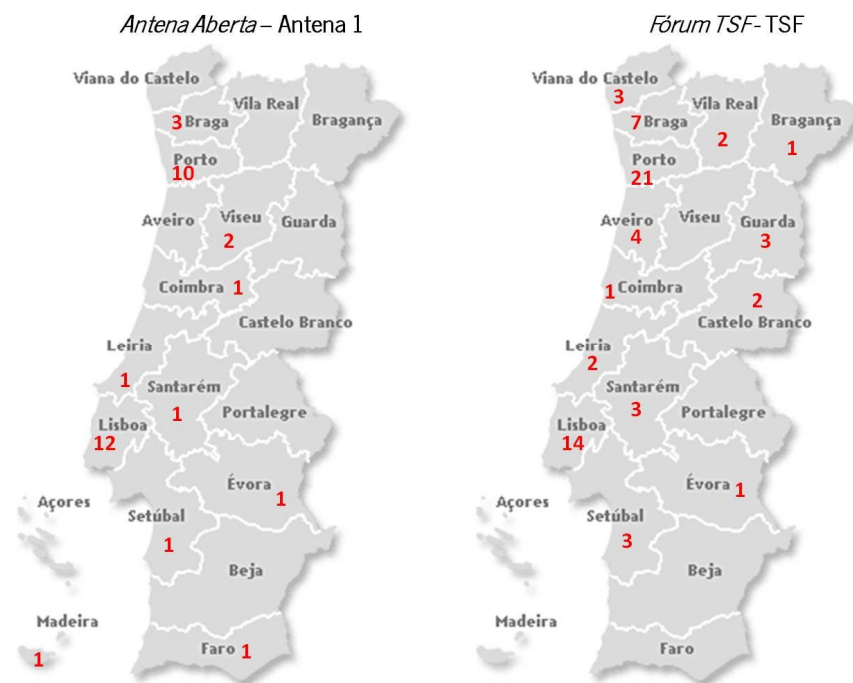
Final remarks

It seems somehow logic that the present state of radio must not be absent of new communicative and sounding landscapes. If crisis means necessarily opportunity, this paper urges radio production to rethink in another business model, alongside public opinion programmes and eventually other formats designed for people's intervention. In other media sections, the digital era has proved to be a refreshing window, although it remains unclear the way the web can be a powerful tool for generating money and profit for the media.

According to two different approaches on how online is being received by two Portuguese radios, one might suggest that the digital universe is definitely a whole new world of possibilities, simply because it means a different chance to call for people's attention, some of them probably who are absent of the radio broadcasting. In this regard, *Antena Aberta* is roughly more conservative than *Fórum TSF*, as this last one proves clearly that radio needs to surpass its traditional barriers in order to gather people around debates. Thus, there is no surprise to see that the programme of the

radio public service is three times less popular than TSF's. Nonetheless, it is vital to understand that telephone remains as the main tool to get people involved, and this is a perfect example on how radio can indeed be a symbol and a paradigm of new and traditional features towards reaching media. If some authors are not far from being wrong as they frequently point out the same choices in some radio formats, it is possible to see this feature once again, as we observe the same options in terms of the commentators which are invited.

Working in radio means necessarily doing business, in the same perspective as other media landscapes, especially in such a fragile context as nowadays is. Thus, this paper urges the need to understand that there is no point in neglecting the digital environments that radio is surrounded by. In these platforms, it is also possible to gather people, making them faithful towards the media, as well as promoting clear and responsible ways of people to get involved in.

Illustrations, charts

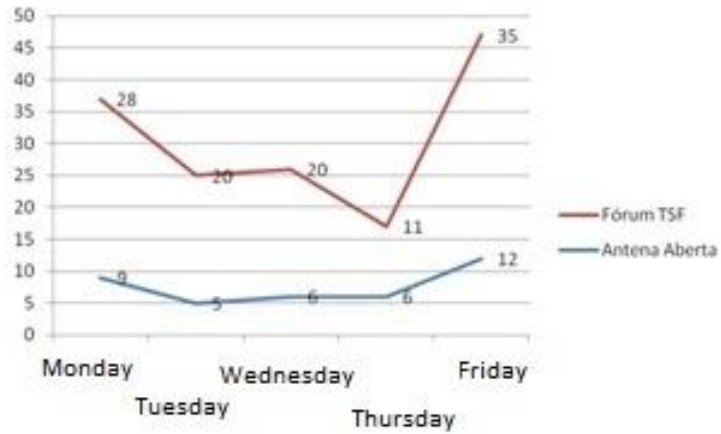Map 1 – Participants' distribution according to the Portuguese districts.

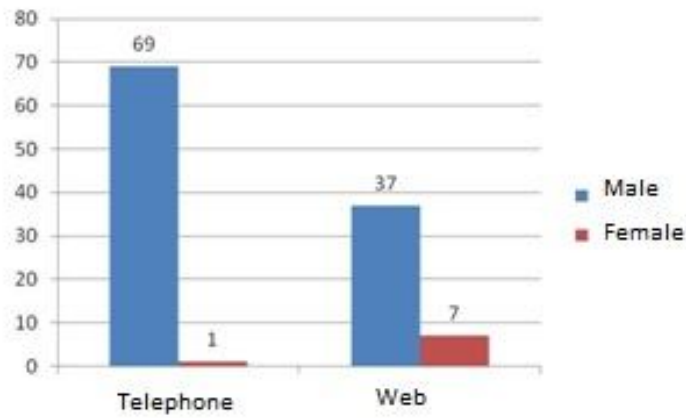Chart 1 - Daily evolution on the participants of both programmes.

