

OTT strategies and regulations: lessons from the US (2005-2015)

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Abstract

The arrival of the internet on the home TV set has allowed new players to enter the audiovisual industry and new services to be implemented, resulting in major changes over the last few years. The first is unserialising, offering viewers a new way to interact with content and thereby breaking with the traditional flow to allow a potentially "active" and personalised consumption. The second relates to the content supplied, which is no longer the exclusive domain of traditional broadcasters but is now likely to be open to all content or service publishers, thereby increasing competition, especially with OTT services. Consequently, this new landscape involves two outcomes: new uses and related practices and a change in the value chain, rooted in actual change brought about and the hopes and fears aroused by these services. Beyond the restructuring of relations between actors in the enlarged sector, this analysis highlights a number of key issues: regulatory conditions, the location and funding of content, methods used to value content production and the developing influence of data. The boom and fragmentation of supply also lead to another issue: the individualisation of practices. Although it is highly premature to assess the impact of these OTT players, their growing popularity in the United States is poised to transform the audiovisual sector. At first glance, the established players seem significantly weakened by ambitious new entrants; however, they have undeniable advantages and, as yet, there are no sure signs of disruption. TV still has a strong place in the American media landscape.

Keywords

Internet Television, Over-the-top Services, Industrial Strategies, Regulation, Data.

Resum

L'arribada d'internet al món de la televisió ha permès l'entrada de nous actors a la indústria audiovisual i la implementació de nous serveis; una situació que ha comportat canvis importants en els últims anys. El primer d'aquests canvis és el que anomenem deserialització, que ofereix a l'espectador una nova manera d'interactuar amb el contingut i trenca, així, amb la lògica de flux per fomentar un consum potencialment actiu i personalitzat. El segon canvi està relacionat amb l'oferta de contingut, que deixa de ser de domini exclusiu de l'organisme de radiodifusió tradicional i passa a estar oberta a tots els editors de contingut o serveis; això, alhora, fa que augmenti la competència, especialment amb els serveis de lliure transmissió o over-the-top (OTT). Com a conseqüència, aquest nou panorama ens porta dues promeses: la renovació dels usos i les pràctiques relacionades i un canvi en la cadena de valor que té l'origen en el canvi efectiu, les esperances i les pors generats per aquests serveis. A banda de la reestructuració de les relacions entre els actors del sector ampliat, aquesta anàlisi destaca una sèrie de qüestions clau: les condicions reguladores, el lloc i el finançament dels continguts, els mètodes de valoració de la producció i l'evolució de la influència de les dades. D'altra banda, l'auge i la fragmentació de l'oferta han donat lloc a un altre fenomen: la individualització de les pràctiques. Tot i que és molt aviat per avaluar l'impacte d'aquests actors OTT, la creixent popularitat que han adquirit als Estats Units està a punt de fer que ens replantegem de dalt a baix el sector audiovisual. A primer cop d'ull, sembla que els actors establerts han quedat bastant debilitats pels ambiciosos nous entrants; ara bé, tenen avantatges innegables i encara no podem parlar d'alteració. La televisió encara té un paper important en el panorama dels mitjans de comunicació nord-americans.

Paraules clau

Televisió per internet, serveis de lliure transmissió, OTT, estratègies de la indústria, normativa, dades.

Introduction

Since 2005, when the first video was broadcast on YouTube, over-the-top (OTT) audiovisual services have continued to multiply and very quickly, leading to constant questions regarding the structural transformation of the audiovisual industry due to the strategies and distribution of these new forms of content. Notably, this issue had already been announced the previous year in an important book published under the title *Internet Television*.¹ The authors of this book state that this structural transformation was inevitable and expected to appear due to the technical arrangements for content distribution, changes in programming and associated viewing practices, methods of production and the form of content, business models funding this production and, finally, concomitant political and legal framework (Noam, Groeble & Gerbarg 2004). While covering many aspects with foresight and astuteness, the authors certainly didn't anticipate the huge success of new entrants, epitomised by YouTube and Netflix. Yet, over the past decade, it is these very players that have laid the foundations for a new configuration of the audiovisual sector as a whole.

This article therefore aims to provide a summary review of the development of these OTT services based on a study of these actors' strategies in the most advanced country in this area: the United States. Our article does not claim to be an exhaustive analysis of all aspects of the audiovisual sector affected by the new services. We will focus on three aspects that seem crucial to understanding the ongoing mutations: the strategies used to obtain content, data as a new industrial and commercial asset, and the complex adaptations of regulations and legal framework for these services. These three parts will be preceded by a summary of the key OTT services and an overview of their influence on the US market. In conclusion, we'll explain a concept represented by these OTT services which has been central, for the last thirty years, to discussions on the development of audiovisual and telecom industries: convergence.

1. A typology of audiovisual OTT services

The convergence of the audiovisual and digital industries (consumer electronics, telecommunications, computer, software and internet) has been fuelled by dynamics based on the interconnection of the sectors concerned, which tends to form a system. In this respect, the rise of OTT services is closely related to major technical breakthroughs in consumer electronics and the increase in network capabilities in terms of speed (especially for video services).

A. OTT services, a new paradigm in the audiovisual sector

To avoid being confined to a technical approach focusing on distribution protocols (Internet TV, IPVOD ...), our study will be

based on a distinction between two key terms: "managed" video services provided on the internet by network operators (often grouped under the term IPTV) and OTT (Over-the-top) services which are available on the open internet. The distribution of video services has long been and continues to be largely the preserve of managed networks (analogue and digital terrestrial broadcasting, satellite, cable, ADSL and now FTTH) in which the operator guarantees a certain level of service. Some of these network operators (cable and telecommunications operators) also provide the commercial distribution of services. Managed networks have a number of advantages for video distribution: a controlled quality of service, the capacity to bill for services and customer technical support.

This established situation is being challenged by the rise in on-demand consumption in various forms (paid and free) and the development of new online services, particularly in the United States. Managed video services are being rivalled by another category called OTT (Over-the-top TV or Over-the-top content) which refers to television distributed on the open internet, regardless of the technology used. As the name suggests, OTT services come "on top" of existing transmission infrastructures using telephone networks, wireless networks or bandwidth. In other words, OTT services do not control the network and do not have to pay for its development and maintenance, but use it to deliver their services.

