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DECREASING COPYRIGHT ENFORCEMENT COSTS: THE SCOPE OF A GRADUATED RESPONSE

OLIVIER BOMSEL AND HERITIANA RANAIVOSON

ABSTRACT. The digitization of copyrighted goods and the dematerialization of their distribution over the Internet have caused a weakening of copyright, a key institution of the creative industries. One reason is that, during the broadband roll-out, copyright enforcement costs have become superior to the estimated benefits of copyright. This paper analyses the causes of this situation and suggests how a graduated response to infringers can decrease copyright enforcement costs.

The paper starts with a review of the economic literature on copyright that focuses on its industrial aspects. It then analyses how, all along the distribution vertical chain, the consumer's impunity provides incentives to free ride on copyright, which rapidly increases copyright enforcement costs. It finally depicts the graduated response mechanism and the voluntary agreement that initiated this system in France. In conclusion, the increase in the cost of free-riding for the final consumer should lead to a decrease in copyright enforcement costs and to higher returns in the creative industries.

1. INTRODUCTION

In all capitalist economies, the institution of copyright has become essential to the development of creative industries. Copyright consists of the granting of an exclusive right to the exploitation of reproductions (and representations) of an artistic or literary work. As such it has contributed to the accumulation of large copyright portfolios that allow the risks of financing and marketing new creations to be handled (Caves, 2000). From an economic point of view, the copyright institution appears as an internalization means whose social benefits should remain superior to its social costs. Among these costs are the enforcement costs, which include the costs related to the exclusion of unauthorized users.

In the physical economy, enforcement costs are bundled with the packaging of the copyrighted information on a physical support, or with a specific decryption device in the broadcast distribution system. Here the main copyright infringers are commercial intermediaries that take the responsibility to produce and distribute counterfeited packaged goods (books, CDs, DVDs) or set-top-box decryption devices.

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Therefore, in the physical world, copyright enforcement is based upon legal deterrence targeting those intermediaries. The threat of a strong penalty for convicted infringers is enough to keep the expected costs of infringing largely above the anticipated benefits for the infringers, at least in most developed countries (that stand as the main markets from an economic point of view). And the restricted number of infringers keeps the the penalty, in other words the cost of being caught, at a socially acceptable level. As a result, this philosophy was largely integrated into the digital copyright laws voted in the late 1990's or the early 2000's such as the DMCA (1998) in the USA and the EUCD (2001) in the EU.

While the physical economy is far from having disappeared or from even becoming negligible, the dematerialization of copyrighted goods is deeply affecting the creative industries. It notably enables storage, circulation and exchange of digitized content over the Internet. As soon as an exchange technology is available (peer-to-peer for instance), any consumer can become an active counterfeiter while enduring almost no costs at all. As a result, the scope of copyright infringement has changed, and so has the structure of enforcement costs. In other words, heavy fines, which are effective towards a limited number of intermediaries, cannot deter massive copyright infringement. Not only does the expected value of the fine diminish with the number of infringers, but the misfortune of being caught appears more and more unfair to the society since the size of the fine increases and since there is no longer a commercial intent on the behalf of these infringers.

This weakness in the institution of copyright and the corresponding legal loopholes have been exploited by the digital industries, i.e. those that provide consumers with technologies allowing free access to content. As a result, in most countries the number of copyright infringers has increased in recent years. At the same time copyright is being debated. In December 2005, the legal implementation of the EUCD in the French parliament brought an amendment proposing a levy system (*licence globale*), a form of compulsory license applying to all audiovisual contents exchanged over the Internet. While this amendment was finally rejected, the debate illustrated the weakness of exclusive IP rights in the digital era.

This paper examines to what extent the French scheme of a graduated response may restore incentives to enforce copyright. The next section provides a review of the literature on copyright that focuses on its industrial aspects. In Section 3 the paper then examines how, all along the distribution vertical chain, final consumer impunity provides incentives to free ride on copyright, which increases the copyright enforcement costs. Section 4 depicts the voluntary agreement that initiated the French graduated response system and shows how it aims to decrease copyright enforcement costs. Section 5 brings some conclusions regarding the impact of the

graduated response as a means to internalise copyright enforcement within the content and network industries.