Chart 2 - Gender distribution in the two was of participation in Fórum TSF.
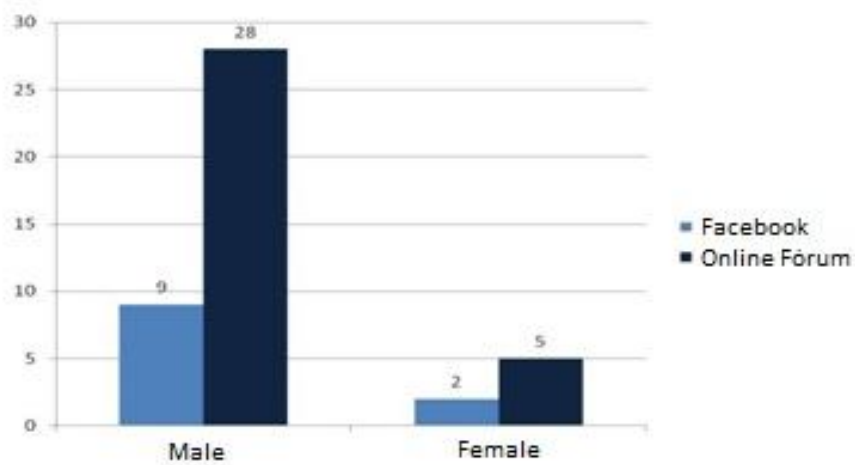

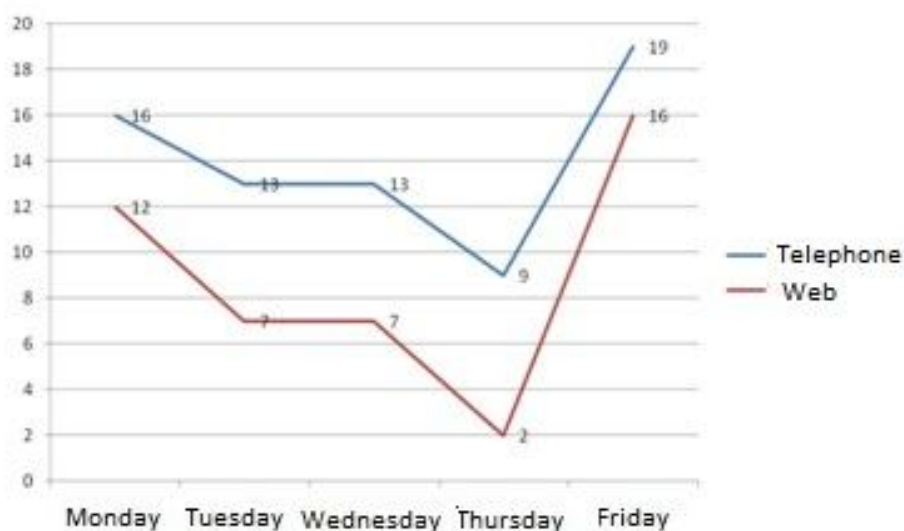Chart 3 - Gender distribution in the two online platforms in Fórum TSF.

Chart 4 - Daily evolution on the telephone and Web participation in Fórum TSF.

	Facebook comments (total day)	Facebook comments (live)	Online *Fórum TSF* comments (total day)	Online *Fórum TSF* comments (live)
Monday	21	3	94	9
Tuesday	22	3	54	4
Wednesday	28	3	49	4
Thursday	20	1	62	1
Friday	6	1	33	15
Total	99	11	292	33

Table 15 - Global commentaries in the online tools and percentage of those broadcasted live in Fórum TSF.

References

Balsebre, *A.*, (1994) "*El lenguaje radiofónico*", Madrid: Cátedra.

Cébrian Herreros, M., (2001) *"La rádio en la convergencia multimédia"*. Barcelona: Gedisa.

Cébrian Herreros, M., (2007) *"Modelos de rádio, desarrollos e inovaciones – del diálogo a la interactividade"*. Madrid: Fragua.

Gago, L., (2004) *"La radio sur Internet : approche de l'innovation par l'étude des représentations et des services en ligne. Le cas de Ouï Fm.com et de Diora.com"* [Online in: http://www.grer.fr/article16.htm, access on 05-07-2010].

Garcés, R., (2007) *"La crisis de los discursos radiofónicos"*, Revista Latina de Comunicación Social, n. 62 pp.17-20 [Online in: http://www.ull.es/publicaciones/latina/200719RaulGarces.htm, access on 9-03-2010].

Ibarra, J., (2007) *"Transformaciones de la radio y la televisión en Europa"*, Servicio editorial de la Universidad del País Vasco (upv-ehu), Zarautz.

Merayo Pérez, A., (2000) *"Para entender la rádio – estrutura del processo informativo radiofónico. Salamanca"*, Salamanca: Publicaciones Universidad Pontífica de Salamanca.

Putnam, R., (2000) *"Bowling Alone: The Collapse and Revival of American Community"*, New York: Simon and Schuster.