Unlike managed video services, there is no dedicated network or infrastructure provided by network managers. It seems important to note that the traditional television channels and network operators also offer OTT services in addition to their main business. However, they no longer appear as key intermediaries and are being directly challenged by new entrants with a position focused on OTT services. The latter, whose business is based on an editorialised catalogue and which provide a set of content services (notably arrangement and selection), lie at the heart of this study. Under their influence, new opportunities for to create and capture value but also to destroy value are emerging (Gabszewicz & Sonnac 2013). Indeed, the spread of OTT services supports the hypothesis that the internet's arrival in the field of television will gradually sweep away divisions in the audiovisual industry and the traditional market organisation.

The different functions carried out by OTT service providers vary greatly. While some appear primarily as an intermediary, linking different categories of providers, others, in order to distinguish themselves from the existing offer, flood the upstream side by producing their own content. These audiovisual OTT services are structured around four main integrated functions: the creation and production of content; the accumulation and distribution of content; network management; the production of devices and connection options.

These services are also structured around 3 main business models:

- Subscription (SVOD) such as Netflix and Amazon Prime Video
- Buying and renting such as Google Play Film, Vudu and iTunes

- The sale of advertising space such as YouTube and catch-up TV from large national channels (a particularly significant phenomenon in Europe).

A hybridisation of economic models has also appeared, as evidenced by Hulu's proposal, comprising a free offer financed by advertising and a premium offer (Hulu Plus), giving access to more ad-free HD content via subscription. The launch of the paid subscription plan, YouTube Red, also illustrates this trend.

B. The undeniable rise of OTT services

The number of pay-TV service subscribers in the US fell for the first time in the second quarter of 2010. A study on connected TV (Girieux & Fountain 2010) underlined the phenomenon of "cord-cutting", which means cancelling a pay-TV subscription to replace it with an OTT video service, a growing phenomenon especially among young consumers. According to a Nielsen USA study, teens and young adults are spending far fewer hours watching "traditional" TV every week than they were just four years ago while there is growth in OTT services, with attractive offers customised for young Americans. The drop is steepest among 12 to 17-year-olds: in 2011 they were watching about 25 hours of live TV a week whereas in 2015 they only watched 15 (*Business Insider* 2015).

In 2015, 181.0 million people in the US watched videos via an app or website that streams content over the internet and bypasses traditional distribution channels, according to eMarketer's study of OTT video viewership. Among the OTT services listed, we find Netflix, Amazon and Hulu but also YouTube, accessible to almost all Americans. 7 out of 10 American internet users watch OTT video services according

to an eMarketer study (see Figure 1). According to forecasts from the same study, this number will be around 200 million in 2019, namely 72% of US internet users and 89% of users consuming video online. After YouTube, used by 94% of video viewers, Netflix is the most powerful service with a penetration rate of 63% in 2015, forecast to be 72% by 2019. Amazon and Hulu's penetration rates are also on the rise, 36% and 33% in 2015 respectively with an annual growth rate of 2% over the next 4 years based on this study.

C. The still influential linear TV in the US market

However, our analysis shows that the threat posed by online TV for traditional channels should not be overestimated. OTT video providers (like Netflix) may represent an extra option or a one-off substitute to linear TV; nevertheless, this is not a complete alternative to the broadcast stream. Channels have great assets to withstand the arrival of online content on TV: the strength of their premium programmes and of their media brands, the power of prime time and live events and their ability to retain audience loyalty to daily or weekly programmes (series, TV news, reality shows, etc.). The following table demonstrates the continuing importance of television in American media space.

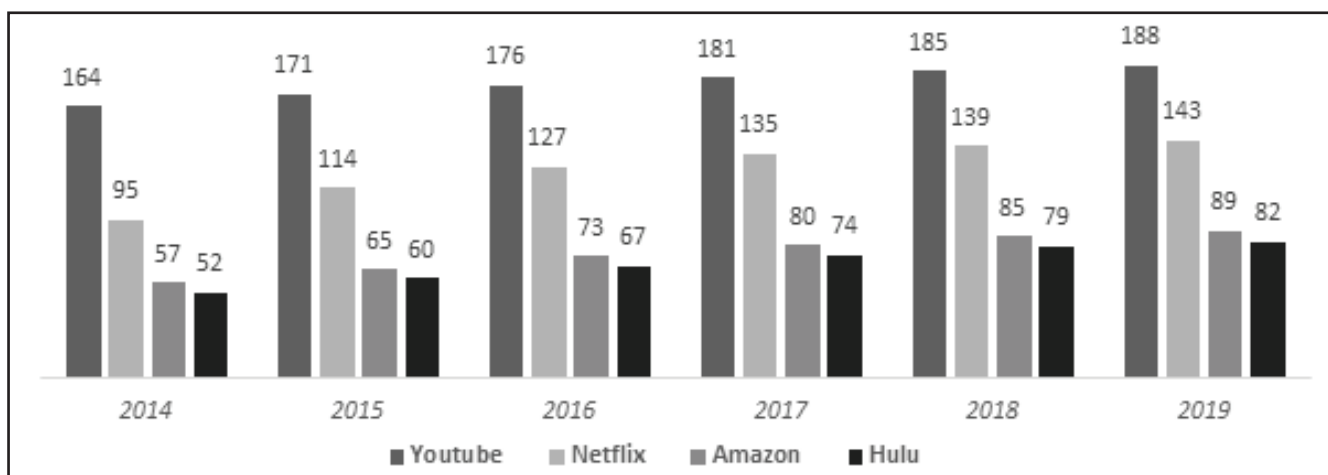
We can see that, despite the proliferation of media platforms, television remains by far the reference media in the United States. Although the time spent on mobile media consumption has increased in recent years (+ 97% in 2011, + 91% in 2012, +53% in 2013, +16% in 2014), daily TV consumption is still much greater: in 2015, Americans spent 26 minutes a day watching videos on mobiles compared with a daily "traditional" television consumption of 4 hours and 11 minutes.

In addition, these new audiovisual consumption patterns may

Figure 1. US Over-the-top (OTT Video Service Users, by Service Provider. 2014-2019

OTT video service users (millions) - 2016-2019 (forecast)

Users ≠ subscribers



Note: individuals of any age who watch video via any app or website at least once per month streams video content over the internet and bypasses traditional distribution channels.