2. THE COSTS AND BENEFITS OF COPYRIGHT: A REVIEW OF THE LITERATURE

Since the 1960's and increasingly through the 1980's, the concept of Intellectual Property has gradually included legal instruments as various as patents, trademarks and copyright (Blaug, 2005). There is now a well-established economic analysis of the arguments both in favor and against copyright (and more generally intellectual property). They are important to characterize how this property should be designed, notably in the context of the spreading of the Internet and its new uses. For that reason here we remind the reader of the main arguments that are to be taken into account when assessing the economic effects of copyright.

In doing so an important distinction is to be made between two categories of rights holders: the creators and the intermediaries in production and distribution. Actually both may have different incentives to produce and distribute cultural goods (Plant, 1934). The main point is that all creators do not necessarily work for money, rather for recognition, and may even be ready to pay to have their works published and distributed. Even when money does stand as an incentive it does not necessarily take the form of the granting of a copyright. On the contrary there is a clear and direct interest for the intermediaries in production and distribution in having their contents protected by copyright. As a result, economists have generally investigated the benefits of copyright in terms of incentives for these intermediaries (Benhamou and Farchy, 2007).

For the same reason, and all the more so as we are interested in the industrial organization of the creative industries, our analysis focuses on the intermediaries rather than on the creators themselves. To conduct this analysis, we rely on the usual comparison between the costs and the benefits of copyright.

From a normative point of view, the traditional analysis of the optimal copyright can be described as a balance between on the one hand its positive impact on production and distribution and on the other hand its negative impact on utilization (Besen, 1987). As Landes and Posner (1989, p. 326) state, “[c]opyright protection (...) trades off the costs of limiting access to a work against the benefits of providing incentives to create the work in the first place. Striking the correct balance between access and incentives is the central problem in copyright law.”.

The main benefit of copyright is its capacity to favor the production and distribution of meaningful content. Actually, creative goods (like information goods in general) are public goods, i.e. they share the properties of non-rivalry and non-excludability. However they have high fixed costs of production and marketing and low variable costs of reproduction and/or distribution (Arrow, 1962). However,

being a legal monopoly on a work of art, copyright has an immediate downside on society as a whole since it restrains the diffusion of protected goods.

Beyond this well-known literature our analysis focuses on the role of copyright at the industry level.¹ It relies mainly on the transaction costs analysis. The point of departure of the reasoning here is the so-called Coase theorem that states that when trade in an externality is possible and there are no transaction costs, bargaining will lead to an efficient outcome regardless of the initial allocation of property rights (Coase, 1960). However the Coase theorem assumes that there is no transaction cost, which is never the case, and maybe even less in our case than in general. Moreover the right holder itself first endures costs since “intellectual property is very easy to expropriate” (Watt, 2000, p.1). Therefore, “administrative and enforcement costs” are important, which “include the costs of setting up boundaries or erecting imaginary fences that separate protected and unprotected elements of a work. They also include the costs of excluding trespassers, proving infringement and sanctioning copyright violators.” (Landes, 2003, p.134). Moreover such costs depend on the technological context as we illustrate in the next section.

As a consequence the economic function of copyright is to allow cultural goods to have the characteristics of private goods by making it possible for rights holders to exclude other users, potential competitors as well as final consumers (Demsetz, 1970). In other words, copyright is above all a property right and more precisely a form of private ownership. Actually, “[p]rivate ownership implies that the community recognizes the right of the owner to exclude others from exercising the owner’s private rights” (Demsetz, 1967, p.354). As such, it allows the internalization of costs and benefits.

Demsetz (1967) states that property rights develop when it becomes interesting to internalize effects that were until then mere externalities because “the gains of internalization become larger than the cost of internalization.”. As a result “the emergence of new (...) property rights will be in response to changes in technology and relative prices.” (p.350). Demsetz considers property rights in general but this applies to copyright as well: with the development of printing, it (slowly) became more detrimental to have one’s creations copied by competitors. So publishers and, to a lesser extent, writers had a clear opportunity to get exclusive rights over the writings.

¹Our approach is somehow echoed by the current reinforcement of copyright legislation all over the World (e.g. the Sonny Bono Copyright Term Extension Act in 1998 in the USA), which shows that copyright is more and more considered by the governments as playing a role in the global competition by allowing innovation in the creative industries. This trend may show that the welfare approach of copyright, based on the spreading out of useful information in a given community, is now challenged by the taking into account of copyright as an industrial asset.