Ribeiro, F., (2008) *"A rádio e os ouvintes: a fórmula de uma relação bipolar"*, Dissertação de Mestrado. Braga: Universidade do Minho.

Rodero, A.; **Sánchez**, Ch., (2007) *"Radiografía de la radio en España"*, Revista Latina de Comunicación Social, no. 62.
[Online in http://www.ull.es/publicaciones/latina/200714RoderoySanchez.htm, access on 02-04-2010]

Online references

http://jn.sapo.pt/PaginaInicial/Media/Interior.aspx?content_id=1527471

http://tv1.rtp.pt/programas-rtp/index.php?p_id=1040&e_id=&c_id=1&dif=radio

http://www.tsf.pt/PaginaInicial/Interior.aspx?content_id=1827724&tag=F%F3rum%20TSF

http://ww1.rtp.pt/web/podcast/gera_podcast.php?prog=1040

http://feeds.tsf.pt/TSF-ForumTSF

http://www.comunicacao.uminho.pt/cecs/content.asp?startAt=2&categoryID=672&newsID=2060

http://www.jn.pt/PaginaInicial/Media/Interior.aspx?content_id=1759341

The Interactive Digital TV based on Distance Education: Integrated Collaboration Environments.

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1. Introduction

Integrated collaboration environments can be considered as one of the factors driving the transformation of mass media, associating new forms in network communication and turning information more accessible to any person that has access to the worldwide network of computers, promoting the production and dissemination of information in science and technology for teaching and research in all areas of knowledge, as well as in different sectors of society. This represents the communicability and sociability of people with the virtual world. During the development process of mass-communication technologies, beginning from the 1990's up until now, there have been many changes. The Internet and mobile communication technologies have provided users with interactive digital services. Television has followed this trend through a digitizing process [Ergul 2007]. "Digital television is a hybrid platform, combining classical analogue TV and Internet or similar platforms with data provided by multimedia services. Digital television is a revolutionary technology in

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broadcasting and can be considered as a gateway to an interactive media world" [Ibdem, p.66].

In Latin America, television is considered a medium with a powerful and strong ability to form identities, also able to build up individual profiles, because it is present in almost every household. It is through television that millions of Brazilians acquire knowledge, information, culture, and especially entertainment. Moreover, they spend much of their lives tracking what goes on TV. Digitalization of TV transmissions brings opportunities that currently are not possible to be performed by technological limitations of analogue television. One of the key characteristics that encourage countries to develop alternatives for digital TV is the possibility of media convergence and interactivity, starting from a single device [Santos, 2006]. Nevertheless, on the Brazilian's context, the deployment of Digital TV (DTV) has a social origin. In other words, it goes further than just offering people the possibility to receive high definition images or higher quality sound at their homes. The Presidential Decree 4901, issued on November 26th, 2003 and establishing the Digital TV Brazilian System (SBTVD), highlights the following actions on its early goals: "I - to promote social inclusion, cultural diversity of the country and native language through access to digital technology, aiming the democratization of information, and II – to facilitate the creation of an universal network for distance education".

Once the presence of a digital signal becomes real in several Brazilian cities, the primary challenges to overcome are, for example: the production of interactive applications and quality services, and the training of skilled employees for the various purposes that require this new technology. The challenge of interactive quality services concerns the new attitudes of TV viewers facing television content. Currently, the user is a purely passive agent regarding the spread out content, but with the digital transmission service innovation, he will interact with a television environment that will lead him to participate proactively and effectively through his own TV. For an effective mass adoption, DTV applications should be sufficiently attractive to entice the viewer in its use and to acquisition of culture. However, concerning this aspect, the ease and efficiency of these applications remains as major obstacle for the large adoption.

This research aims to analyze the feasibility of distance learning through interactive applications supplied by digital TV and, along the text, this paper reflects on

the following issue: How to achieve a satisfactory environment for Teaching and Distance Learning for DTVi (Interactive Digital TV), one that is attractive and, at the same time, addresses usability attributes, given the vagueness of interactivity channels? This work is organized as follows: Section 2 outlines the theoretical concepts that guided this research - Interactive Digital TV and Distance Learning - , and some related successful work will be displayed. Section 3 introduces the case study conducted on this research, followed by its evaluation in Section 4. Finally, section 5 details some conclusions and the perspectives for future work.

Therefore, communication gains a key role in knowledge building, turning the educative act into something more dynamic and appealing. After this brief introduction, we´ll take a look at the concept of interactivity.

2. The Interactivity Television

The concept of interactivity is normally used to refer to the chance for interactive communication among subjects. Technically, interactivity implies the presence of a return channel in a communication system, going from the user to the source of information. The channel is a vehicle for the data bytes that represent the choices or reaction of the user. This definition classifies systems according to whether they are diffusive or interactive. Diffusive systems are those where only one channel runs from the information source to the user (referred to as downstream). Interactive systems have a return channel from the user to the information source (referred to as upstream), theorizes Ergul [2007]. Understanding interactivity is the best way to understand mediated communication. Like any other medium, TV is also affected by the constant process of evolution and adaptive search that human needs have to meet. Since 1936, when the first TV channel was launched by the British Broadcasting Corporation (BBC) in London, this media has evolved into what we see today. In the '50s, the first devices capable of transmitting colorful programs were launched, improving transmission, then the increase in the number of channels was possible, and the advent of revolutionary remote control allowed TV viewers to have the power of "channel surfing", providing comfort and eliminating the need of locomotion for the execution of basic operations with the TV [Montez and Becker 2005].