Source: eMarketer. October 2015

Figure 2. Average time spent per day with major media by US Adults. 2011-2017

hrs:mins - 2016-2019 (forecast)

	2011	2012	2013	2014	2015	2016	2017
DIGITAL	3:34	4:10	4:48	5:09	5:29	5:45	5:56
Mobile (nonvoice)	0:46	1:28	2:15	2:37	2:54	3:08	3:18
Radio	0:16	0:26	0:32	0:39	0:44	0:49	0:52
Social networks	0:04	0:09	0:18	0:23	0:27	0:30	0:32
Video	0:03	0:09	0:17	0:22	0:26	0:29	0:32
Other	0:23	0:44	1:08	1:14	1:17	1:20	1:22
Desktop / laptop*	2:30	2:24	2:16	2:14	2:12	2:11	2:10
Video	0:12	0:20	0:22	0:23	0:24	0:25	0:25
Social networks	0:21	0:22	0:17	0:16	0:15	0:14	0:13
Radio	0:12	0:07	0:06	0:06	0:06	0:06	0:06
Other	1:45	1:35	1:31	1:28	1:27	1:26	1:25
Other connected devices	0:18	0:18	0:17	0:19	0:23	0:26	0:28
TV**	4:34	4:38	4:31	4:22	4:11	4:03	3:58
RADIO**	1:34	1:32	1:30	1:28	1:27	1:25	1:24
PRINT**	0:46	0:40	0:35	0:32	0:30	0:28	0:27
OTHER	0:39	0:38	0:31	0:26	0:24	0:22	0:21
TOTAL	11:08	11:39	11:55	11:57	12:00	12:04	12:05

Note: age 18+; time spent with each medium includes all time spent with that medium, regardless of multitasking: for example, 1 hour of multitasking on desktop/laptop while watching TV is counted as 1 hour for TV and 1 hour for desktop/laptop

* includes all internet activities on desktop and laptop computers

** excludes digital.

Source: eMarketer. October 2015.

also represent new opportunities for traditional TV channels that seek to promote their “brand equity” (largely related to their program selection and prescription) and programs by developing their distribution across all portals and platforms used by new entrants. Unlike pure OTT players, broadcasters generally view their presence on the internet as a complementary service to their core business. With this in mind, the flow model (linear) remains central in the television experience. They seek above all to adapt to the new consumption patterns of viewers (delinearisation, generalisation of multi-tasking and multi-screening activities) and thus retain their audience while supporting the linear consumption of the broadcast stream. OTT services therefore appear as a means to improve the television experience with “interactive” complementary content and services, thereby generating additional revenue through pay-VoD, affiliation, e-commerce, or via new advertising inserts within interfaces and catch-up TV services.

The development of “cord-cutting”, a consensual term in the American media, should also be put into perspective. Network managers have lost subscribers but this decline is still limited. On the other hand, cable operators like Comcast are implementing strategies to limit the use of OTT services such as Netflix and YouTube by applying additional charges for larger consumers. The implementation of this system in early 2016

shows that network managers still have an essential position within the sector. OTT services are still largely dependent on the performance of distribution networks and the balance of power has yet to be reversed, as shown by the market capitalisation of Netflix (42 billion USD) in early 2016, which is still far from the first US cable network, Comcast (145 billion USD).

However, it is undeniable that a fundamental trend has begun and the aim to contain the spread of flagship OTT players does not seem tenable in the long term. Moreover, since the second quarter of 2015, Comcast has been facing a change in the nature of its subscriptions: the number of people subscribing only to the company’s internet access service exceeded its pay-TV subscribers for the first time in the second quarter of 2015 (Rosoff 2015).

2. Three ideal-typical strategies in the “race to content”

Exclusive content is the prerequisite to the economic viability of pay-TV (Sonnac 2011). Initially OTT services, specifically those relating to Video on Demand, tended to have more similarities than differences in terms of their catalogues. Indeed, at first most content owners made the choice to offer their programs on the majority of distribution platforms to ensure their presence

on popular platforms. However, it is evident that strategies to differentiate content have been implemented since the third quarter of 2010. Traditional audiovisual players who initially opened up their catalogues have now become more reluctant to share their content.

Many traditional players have also chosen to broadcast their own channel and content on the internet : for example, ABC, CBS and NBC refused to join the Google TV program in late 2010 (as well as Apple TV program for NBC) preferring to reserve their content for their Hulu and Hulu + platforms; similarly, at the same time cable and satellite stations threatened by the arrival of new services launched into proprietary deals based on exclusive programs (e.g. HBO Go, Xfinity Online by Comcast and the satellite operator DISH); Finally, audiovisual and film production studios have joined forces to create their own OTT services –Hulu, Hulu+ and Epix– accessible from several set-top boxes and platforms (e.g. Netflix). These content producers share the same strategy based, firstly, on building up a common catalogue to create a decisive critical mass in order to negotiate with broadcasters and, secondly, on the production of their own OTT service accessible from different devices (e.g. streaming devices like Roku or channel and services packages provided by cable operators).

This race for exclusivity has resulted in content players tightening up intellectual property rights. That's why we have recently observed an increase in litigation and legal proceedings in the US between content broadcasters on the internet and copyright holders regarding a key issue: do the rights acquired by broadcasters on one type of network give them the right to deliver the content via alternative broadcasting services (Durand, 2011)? In this respect, the claim of content producers was clear: the rights acquired by paid-TV players and those used for streaming should be separate markets. The fears expressed by an FCC manager at the start of IPTV regarding the role of intellectual property rights as a barrier to entry, holding back innovation in broadcasting (Pepper, 2004), have resurfaced in the American media as OTT audiovisual services have developed. Because content represents a resource that is fiercely negotiated by the producers, OTT players have developed three main strategies to get around this problem, at least in part: (a) the acquisition of broadcasting rights related to a large back catalogue, (b) an organisation “platform” (or “marketplace”) to promote the use of “alternative” content (Pro-Am & User Generated Content) and (c) the financing of in-house content production.