As a consequence of copyrighting a cultural good, the right holder may keep all benefits linked to the exploitation of the work, either directly or indirectly (e.g. through licenses). Moreover, the market power given by copyright enables the implementation of profitable price discrimination.

Finally cultural goods are subject to significant market uncertainty, which means that it is not possible to know in advance which goods are going to be successful. Therefore, were there to be no copyright, successful goods would be likely to be reproduced by competitors. Actually those competitors would avoid, on the one hand, betting on innovative and thus risky products, and on the other hand, enduring high fixed costs. Such a situation would all the more be penalising for investors for whom entry is rather easy in the creative industries.

“Because copyright tends to be a costly system of property, economics predicts that property rights in copyrighted works will be more limited than for tangible or physical property.” (Landes, 2003, p.135). As a consequence, “various copyright doctrines that limit protection can be best explained as rough efforts to achieve the optimal balance between incentive benefits and access and other costs in order to promote economic efficiency.” (Landes, 2003, p.135). These limitations can take numerous forms in practice. First of all, a common way of counterbalancing excessively high enforcement costs of copyright is to supplement the copyright with specific levy systems. Those levies are then collected and redistributed to right holders by collecting societies. Fair use – or exceptions to the author’s right – is another common device that can be interpreted as a way of reducing transaction costs by allowing some uses whose enforcement costs would be superior to the eventual related profit for the right holder (Gordon, 1982). The limitation of the duration of the copyright is usually seen as a way to balance the incentives for production and distribution and the allowance of access by the public once the investment is repaid.

In a nutshell, copyright is a legal institution that enables a partial internalization of the costs and benefits linked to the production and distribution of cultural goods. Our approach focuses on the industrial organization of copyright, i.e. the trade-off between the benefits and costs from the industry’s point of view. We now turn to an analysis of the advent of the digital era to see its influence on these costs, and notably the enforcement costs.

3. THE INTERNET ROLL-OUT:² NEW BENEFITS AND NEW COSTS

3.1. Digitization and the development of online piracy. One of the most visible effects of the digitization of copyrighted contents and of the advent of the Internet is the surge of massive infringement practices that rely on peer-to-peer software. Massive piracy has led to a wide questioning of the economic relevance of copyright in a digital environment (Varian, 2005). It first introduces a break into the traditional economic cost-benefit analysis of copyright piracy. Actually in the analogue environment, the benefits of the diffusion of an unauthorized copy are similar to the limited release of a degraded version. Under such an approach, unauthorized copying was seen as a means of stimulating the network effects of the copyrighted good and enlarging its markets, with perhaps only a marginal negative impact on the right holders (Watt, 2000). Digitization changes the scale of the phenomenon.

This questioning of the economic relevance of copyright in a digital environment can be analyzed by using Demsetz’s approach of property rights. Actually Demsetz states that “[i]f the main allocative function of property rights is the internalization of beneficial and harmful effects, then the emergence of property rights can be understood best by their association with the emergence of new beneficial or harmful effects” (1967, p.350). In the following, we analyze whether the massive infringement of property rights can be understood best by its association with the emergence of new harmful or beneficial effects.

We will therefore suppose in this section that there are new benefits and new costs for the industry linked to the digitization of copyrighted goods and the dematerialization of their distribution and try to point out how they might have impacted the previous consensus on copyright.

The benefits are clearly associated with new versioning possibilities and better discrimination of the consumers’ preferences through digital distribution. Thus digitization was first perceived as an opportunity for the major actors of the entertainment industry. For example, the advent of the compact-disc put an end to the crisis endured by the recording industry and allowed the beginning of a prosperous era for the industry (Burnett, 1996). Initially, the Internet was considered an additional outlet for music (Ranaivoson, 2003). Moreover, digital distribution allows

²We use the expression “roll-out” to designate the emergence of a market showing strong network effects. In such a market where the consumer’s utility increases with the number of consumers (Rolhfs, 1974), a critical mass of consumers should be reached before the utility of the service stabilizes over its price. When this occurs, each consumer joining the market increases the utility of all the others, allowing the service to reach all its targeted market. The expression “roll-out” – which can be physically associated with the deployment of an infrastructure – depicts the expansion of a market providing utility that grows with the number of consumers.

new modes of signaling and selecting contents, individualized access and the possibility for each consumer to store large content libraries or play-lists on portable personal devices. It then enlarges the addressable markets of all copyrighted goods. However, these benefits can be obtained only once an extensive digital distribution system is rolled-out.