Nowadays, in Brazil, the biggest revolution that TV has been suffering is the migration of the broadcasting system from analogue to digital. Discussions around this topic were initiated in 1998, during a partnership formed between the Centre for Research and Development in Telecommunications (CPqD) and institutions such as the Mackenzie Presbyterian University, the Brazilian Association of Radio and Television (ABERT) and the Society of Television Engineering (SET), in order to investigate digital television systems adopted abroad, such as in the USA, in Europe and in Japan. In 1999, CPqD and the National Telecommunications Agency (Anatel) joined each other to assess, technically and economically, the digital television standard that would be used in Brazil. The foundation of the SBTVD was held in November 2003, an event considered the official beginning of the transition from the analogue model to the digital one. The SBTVD, besides its main objective, which is the transition itself, has digital inclusion as another important target. In this sense, it will be possible to connect analogue television devices to the Internet through the use of a Set-Top-Box (STB) [Montez and Becker 2005].

On December 2nd, 2007, the first digital transmission took place, in São Paulo. In mid-2016, intentions are that the migration to DTV will be completed, and until that happens, stations will be broadcasting their programmes on both signals. This allows users who have not acquired the converter (also known as STB), or users residing in regions where the digital signal was not released, to be able to normally receive the available programmes. Brazilian Digital TV was designed to be the most convergent in the world and to technically enable "digital broadcast in high definition (HDTV) and standard definition (SDTV); digital broadcast to be held simultaneously on static, portable and mobile reception, and provided with interactivity" [BRAZIL, Casa Civil 2006]. This implies not only technical changes, but especially a transformation on the content for those who purchase full featured high-definition appliances [Teixeira 2008]. In fact, the process of digitization suffered by traditional media, and the availability of its content on the Internet, produced the latest step in recent history of mass media, implying the chance to produce multidisciplinary programmes in several areas of knowledge.

3. TV & Distance Education

Nowadays, more than ever, institutions are making intensive use of technological resources within virtual learning environments, based on a new communicative paradigm. Thereby, global interaction based on the sharing of information and knowledge, and development in communication technologies, have changed the concept of economy and society - consumers become producers, and producers become consumers of content, goods and services, in a new global economic model, without restrictions or barriers, induced by a process of massive collaboration, comments Teixeira and Silva [2009ab]. This represents the communicability and sociability of people with the virtual world. According to Castells [2010], it is fundamental to think of communication as a necessary element of sociability, to understand the act of communicating from its symbolic nature and inherent culture. Pierre Lévy [2010] adds that Collective Intelligence is a determining factor in competitiveness, creativity and human development in a knowledge based economy, or in an information economy on the Network Society. Commenting on the link between information and learning, Pinto [2002] concludes that information is present, and more and more complex and frequent, in the environment surrounding the learner. His/her perceptions are built in a structured manner (education), an informational model that he/she uses to survive in this very environment. When it comes to mass media that develop sociocultural activities of informal and non-formal education, they normally include formal programs, oriented directly to the school's curriculum.

Distance Education (DE) is a mode of teaching and learning with various names and related conceptualizations. Distance Education and Distance Teaching, i. e., are often associated as univocal processes. However, while teaching stands for information sharing and learning, education, on the other hand [Maroto 1995], is the basic strategy of human development, where we learn how to think, create, innovate, and build knowledge, participation, among other things. According to Moran (1994), the DE is the process of teaching and learning, where teachers and students are separated spatially and/or temporally, but may be interconnected by technology such as the Internet and by means of a computer. Furthermore, the e-mail, radio, television,

video, the CD-ROM, telephone, fax, and other similar technologies can also be used. For Garcia (1995), DE differs from the traditional mode of face-to-face teaching, once the former is a bidirectional communication technology system that can be massive, and replaces personal interaction in the classroom between teacher and student by some systematic and combined actions of various teaching resources and support of an organization, besides a mentoring process that provides a flexible and independent learning. Hence, the main activity yet to be developed by educators is to advise educational institutions on the use of new technologies as a an instructive support, promoting and spreading their educative applications inside and outside classrooms [Teixeira 2009].

DE arose from the need for professional and cultural development in the life of millions of people. Motivated by situations such as: living in distant locations from educational areas; non completion of regular courses, integration into labor market, being able to plan their programs of study easily, and to assess progress, and even being able to prefer to study alone, rather than in crowded classes, these people could not attend an educational physical institution. Furthermore, with the evolution of technology available in every historical moment, DE has had a notorious influence at both educational environment and society. On the educational field, the cyberspace has enabled the development of virtual learning environments, focused on the use of interaction software and the Internet itself as a pedagogic interface, potentially capable of decreasing geographical distances and increasing interaction between student and instructor pairs, above all those who act on the distance education modality [Teixeira, Silva and Daher 2009]. Given this context, we can observe endless studies and surveys, conducted to assess all that is seemingly impossible to do in the present environment of model of teaching and distance education. The adopted teaching methods and the needed technological support, are both outstanding issues, regardless of what type of DE model we are referring to (Correspondence, Radio, Internet, TV Analogue or Digital).