A. Acquiring broadcasting rights

Initially, OTT players had two main types of strategy in the “content race”, perfectly illustrated by the paragons of the sector, namely Netflix and YouTube. These two types of positioning for content can easily be related to these players’ core activities. Consequently the Netflix Company, originally offering a DVD home delivery service, continued its activity but gradually abandoned the offline service to focus on OTT. From 2007 the

Los Gatos firm, in addition to sending DVDs by mail, which had formed the core of its business since it was set up in 1998, provided a Video on Demand service from its own website. The challenge is therefore to provide a catalogue able to encourage customers to migrate from the “offline” to the “digital” service while maintaining a monthly subscription model that had been set up by the firm in 1999.² To do this, the strategy adopted was catalogue completeness.

Owing to an efficient information system that recorded its subscribers, the company realised that the emergence of a viewing practice that would subsequently be called “binge watching” (or “binge viewing”) was an important trend. This consists of continuously viewing episodes from the same series and has led to a growing demand in the rental of boxset DVDs containing the entire season of a television series. Netflix therefore purchased broadcasting rights for the entire season of different series from the back catalogues of major national networks and American cable operators. The company also established distribution contracts with English producers offering hit shows on the other side of the Atlantic. The major issue is to provide the most extensive catalogue to make up for a lack of premium content. This strategy of providing the widest catalogue in order to attract and retain audience is implemented by a firm like Vudu. Much like Netflix, this company is not affiliated with any major audiovisual player or present in any other activity likely to compete with these players; Vudu is pursuing the same completeness strategy by proposing a number of references that is significantly larger than its counterparts and by building on a “long tail” effect (Anderson, 2004) to monetise its rights acquisitions. So this first ideal type illustrated by Netflix is an offshoot of an organisational and business model already identified in studies on cable or satellite³. Indeed, notwithstanding the sophisticated recommendation systems, the “Netflix model” has a traditional production line (initially at least), purchasing broadcasting rights from content producers and funding production via the final consumer thanks to subscription fees.

B. The “platform” model

The second ideal type is the “YouTube” model (which can be found, for example, in its direct competitor Dailymotion). This model appears to be more innovative. Indeed, we are faced with an organisational and promotional model of a many-sided market some economists call “model platforms” (Evans et al 2007; Gawer 2009). The core of the activity of a company like YouTube is intermediation: it does not acquire broadcast rights to show content but aims to become an essential intermediary for content producers who will willingly offer their products on the platform. The concept of a many-sided market is also obvious: for the Palo Alto firm, this involves handling three main elements; namely content producers, end users (audience) and advertisers that finance the system. Consequently YouTube content seems relatively “innovative” from a formal point of view (video format, covering topics often not available elsewhere, etc.) but also from

the point of view of their producers' status (recognition of "pro-ams" illustrated by some worldwide famous "YouTuber Stars" - See Jenkins 2006; Snickars & Vonderan, 2009) and finally from the point of view of the public and viewing practices.

The YouTube model therefore relies on matching an organisation not involving upstream for content transactions, funding based on advertising and a range of services connected to emerging practices. Indeed, like Netflix and "binge-watching", YouTube services correspond to the developing demand, mainly a teenage audience which appreciates short formats and viewing on multiple devices which some experts call "ATAWAD" ("Anytime, Anywhere, Any device").

However, YouTube's economic results in 2014 were disappointing for most observers: in 2014, they were estimated at \$4 billion, well below the forecasts announced by the firm and which, above all, just allows the company to break even⁴. In addition, with increasing competition from other OTT platforms and services (e.g. Hulu website -see Kim 2012- or Facebook which has its own growing hosting videos service), we can understand why the Alphabet subsidiary has, for several years, been implementing a significant shift in its strategy focusing on supervising (originally) unprofessional content production to match advertisers' expectations.⁵

The idea is to help professionalise "promising" amateurs to enhance both the quality and productivity of these producers in order to provide content that is formatted for advertising and, if possible, exclusive (Bullich 2015). Alongside this work with amateurs, YouTube has also increased the number of closed partnerships with professional content providers as illustrated by Vevo, the main YouTube music channel funded and supplied by record labels. Finally, the site has also started moving in a new direction that takes it away from its original purpose - previously summarised by its slogan "Broadcast Yourself" - as YouTube has invested in directly funding professional content since 2012.

C. Internal production

The main pure OTT players (in this case Netflix, YouTube and Amazon Video, namely those unaffiliated to content producers) have taken a third way intended to provide them with exclusive content: on the one hand direct investment in the production of short, medium-length and feature films in the form of series or standalone programs and, on the other, by funding audiovisual programs exclusively broadcast on these OTT services. Netflix has been implementing this third type of strategy since 2011 through its partnership with NRK1, a Norwegian television channel, to produce a dramatic series called *Lilyhammer*. The series is a success, notably because the Los Gatos firm, with its expertise in its subscribers' consumption trends, makes all the episodes available to them at once.

Netflix thus defines the model of what has later become its distribution strategy, based notably on "binge watching" and fully meeting its subscribers' expectations. The firm is now increasing its investment in content production by 50% each

year on average and has enjoyed major popular and critical success with series like *Orange is the New Black*, *Arrested Development* and especially *House of Cards*. In 2014 specialists estimated that the company invested \$2.8 billion in content production and have forecast that this amount will rise to nearly \$5 billion in 2016 (more than double the investment made by a giant audiovisual content producer such as HBO).⁶

In addition, what is remarkable in this strategic content production is the fact that the US firm is seeking funding for local productions: Netflix invests, for example, in the production of a series entitled *Marseille* to make it easier to enter the French market and did the same with the *Suburra* series in Italy and *The Crown* for the UK. This internal production framework goes hand in hand with the internationalisation strategy of the firm, the more so because "the production of original content allows Netflix to hold exclusive rights to the territories in which the service is provided" (CSA 2016, p. 11).

Other pure players have also invested in production but to a much smaller degree. For example, YouTube invested more than \$100 million in short films, TV series and shows in 2011 and 200 million more in 2012⁷. Although the Mountain View Company remains relatively quiet in terms of original content, it nonetheless announced in 2015 the launch of its "Red YouTube Originals" program. This logically extends the implementation of its professionalisation strategy based on "YouTuber Stars" and involves the production of a dozen series and films featuring the most famous "YouTubers". This program also introduces a new business model based on this new positioning funded by subscription fees.⁸

For its part, Amazon Video has entered the production field via Amazon Studios. After a first attempt to move towards film production in 2008 and co-production with 20th Century Fox for an unsuccessful movie called *The Stolen Child*, the company returned to audiovisual production in 2013 and funded the production of around fifteen series in the following two years. Some of these items have received very positive reviews from the public and critics (*Transparent*, *Mozart in the Jungle*), endorsing Amazon's strategy. Amazon Studios has also produced nearly thirty pilot prototypes from 2013 to 2015, half a dozen kids' programs as well as a feature film in 2015.