3.1. Distance Learning in Interactive Digital TV

T-learning, a shorthand term for TV-based interactive learning, is all about having interactive access to video-rich learning materials, primarily within the premises or our home, through a television or a device more like a TV than a personal computer, says Aarreniemi-Jokipelt [2005]. T-learning is also described as the convergence between interactive TV (iTV) and e-learning, then later understood as the use of computer technology to support training and educational activities. Bates [2003] adds; T-learning is the type of distance education based on interactive television, that is, it represents the specification of Digital TV as the technology that supports the process called E-Learning. Aarreniemi-Jokipelt displays T-Learning as a convergence between some more elements than those mentioned by Bates: Digital television, computer, network and E-Learning.

We have no doubt that T-learning courses are an effective way of education, but their creation is a time-consuming expensive activity. As said by Jensen [2005] in Olševičová, Rohrová and Mikulecká [2010], after the big ambitious experiments with interactive TV systems in the mid-90s, which aimed at the full spectrum of interactive services and at very advanced types of interactivity, there was a turn of events at the end of the last century and in the beginning of this millennium, which led towards a downscaling of efforts and low technologically-based experiments with interactive TV. A new and more realistic strategy develops simple services based on existing technologies and only concentrates on more advanced solutions in connection with the innovations of infrastructure, which take place anyway [Ibdem]. Bates [2003] believes that T-Learning will allow TV viewers to access several textbooks, such as movies, pictures, hypertext, among other artifacts, right from their own homes, schools, workplaces or community centers.
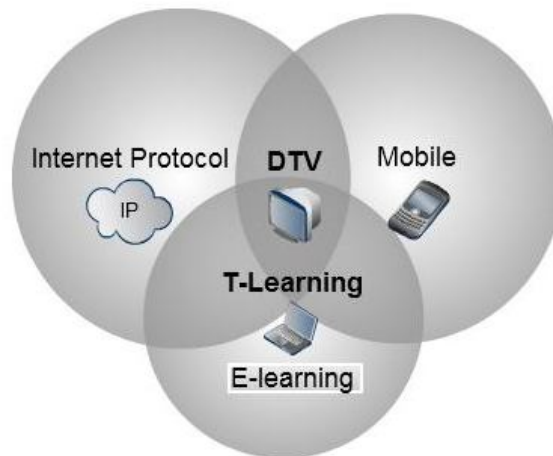
Figure 1: Converging technologies in T-Learning
[Aarreniemi-Jokipelt, 2005].

3.3 Distance Learning Applications for TVDi - Related Work

T-Learning takes us to a proposal of rupture from the traditional educational model, based on a linear transmission of discipline content, in which emission and reception are separate. Some T-Learning applications, which use a local model of interactivity, have turned into widespread projects in Brazil. The following examples are some of these projects, they are applications developed for TVDi, but not limited to free-to-air (FTA) television, as figures 2 and 3:

Figure 2: Amazon Interactive Application

- **Project: Amazon Interactive**

General objective: It consists of a program to learn about the Amazon region, with a focus on training young people and adults, through the technology of interactive digital TV, broadcasted via satellite.

Designer*:* Genius Institute;

Services*:* digital literacy, distance education, citizen communication, and school management [Waisman 2005].

- **Project: The Class Tree**

General objective: Designed for illiterate children up to six years. It supports a more sophisticated interactive version.

Services: The plot is about a group of friends who are on top of a tree in a wooden house. The position of the house allows them to see the city from another angle and this new way of seeing their environment awakes them to environmental education, recyclable waste, health and citizenship [TAVARES and SAIBEL 2006].

Figure 3: The Class Tree Application

4. Software "Education in Traffic"

The aim of this project is education in Traffic, with defensive driving concepts and signaling. All content was based on CTB - Brazilian Traffic Code [BRASIL. DENATRAN 2009]. It is also regarded as rich material for those who want to recycle or are about to undergo examination for obtaining a driving license (Figure 4):

Figure 4: Traffic Application Screenshot and Remote Control

The project has got three well-divided points of interaction (Figure 5): The first consists on theory about traffic, the second section includes tests with objective questions about theory and, finally, the third point is an area for entertainment that contains a list of games involving the theme of this application. Currently, the software is only available in Portuguese.
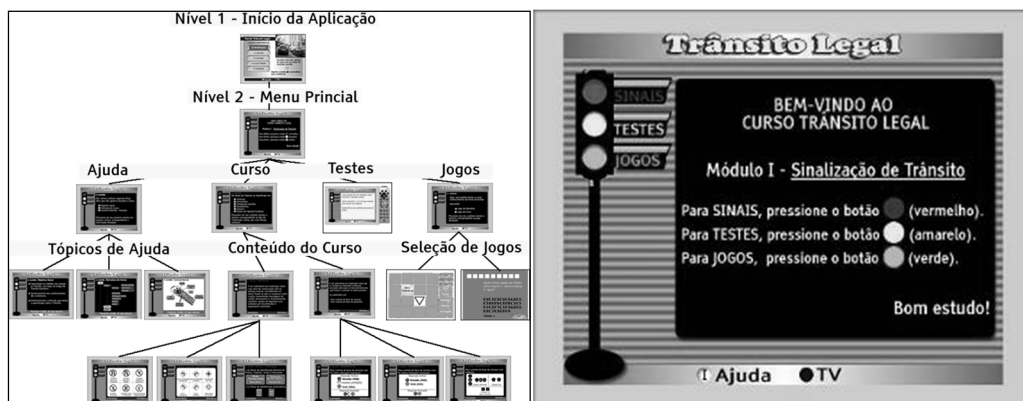

Figure 5: Screen Map navigation and Main Menu

The interactivity offered by the application is purely local, due to the lack of return channel from the signal provider. The proposed application is generic, since it was not designed specifically for a particular type of middleware, such as GINGA, MHP, DASE or ARIBA. Rather than that, the application only provides a conceptual view (hence the tool was developed with Adobe Flash), but it is entirely possible to be rewritten in any other programming language. The use of simulation programmes for

creating interactive applications for digital TV has been widely exploited in educational research institutions or by software brands. The purpose of this type of resource is the simulation of features that are contained in the applications before they can effectively be put into production (a prototyping phase). This step is necessary due the difficulty and high cost in preparing an environment with similar characteristics to a television station for testing. At one point in the conduction of this research, a visit to the C.E.S.A.R. Laboratory of Digital TV [CESAR 2009] was conducted, in order to know in detail the technical characteristics of some applications: simulation, languages, source code, performance, size, among other features. Regarding the size aspect, none of these applications has more than 700 Kbytes (graphics + animation + text). Most set-top box devices have more than 16 Mbytes in memory, a capacity that is still very small, but still it allows the execution of various types of applications.

Facing the poor development of applications for the Brazilian DTV, issues like usability are often based on best practices for the internet. The usability of applications, both on internet and on DTV, is a recurring concern (also a common target of criticism), since it undermines the application interaction with the user. The traffic application is a simulator of an environment of digital TV on computer, where the human-machine interaction happens entirely through the use of remote control. According to the usage recommendations, there is a help screen with information about how a user can correctly select the desired option, using buttons to perform specific actions: red, green, yellow, blue, i, OK, and navigation arrows.

The application is designed to meet the requirement of "simplicity" in light of the resources used by the user during the interaction, and the limitations imposed by the environment, e.g., distance and screen size. The limit of text lines is up to 20 units and helps avoiding the use of scroll bars on screen menus. Besides that, a more suitable language was used rather than a technical one, e.g., "Loading ..." was preferred over "Please, wait". During television programmes, you will see a symbol of interactivity in the upper right corner of the screen, warning viewers about an interactive application that is available for that programme, as shown in Figure 6. It is considered as the least invasive way to call the attention of viewers, if compared with some applications that appear to the user without any demand for such action. The application should be implemented in a government services dedicated channel, via

broadcast. Through the portal, the viewer can select the type of course desired. The channel can elaborate, along with the application, a streaming of audio and video, but occupying only a part of the screen.

Figure 6: Signal for interactivity

The predominant colours on the application are red, yellow and green, in order to create a consistent theme related to traffic lights. For applications that use layers, it is allowed the use up to three: the background, which may contain a colour image or a background colour, the mid-layer with a full screen or resized video, and a last layer with all the graphics. In this type of arrangement, one must be especially careful with the graphic layer so that it will not cover any content, since it could generate issues while viewing the narrative.
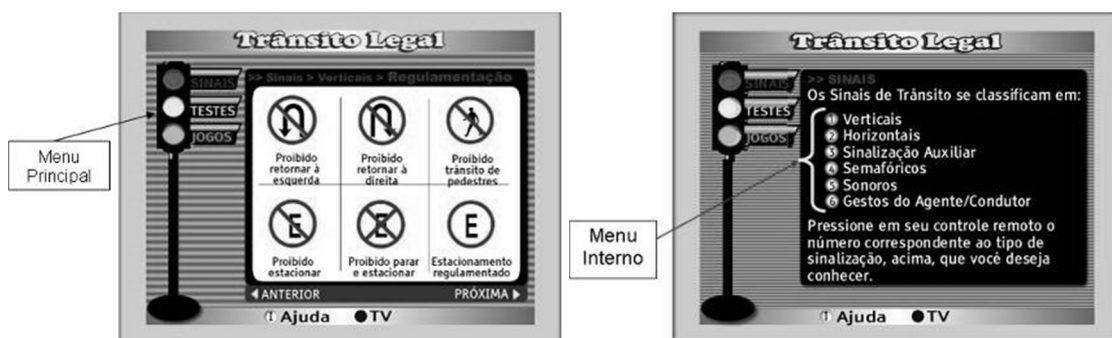

Figure 7: Traffic Menus

A main menu is presented in the form of traffic lights, and maintained at the left of all application screens. The selection of options like Signs, Tests and Games should be done by remote control, by pressing the red, yellow and green buttons, respectively. The application also has a sub-menu to ease vertical navigation, by

allowing the user to move directly to the content located forward from where the user is (Figure 7). Concerning interactive applications that will reach households via broadcast, and along with them, it should also be presented some resources that lead the user to learn through play. Surely games are able to meet that expectation, because applications will complement all the bonus attractions, which will awaken the viewer's desire to accomplish a given training on television. It is recommended for the application not to take longer than 5 seconds to give feedback to the user as soon as he/she has acted.