However, both YouTube and Amazon Video are still far from having an internal production system and the content provided continues to come from experimentation rather than a "container / content" integration strategy (for now at least). Nonetheless, a bipolarisation of these actors' catalogues has clearly emerged with back catalogue content (Netflix, Amazon Video) associated with secondary content (YouTube UGC) and premium content available on their own OTT services. In doing so, they've adopted processes which can also be found in the traditional audiovisual sectors.

To conclude, the developing influence of OTT players in the American audiovisual industry through the complementary nature of the three ideal strategies outlined above is in line with growing audience segmentation and fragmentation. Although

this phenomenon is already old, it is certainly accelerating with such OTT strategies and the consequences for traditional audiovisual markets are still unclear (although budgetary decisions by consumers in favour of new players and the effects of advertising resources being more widely spread are already visible). What we know for sure, however, is that exclusive content is the key resource in the entire ecosystem and therefore a strategic issue.

3. Data as a new “key resource”

If exclusive content is a major issue, OTT services revealed a new “essential resource” in the audiovisual landscape: data. Resulting from anti-trust law, the concept of “essential resource” refers to a resource that gives its owner a lasting and dominant position in the market. This notion is used here to emphasise the essential character, in the near future, of data for the existence of production and audiovisual markets.

In this third section we will try to summarise the main factors contributing this new prevalence of data, beyond the media buzz. To do so we will first concentrate on the role of interfaces and the general ergonomics of these OTT services from a data mining perspective. Then we will focus on the functions of recommendation / prescription, now automated through the use of algorithmic devices, as well as the role of these devices from a content production perspective. We will conclude this section by considering the role of data mining in the ever-greater personalisation of audiovisual advertising programs.

A. The central role of interface and multi-screen strategy

The addition of internet-based content and services to traditional TV leads to an abundant supply and increased complexity for users. In an intensely competitive environment initially characterised by a certain degree of uniformity in terms of what is on offer for both these devices and some OTT services (such as Subscription VoD or SVoD), the quality of the interface is crucial to attract and retain users.

Ergonomics, namely usability and intuitiveness, the fluidity of the navigation system, the speed of response, the advanced remote control functions, the reliability of different devices and other features (parental control, personal data protection, secure payments etc.) appears to be a differentiating factor between players. In this area international OTT services like Netflix and YouTube, developing a range of services and making their content denser, tend to “downgrade” the traditional player applications. In our study, this “downgrade” reflects a situation of disequilibrium related to gaps in human and technical terms, and therefore also financial terms, resulting in uneven and visible competition between players: a particularly significant issue in emerging countries where local players often can't invest in expensive applications and technical maintenance.

A multi-screen strategy appears to be a key issue in this new audiovisual landscape. It helps to unify distribution solutions

on the open internet and thus encourages new OTT service entrants basing their development on this configuration. Indeed, video content, located on the cloud servers, must by definition be distributed on a number of devices: PC, mobile, tablet, connected TV. Rather than specific solutions for each terminal, the challenge for OTT players is to set up a single infrastructure that can dynamically adapt to all consumption scenarios. American giants such as YouTube and Netflix have strengthened their international penetration thanks to the large amount of content they offer but also by providing quality applications on all platforms.

In addition, encouraging feedback and the customisation of search tools appears vital to simplify user navigation in huge banks of content (Netflix offers over 100,000 audiovisual references). In recent years Netflix's investment in this area has been considerable and the company can afford it because of the economies of scale provided by its international strategy. The interface then becomes a central tool for the service: by using SSO (single sign-on) access, the features of “one to one relationship marketing” can be deployed on all the user's devices.

B. Customising feedback and supply

Many studies have highlighted the prescriber role of TV channels (for example: Benghozi & Paris 2003). In the case of OTT audiovisual services, this role is partly delegated to a system of algorithmic data processing that automates this feedback / prescription function. Indeed, unserialising, that is to say the transition from a flow model to a stock model, made “active” limitation much more important. This paradigm shift from “Top Down” television (non-interactive and linear) to “Bottom-Up” television (on-demand, without constraints of time or place thanks to mobile devices, according to Boddy 2011), has the major consequence of eliminating the central function of programming in the audiovisual sector. If the TV channel plays a prescriber role, it's especially through the quality of its program schedule. Yet, the inherent content fragmentation of these OTT services, which operate as aggregation platforms, breaks radically with this model and gives viewers an unprecedented wealth of content to choose from. The challenge for OTT players is to provide advice in the sense of directing viewers towards customised content suited to their tastes in order to keep them within their digital environment, which is essential to acquire personal data.

Automated feedback systems for viewing or using content are generally based on the user's consumption patterns (recorded via personal accounts) and, secondly, on recommendations provided by other users of the same service (the principle of collaborative filtering). Consistently presented by the OTT players (including Netflix and Amazon Video) as “added value” to their services, these feedback systems are not entirely new. Indeed automated and personalised feedback was initiated in the US by TiVo set-top boxes in 2000. However, it has significantly improved as a result of the unprecedented growth

in data availability and sophistication of algorithmic processing devices. On this particular point, Netflix is probably the most illustrative case. Since it was first set up, the company has established an efficient information system that provides it with good information on its subscribers. Firstly, Customer Relationship Management (CRM) software is primarily intended to establish its catalogue of references which is adapted to customers' expectations and, secondly, to a customised recommendation (although still not fully personalised) linked to selected references from those customers. Two main systems emerge: content scheduling (distinction of elements without hierarchy) and the pairing of such content with customer groups.

The algorithmic framework at the heart of the system is called *Cinematich* and, since 2006, this process has been greatly improved with the introduction of the "Netflix Prize", rewarding every engineer claiming to be able to improve automated matching by 10% or more with \$1 million, providing the company with a huge number of technical proposals⁹. The strength of the Netflix model is based on the successful combination of an impressive amount of work carried out by humans, technical operators to efficiently extract customer data and an algorithm configuration to automate and schedule feedback tasks.