4.1 Evaluation of Traffic

In order to validate the results obtained from the use of the prototype, we conducted a survey that included interviews, which are characterized as qualitative and quantitative methods [Bauer and Gaskell 2002].

5. Research Methodology

The investigation from which this communication was made has taken into consideration important analyses on the educational potentialities of DTVi, being described in a more fully detailed manner on the Brazilian case studies. Given the characteristics of the study, a qualitative and empirical-descriptive research methodology was used. Investigation through case studies contemplates multiple sources of evidence and different techniques of field research, which could involve the observation of phenomena during its occurrence, studies and document analysis, interviews, measurements and both qualitative and quantitative surveys related to the case, argue Yin [2009], and Simons ([2009], each of which will be discussed in this work.

6. Instruments for Data Collection

The instruments for data collection that were used were semi-structured questionnaires applied to 14 participants. The questionnaire, both containing open and closed questions that were also purely personal, was the basis for acquiring the profile of participants. Along with this questionnaire, it was delivered a guide with

activities that should be performed during the interaction with the prototype. At the end of the activity, it was handed a third questionnaire that also consisted on both open and closed questions, in order to assess the acceptance degree of the application.

7. Profile of Participants

We selected a very heterogeneous group, in order to meet the reality of the type of audience that uses television on a daily basis, according to Cybis, Betiol and Faust (2007, p. 286) "[...] the target audience of DTVi interface is heterogeneous, covering the entire population of the country.": (i) Half of those were female and half were male, aged between 18 and 73 years; (ii) About 70% of the participants had a driver's license; (iii) Most had university degrees; (iv) All have contact with TV; from the total number of participants, eight people have cable TV, and only one uses interactivity besides the use of a programme guide.

7.1. Analysis of the overall performance

In order to analyze the overall performance, participants were asked to record information on the number of correct answers obtained by conducting the tests that were available on the application. This task was undertaken in two stages, according to an activity guide which provided guidance and that was distributed to each participant during the interaction with the prototype. The available fixation test contained ten (10) multiple choice questions, each with three alternatives, for a particular text or image that was displayed. All questions were drawn up exclusively on the theoretical content provided in the application, dealing with traffic signs. For every new attempt to answer the test, questions were shuffled and randomly presented, so that the respondent couldn't easily memorize the position of the answer. At the end of the test, participants were given feedback regarding their performance (Figure 8), metaphorically using the colors used in traffic lights (red, yellow and green) to show the level of correct answers, and directing them to the sections where they could strengthen their theoretical knowledge. In case of up to 5 correct hits were submitted,

a feedback on "red" indicating a lower than expected performance would be given, a "yellow" feedback from 6 to 7 hits, and a "green" one between 8 and 10 hits.

Figure 8: Feedback Screenshot

It was observed that four participants (which had no driver's license) had a good performance (8 correct hits) at their first attempt on the test, and they further improved their record at their second attempt, successfully answering 100% of the questions. The overall average of correct hits obtained by the participants at their first attempt was 7.29, and 9.64 on their second attempt (in order to save space, the table with these data was omitted). In terms of the application itself, we can conclude that all the resources (courses, tests and theoretical material) were well accepted. The evaluation of the application contained certain aspects such as the basic requirements concerning local interaction, attractiveness of the application, simplicity in use and good usability. It achieved an overall average of 4.50 in a range from 0 up to 5.0 points. Nevertheless, despite the high averages on closed questions, some comments concerning the difficulty in using the application were made by participants on open questions. These observations will be taken into account on a new version of the prototype: (i) Improve the identification display on the path followed by the user, especially when there are subdivisions on the subject, in order to facilitate locating where the user is (three remarks); (ii) Reduce the amount of long texts, and increase the use of pictures (two remarks); (iii) Use the virtual remote control (one remark)[44].

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[44] The final results are available on: http://www.dabanet.com.br/transitolegal/anexos.pdf

8. Conclusions

The interaction between digital television and distance education represents a valuable space for dissemination, popularization and social knowledge, allowing a student's access to educational content at anytime and anywhere in the world, and establishing a new channel for communication in a virtual universe. To understand communication leads to the perception of human relations in a process involving personalities, stories, feelings, values and ways of seeing the world, for which one causes changes in the way individuals feel, think and act in society. Interactive digital television presents itself as a revolutionary trend and expectations about it are numerous. What at first was a technological breakthrough for a few minorities, has become later an opportunity for digital inclusion for millions of Brazilians. The Service of Learning and Distance Education, implemented initially in analogue TV, is a service to be reorganized or migrated to the new model of transmitting television signals. Even with the uncertainty about the interactivity of Brazilian DTVi channel, companies have successfully invested time and money in applications with interactive sites, all of them focused on Education and Distance Learning. The research that as carried out with prototyping the Education in Traffic application showed that the DTVi is already a tool that is accepted by the population, since about 90% of households have a TV device, reducing the margin of Brazilians rejecting it. It is a new concept, a new form of digital inclusion and also favors a new and more interactive way of learning, which will probably be much more satisfying (and even feasible), accordingly to the real situation of Brazilians.