Upstream, the human work is comprised of content analysis by about 700 professionals who apply over a hundred micro-tags (metadata) for each element analysed; downstream, the device allows the extraction and analysis of 30 million views per day but also traces three million daily searches; at its core, the algorithmic processing continuously produces connections between 80,000 combinations resulting from micro-tags, viewer behaviours and viewer ratings (behaviours measured by collaborative filtering). What appears remarkable with the Netflix model is that, besides the sophistication and relevance of the recommendations made, it has also drastically helped to steer in-house productions. Thus, the *House of Cards* and *Orange is the New Black* series are presented by company managers as largely resulting from the data collected regarding the preferences and uses of millions of Netflix subscribers¹⁰. An "editorial" algorithm would later determine a set of correlations that have served as a template for choosing the proposed themes, scenarios and would also guide the casting and director choices.

Data therefore appears to be a decisive factor in production for two reasons: firstly, because of their *sine qua non* integration into pairing processes that allowed (customised) feedback to replace mass promotion; secondly, because of their integration into offer-building strategies, directing content acquisition policies and contributing to the production of content (following a format-based logic). The "core function" (Miege 1996) in the field of broadcasting traditionally occupied by the program management team is being delegated to technical and algorithmic processes that replace humans in the cases just described.

C. Towards a major change in audiovisual commercial communication?

If data appear to be a key resource in the digital world, on the one hand to maintain subscribers and attract new ones, on the other to establish what is offered and produced, then data also seem to be decisive in communication and the advertising market. Indeed, to value their scattered audiences, OTT players whose model is based on advertisers funding production are seeking to adapt their advertising tools to the service's technical characteristics. They therefore rely on an individualised customer relationship which can offset the quantitative decline in audience as a result of fragmentation due to the large number of channels.

The challenge is to establish a direct link with customers able to attract advertisers. This is still the multisided market model, classic in the media, albeit with unprecedented sophistication because of the technical tools that enable automation with a new precision to match viewers and the content offered, as well as viewers and the advertising message. By acquiring and processing personal data using CRM software, OTT services managers are able to direct viewer choice and, above all, to adapt advertising messages to:

1. Viewed content: context and content-sensitive advertisements on screen or commercials automatically appearing before viewing the requested content ("in-stream ads").
2. User navigation traces: these services create a certain kind of "commodification of uses and traces" which consists of gathering information while users are browsing then increasing its value as a "marketing profile" (Chamberlain 2011, p. 242). Consequently, data appears both as a production factor and an assignable value.

However, while the possibilities offered by technology in marketing are able to significantly improve the quality of advertising exposure and thereby provide potentially substantial income sources for OTT players, these tools have important implementation and management costs. At least initially, only financially strong players could fully exploit them while other companies would have to maintain a business model where advertising revenues are not predominant (subscription, sales terminals, pay per view / pick-and-pay). In addition, the measuring systems associated with the tools to personalise audiovisual commercials are currently being questioned.

Indeed, these are mainly created by industrial players themselves and are not certified by any independent body. This lack of transparency logically has a negative impact on advertiser confidence, thereby greatly hindering the development of this individualised advertising (Wolk 2015). Nevertheless, and considering the potential of a personalised relationship with consumers, it's easy to imagine this problem being solved in the coming years. Data will be so pervasive in the future and

the players' ability to collect and treat data will undoubtedly become such a decisive advantage in the "screen war" and "fight for attention" that this will influence the structure of the audiovisual sector in the coming decades (Webster 2014).

4. A necessary adaptation to regulations

The multiplication and heterogeneity of devices that provide access to audiovisual content via the internet raise thorny issues as to how to adapt the regulatory framework. As is often the case with internet and digital tools, socio-technical mutations are occurring at a pace which the legislature has trouble keeping up with. In this fourth part, we leave our American setting and focus on the regulation of OTT audiovisual services envisaged in most OECD countries. Our aim is not to draw up an exhaustive typology of legal systems and to carry out a comparative analysis of the regulations implemented in each country but, more simply, to identify the main challenges faced by legislators and the main strategies put in place or planned.

A. The two main pathways used by legislators

In order to set up a legal framework for OTT services, two main approaches have been favoured by the legislator. The first one is based on the nature of the content and the similarity of practices and uses of OTT services to "traditional" television in order to initiate legal harmonisation regardless of the screen and how content is received in technical terms. This type of approach is found, for example, in Canada and Germany (Noam, 2008). Meanwhile the United States has implemented a regulation based not on the nature of the content or resulting practices and usages but on the technical specifications of broadcasting / distribution conditions (a similar approach is used in South Korea, for instance).

In fact, the Federal Communications Commission (FCC) only officially addressed the issue of regulating internet broadcasting in 2004. At this time the FCC began a thorough review of the control of IP services (which includes the various OTT services). Unlike most countries in the European Union, the FCC does not distinguish between linear (e.g. IPTV) and nonlinear (e.g. VoD) broadcasting. For this reason, the FCC did not seek to transpose the rules applicable to terrestrial broadcasting to OTT services or to set specific regulations according to each mode of access to audiovisual content.

In Europe, the EU-wide regulatory system has been built around the principle of "neutrality". This neutrality, namely equality of treatment, applies to both technical broadcasting modes and the services offered. Thus communication networks are not distinguished from each other, although exceptions are made in the particular audiovisual context (Vachey 2011). The challenge for the European legislator is the relevance of adapting the specific television regulatory framework to new types of audiovisual programme broadcasting. In terms of the OECD countries studied, legislators have remained cautious,

seeking in particular to avoid creating regulatory barriers to the development of this area. Nevertheless, and particularly in the European case, it seems that, under pressure from television channels, legislators will be forced to extend, at least partially, the audiovisual regulatory principles to OTT services in order to maintain equal treatment.

The transposition of some of these rules does not seem to pose major problems, although for others the task may be significantly more difficult. Indeed, the harmonisation of media chronology rules, signage systems for young audiences, advertising restrictions, broadcast content control (respect for the dignity of people, prohibition of racist or anti-Semitic messages, etc.) among the various audiovisual content distribution players poses no technical or legal problem as long as the programmes in question incorporate the traditional distribution framework.

In the case of unedited content (i.e. user-generated content without commercial or counterfeit programmes), such transposition proves much more complicated to implement: first, it is particularly difficult to control all content offered by private individuals (considering the volume and speed of rotation) and, secondly, the laws defining the responsibility for such content are often unclear or abstruse. In fact, responsibility varies greatly depending on the device: whether this is likely to apply to services that are similar to publishing (e.g. YouTube) or to the accumulation of content for which distribution rights were negotiated in advance (e.g. Netflix), it is in no way the responsibility of the "simple" technical provider that put together a package of channels.

Finally, from the point of view of institutional organisation, the question arises of which administrative authority should be in charge of these services. The hybrid nature of OTT audiovisual services, both TV broadcasters and telecommunication services, undermines the areas of competence traditionally established between an audiovisual media authority and an electronic communications authority (BEREC 2016). Thus, in most countries surveyed, consultations were carried out on the possible convergence or even a merger between these two regulatory bodies and the body of laws associated with them, sometimes resulting in a single authority (as is the case in Italy, the UK and Finland, for example) but more generally in partial mergers between the different administrations and regulatory frameworks, as was the case in Korea and is under discussion in the United States and France.

B. Specific difficulties

Overall, the internationalisation of production and broadcasting significantly increases the difficulties in applying "equality of treatment." Taking the controversial case of Netflix or YouTube in Europe, for example, it is clear that transnational players seek to take up residence in places where the tax and legal environment is the most favourable to them and that these host countries are not necessarily inclined to change their legislation to follow the example of more demanding countries. Beyond the question of tax revenue, the most critical issue is related

to the financing of audiovisual and film production. In many European countries this fundamentally depends on generalist TV channels, both public and private. Companies offering OTT audiovisual services are not yet under any obligation to fund or promote any national or regional content (e. g. broadcast quotas).

This situation raises serious concerns among traditional players because it's likely to lead to a profound questioning of national economies and public cultural intervention (as predicted for France a few years ago, see Benhamou 2006). In addition to such issues regarding the harmonisation of regulatory frameworks, OTT services also pose new regulatory issues in the audiovisual sector. Indeed, personalisation systems, CRM software and ad targeting imply, for the audiovisual regulatory authorities, the need to ensure that the laws governing the conditions for collecting and operating personal data are applied. The main issues are, on the one hand, respect for privacy and, on the other, the prevention of data monopolisation strategies from some OTT services in a dominant position (principally YouTube and Netflix).

The aim is to guarantee users' rights regarding their own personal data by preventing any undue privatisation (this type of information should not have an owner) by forcing OTT services to be transparent about how they collect, store and retrieve data and by requiring them to promote a "free flow of data" (European Commission 2015). In addition, the legislator is also responsible for ensuring that those companies with large volumes of personal data implement efficient cybersecurity systems (BEREC 2016). Finally, there is also the issue of the legal framework for prescription / feedback algorithmic devices as these also require special attention from the authorities: indeed, OTT services make decisions regarding selection and publication.

Firstly, we should assess how fairly the content offered to final consumers is presented and, secondly, transparency measures should be introduced for content access (such as the obligation to publish clear consumer guidance on anything relating to advertising, generic algorithm selection, customised adaptation or OTT service preferences). The concept of "information system loyalty" has emerged in Europe in order to emphasise the non-neutrality of algorithmic processing; this loyalty should be applied to consumers as well as to content producers (see, for example: Conseil d'État 2014; European Commission 2015).

In the US, the relevant authorities (including the FCC and the Federal Trade Commission or FTC) favour the concept of "non-discrimination" of algorithms (Ramirez, 2015). Non-discrimination requirements should apply to forms of expression, types of content and also to the conditions of access to the various OTT services, which should never be based on ethnic, sexual or economic criteria. Thus, on both sides of the Atlantic, legislators share the same desire to require OTT services to provide consumers with information on selection and feedback criteria and to guarantee the fairness of these automated processes.

C. The unknown effects of illegal sites

After this summary, it seems clear that OTT audiovisual services are a key regulatory issue for both audiovisual and telecommunication authorities. Two issues appear decisive: the first relates to the delicate relationship between the traditional sector for which specific regulation has slowly been established and the new OTT services for which the legislature needs to provide a rapid and fair response, that is to say legislation that takes into account both the similarities and singularities of these two modes of distribution. The second is beyond the scope of OTT services and relates to the legal framework for data processing via algorithmic devices. This issue predominantly concerns legislators, as evidenced by the work of the European Commission (2015) and the FCC (2016)¹¹, and it clearly illustrates the phenomenon of convergence taking place between electronic communications and the audiovisual industry.

Before concluding this fourth and final section we should mention one aspect which has been more or less ignored although it is probably decisive in the development of these services: namely competition from illegal sites. Indeed, these illegal OTT services form a vast continent that defies regulation but has a significant impact on audiovisual markets (regardless of the form and technique used to broadcast). Although, by definition, it is very difficult to perceive these players and their activities, specialists estimate that the income from such illegal sites totalled between 50 and 70 million euros in 2010¹² and a recent study proposed a figure of 10 million to quantify the number of regular users of these sites for the French territory in just 2015¹³. Moreover, major American series are the most downloaded with record amounts for 2015: a series like *Game of Thrones* was downloaded over 14 million times during the year¹⁴. Beyond questions of revenue shortfall, this "unfair" competition also partly affects the legally provided content.

Therefore we can consider the combined efforts and sophistication of feedback processing devices as a way to fight against free access, which is an essential (but not exclusive) component of illegal sites. Indeed, continuous adjustments of copyright laws have so far proved ineffective in countering such sites and OTT players have had to find alternative ways to compete with them. Convenience of use seems to be the main alternative for legal OTT services, as they make the search for information much easier and offer direct access to a large amount of content within a (supposedly) secure framework. It is impossible to predict how illegal players are going to change the industry, although it seems certain that some legal players are able to beat this particular competition by proposing higher quality services which justify the subscription fee. On this subject we therefore concur with the view of some economists that "piracy" does not systematically harm competition or the ideal situation for society provided that strategies are put in place to differentiate supply based on quality and price (i.e. vertical differentiation).¹⁵