For students, it represents an extension of knowledge and an interactive space outside classrooms, approaching the concept of Pierre Lévy on "Cyberculture". Classrooms today are not the only benchmark teaching, let alone the exclusive area of learning. Geographical borders are abolished; the world today is interconnected by simultaneity of new information and communication technologies. Thus, the need to fully investigate teaching and learning process in educational institutions using DTVi becomes clear. In contemporary context, to explore the Interactivity digital TV based on distance education seems to be a new challenge for educators and communicators.

References

Bates, P. J., (2003) *T-learning Study: A study into TV-based interactive learning to the home, Final Report*, pjb Associates, UK. Available at:
http://www.pjb.co.uk/t-learning/contents.htm , Access: May 2010.

Bauer, M. W.; **Gaskell**, G., (2002) *"Pesquisa qualitativa com texto, imagem e som: um manual prático"*. 2 ed. Trad. Guareschi ,P. – Petrópolis, RJ: Vozes. 516 p.

Brasil. Denatran. *Presidência da República. Decreto-Lei n. 9.503, de 29 de setembro de 1997. Código de trânsito brasileiro - CTB.* Av

Castells, M., (2010) *Communication Power*. New York: Oxford University Press.

Cesar. *Centro de Estudos e Sistemas Avançados do Recife.* Available at:
http://www.cesar.org.br , Access: March 2011.

Cybis, W.; **Betiol**, A. H.; **Faust**, R., (2007) *"Ergonomia e Usabilidade: conhecimentos, métodos e aplicações"*, São Paulo: Novatec, 344 p.

Ergul, R., (2007) *"Digital Broadcasting and Interactive Television in Distance Education: Digital And Interactive Television Infrastructure Proposol for Anadolu University Open Education Faculty"*. *Turkish Online Journal of Distance Education-TOJDE*, January, vol. 8, nº 1.

Fórum SBTVD, (2008) *Fórum do Sistema Brasileiro de TV Digital.* [On-line]. Available at:
http://www.forumsbtvd.org.br/institucional.php , Access: Agost 2011.

García Areto, L., (1995) *"Educación a Distância Hoy"*. Madrid: UNED.

Jokipelto, P. A., (2005) *T-learning model for learning via digital TV. In: 16th EAEEIE conference, Lappeenranta*, Filândia. Available at:
http://www.it.lut.fi/eaeeie05/index.html , Access: July 2011.

Lévy, P., (2010) *Cibercultura*. São Paulo: Editora 34.

Montez, C.; **Becker**, V., (2005) *"TV Digital Interativa: conceitos, desafios e perspectivas para o Brasil"* , 2. ed. Florianópolis: Ed. da UFSC, 160 p.

Moran, J., (1994) Novos Caminhos do Ensino a Distância. *Informe CEAD*, Rio de Janeiro, year 1, n.º 05, oct./dec.

Maroto, M., (1995) Educação a Distância: Aspectos Conceituais. *Informe CEAD*, Rio de Janeiro, ano 2, n.º 08, jul./set.

Olsevicova, K.; **Rohrova**, H.; **Mikulecka**, J., (2010) T-learning Approach: Enhancing Video with Active Elements. Available at: http://sunsite.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-280/p04.pdf , Access: Agost 2011.

Pinto, M., (2002) *Práticas educativas numa sociedade global*. Porto: Asa.

Santos, A., (2006) "*A digitalização da TV no Brasil: a sociedade civil organizada e a opinião pública a respeito do sistema brasileiro de TV digital – SBTVD*". São Paulo: USP, 2006. Tese (Doutorado em Ciências da Comunicação) Escola de Comunicação e Artes, Universidade de São Paulo. São Paulo.

Simons, H., (2009) *Case study research in practice*. London: Sage.

Tavares, T.; **Saibel**, C., (2005) *Concepção artística do programa interativo "A Turma da Árvore"*.

Teixeira, M., (2009) *A rádio web como uma interface dinamizadora da prática educativa: Estudo de caso da RUM*. Master dissertation. Instituto de Educação, Universidade do Minho. Braga.

Teixeira, M; **Silva**, B., (2009) "*Radio-Learning*: *A new tendency of radio web*", Proceedings of V Internacional Conference On Open and Distance Learning (ICODL), Athens, November, 16-28 pp.

Teixeira, M; **Silva**, B., (2009) "*Radio-Learning*. Proceedings of The Asian Conference On Education (ACE)", Osaka, October, 1418-1426 pp.

Teixeira, M; **Silva**, B.; **Daher**, M., (2009) "*Rádio web: Educação, comunicação e cibercultura no ambiente académico português*". Proceedings of VI Conferência de TIC na Educação (Challenge), Braga, May, 193-202 pp.

Teixeira, L., (2008) *Televisão digital: interação e usabilidade*. Master dissertation. Faculdade de Arquitetura, Artes e Comunicação, Universidade Estadual Paulista. São Paulo.

Waisman, T., (2005) *Amazonas interativo: TV digital e educação interativa na Amazônia*. In: 12. Congresso Internacional de Educação a Distância, 2005,

Florianópolis, SC. Available at:

http://www.abed.org.br/congresso2005/por/pdf/160tcc5.pdf , Access: July 2011.

Yin, R., (2009) *Case study research: Design and methods.* London: Sage.

Florianópolis, SC. Available at:

http://www.abed.org.br/congresso2005/por/pdf/160tcc5.pdf , Access: July 2011.