Conclusion

The recent positioning of powerful new entrants upstream in the audiovisual industry and the multisided nature of content distribution is systematically raising issues regarding the new emerging configuration. As a consequent, the hypothesis that the “convergence” strategies put in place over the last thirty years, both by consumer electronics manufacturers and by IT and telecommunications manufacturers, could deeply affect the organisation of production and distribution, business models, access to and consumption of audiovisual content should be carefully examined. This hypothesis has been repeatedly tested in many studies since the late 1980s (e.g.: Tremblay & Lacroix 1991; Moeglin & Tremblay 2005). At first glance OTT services seem to fully illustrate this convergence. Indeed, these new services have introduced three major changes. The first is related to the end of the “silos” organisation (Nuechterlein & Weiser 2005). Television was viewed only on a specific screen, offering specific products and content distributed via dedicated technology and identified players, and finally, the activity was governed by a set of specific regulations based on a national framework. OTT services have profoundly disrupted this paradigm. Not only can television now be watched on multiple devices in multi-screen and multi-channel access but its content is now available in multiple forms. The second significant change is particularly visible in the practice of viewing and is inherently linked to unserialising. This breaks with the linear flow that characterised television broadcasting and gives viewers the chance to interact with content by allowing consumption to be potentially “active” and personalised. The third of these significant changes relates to the supply of content, which is no longer the exclusive domain of traditional broadcasters but is now open to any content or service editor, including publishers and non-professional producers, resulting in an unprecedented diversity and abundance of audiovisual content.

However, in spite of incessant rhetoric from governments and manufacturers about the coming of a “new era of television”, the picture presented in this article is one of an undeniable shift in the audiovisual landscape, albeit rejecting any scenario of a complete rupture. Unlike the recorded music industry where OTT services (music streaming provided by players such as Spotify and Deezer) are poised to take over from the traditionally dominant players¹⁶, traditional television doesn't seem to be in danger of disappearing or even of losing its status as the primary medium (for the moment at least).

TV channels have great assets to withstand this multiplication of audiovisual online content: the strength of their premium programmes and of their media brands, the power of prime time and live events and the ability to retain their audiences thanks to weekly or daily appointments (series, TV news, reality shows, etc.).

In addition, the promotional power of large audiovisual networks in the United States still remains essential to the whole sector. Indeed, the main “blockbusters”, including those

available on OTT platforms, are routinely offered on these networks which have a unique exposure. This observation tends to support the idea that “broad audience” channels as “prescribers and window display” still have a leading role in the recommendation of content (Paracuellos & Benghozi 2011).

However, it is clear that these OTT services reveal a deep trend in the digital economy due to the increased importance of the intermediation function in all cultural industries. Following this logic, the global value of any content access system lies as much in the cultural product circulating (the content itself) as in the interface used to find and qualify it and the set of connected services providing a user-friendly experience (as evidenced by the ever greater availability of content and the slogan “TV Everywhere”, a recurring expression in industrial speeches and commercial promises). Nevertheless, we have tried to show that some of the “rules” from the traditional television industry are still highly influential, even for these new services and markets: the exclusivity of content, the decisive role played by recommendation and the special attention given by the legislature are all examples of such rules.

Notes

1. This book based on a transatlantic and transpacific collaboration between the Columbia Institute for Tele-Information, the European Institute for the Media and the Center for Global Communications at the International University of Japan, which specifically sought to identify the most mutagenic aspects linked to the emergence of internet TV services (over-the-top services and IPTV) for the traditional audiovisual sector and the associated forms of regulation (Noam et al. 2004).
2. We can observe that Netflix has retained its DVD and Blu-Ray rental business via subscription, which reported more than \$646 million in 2015 (CSA 2016).
3. This model of production and valuation is indeed very close to the one established more than twenty-five years ago by two Quebec researchers in a study focusing on the development of cable television: they called it the “club model” (Tremblay & Lacroix 1991).
4. According to figures from the *Wall Street Journal* of 02/25/2015. Available at: <<http://www.wsj.com/articles/viewers-dont-add-up-to-profit-for-youtube-1424897967>> [Consulted: 03/26/2016].
5. As noted by P. McDonald, advertisers have long been reluctant to associate with non-professional content because this is often based on poor quality, is sometimes considered immoral and often in breach of copyright (McDonald 2009).
6. According to figures from the French business magazine *Les échos*. Available at: <http://www.lesechos.fr/16/02/2015/lesechos.fr/0204163543155_netflix-ecrase-la-concurrence-a-coups-de-milliards-de-dollars.htm> [Consulted: 03/26/2016].

7. Based on figures from MediaAmerica, the media information magazine in North America produced by the Cultural Services of the French Embassy of the United States. Available at: <<http://mediamerica.org/vod/youtube-investit-dans-la-creation-de-contenu-et-cree-100-nouvelles-chaines-professionnelles/>> [Consulted: 03/28/2016].
8. Until 2016, paid channels on YouTube were not related to the Mountain View player but based on initiatives by companies which had decided to emphasise their content in this way.
9. The award in 2009 was given to the collective “BellKor’s Pragmatic Chaos”, composed of engineers working in AT & T laboratories and independent IT professionals from Austria and Quebec.
10. The number of subscribers then amounted to 33 million (2012). At 31 December, 2015, Netflix had more than 45 million subscribers in the US and more than 75 million worldwide (the company is now present in 190 countries), according to figures from the CSA (2016, p. 2).
11. Such work focuses on the revision of the “Privacy and Electronic Communications” related to the European Commission (2015). The FCC, meanwhile, is focusing on the application and adaptation of the Privacy Act of 1974 to the current situation (FCC 2016).
12. According to figures from Idate and figures in Farchy *et al.*, 2015, p. 64.
According to figures from the newspaper *Le Figaro*. Available at: <<http://www.lefigaro.fr/secteur/high-tech/2015/07/07/32001-20150707ARTFIG00170-10-millions-de-francais-frequentent-les-sites-de-streaming-et-detelechargement-illegal.php>> [Consulted: 03/28/2016].
13. According to figures from CNBC. Available at: <<http://www.cnbc.com/2015/12/28/game-of-thrones-and-interstellar-named-2015s-most-pirated-tv-show-and-film.html>> [Consulted: 03/28/2016].
14. See, for example, the study by M. & P. Waelbroeck Peitz (2004) on the effects of piracy on CD sales. This advocates vertical differentiation strategies rather than the systematic strengthening of the repressive apparatus in the fight against “piracy”.
15. Based on figures from the Recording Industry Association of America. Available at: <<http://www.riaa.com/wp-content/uploads/2016/03/RIAA-2015-Year-End-shipments-memo.pdf>> [Consulted: 03/28/2016].

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