The costs are associated with copyright enforcement. While the material support provides rivalness and excludability, the full digitization of copyrighted goods requires technical means like specific software (e.g. DRM) to achieve exclusion. Such technical means are legally recognized and strongly protected by the digital copyright laws (Bomsel and Geffroy, 2006). However, the key point regarding copyright enforcement concerns the ability of the final consumer to exchange unprotected files with other consumers, which has sometimes been considered as belonging to fair use. This ability has created a legal loophole favoring the roll-out of several generations of peer-to-peer software (Bomsel, 2007). Not only did it take six years for the US Supreme Court to issue a decision regarding the legality of peer-to-peer applications but the loophole also created a breach in copyright enforcement allowing millions of Internet users around the world to free-ride on copyright. Such a situation was not anticipated by digital copyright laws that had kept a heavy sanction system targeting in practice only a limited number of infringers. Therefore, in spite of many attempts to sue infringers, right holders have proved quite inefficient in enforcing copyright through the legal sanction mechanism.

3.2. The Internet roll-out game and the role of network effects. The online piracy phenomenon is linked to the roll-out of the Internet. The roll-out is actually characterized by the importance of network effects. There are network effects or externalities as soon as the utility linked to one's consumption is influenced by the number of other consumers (Varian, 2000). In our case, network effects are positive: the more consumers use a network, the greater is every consumer's satisfaction. They may be direct or indirect (Katz and Shapiro, 1994). Network effects are direct when the number of users has a direct impact on the utility derived from a product and indirect when they are mediated by another market (Liebowitz and Margolis, 2002). An example of direct network effects is the e-mail: the more people have an e-mail address, the more useful is e-mail to each user. Indirect effects generally correspond to the development of complementary products. For example, DVD players become more useful as DVDs catalogues become more extensive.

Since digitization allows packet switching across communication networks, Internet has been able to expand as a one-to-one communication system and as a media, i.e. a means that allows information to flow from one source to many anonymous individuals. E-mail, web browsing and e-commerce services have allowed network

effects to increase thus making the roll-out of dial-up services easier and faster. However the gain in utility associated for all these specific uses with wider band services might have been too small to justify the roll-out of the Internet infrastructure and of broadband as we saw it in most developed countries.

The possible access to free copyrighted content here played the role of a subsidy. The availability of such content on the Internet has thus allowed not only the ISPs, but also all the equipment contributing to access, to get a larger share of what the consumers would have spent for content. The breach in copyright enforcement has helped the Internet industry to roll-out broadband infrastructure and terminal equipment by rising at nearly no cost the consumer's utility thanks to free content access.

Figure 1 allows us to represent the impact of network effects. These can be illustrated by a demand curve corresponding to the marginal private utility of the service (a), supplemented by another curve corresponding to the marginal social utility including the external effects of other subscribers (i.e. a new subscription increases the utility of being a subscriber by (b)). It is assumed that the external effects are inversely proportional to the number of subscribers, which means that a new subscriber brings more additional utility to others when there are only a few of them than when the market is widely covered. The two curves meet when the market is saturated.

The consumers subscribe according to their private utility. It is assumed that the marginal cost of the service is c , constant. A_1 is the number of subscribers whose private utility is superior to the marginal cost of the service. However, thanks to the external effects, a larger number of customers A_2 could have a total utility higher than c . A_2 represents the socially optimal number of subscribers. To recruit the $(A_2 - A_1)$ customers the service needs to be subsidized, which can be done by pricing at p , where p is less than c . In a second phase, prices can be increased to match the total utility of the marginal subscriber. Network economics largely depend on the size of the benefits associated with the increase $(A_2 - A_1)$ of the market and on the way the subsidy required to capture these consumers is financed and recovered.

The cost of the subsidy is proportional to the number of subsidized subscribers. If it is not possible to discriminate among subscribers, the cost of the subsidy to reach A_2 will be $(c - p) \times A_2$. If it is possible to discriminate the service, which means that the price p is only applied to those customers having a willingness-to-pay inferior to c , then the cost will be only $(c - p) \times (A_2 - A_1)$.

Now we come to the impact of peer-to-peer on the roll-out of broadband services. The possibility of free-riding on copyrights provides additional utility to the consumer which operates like a subsidy in kind. In Figure 2, we can then draw

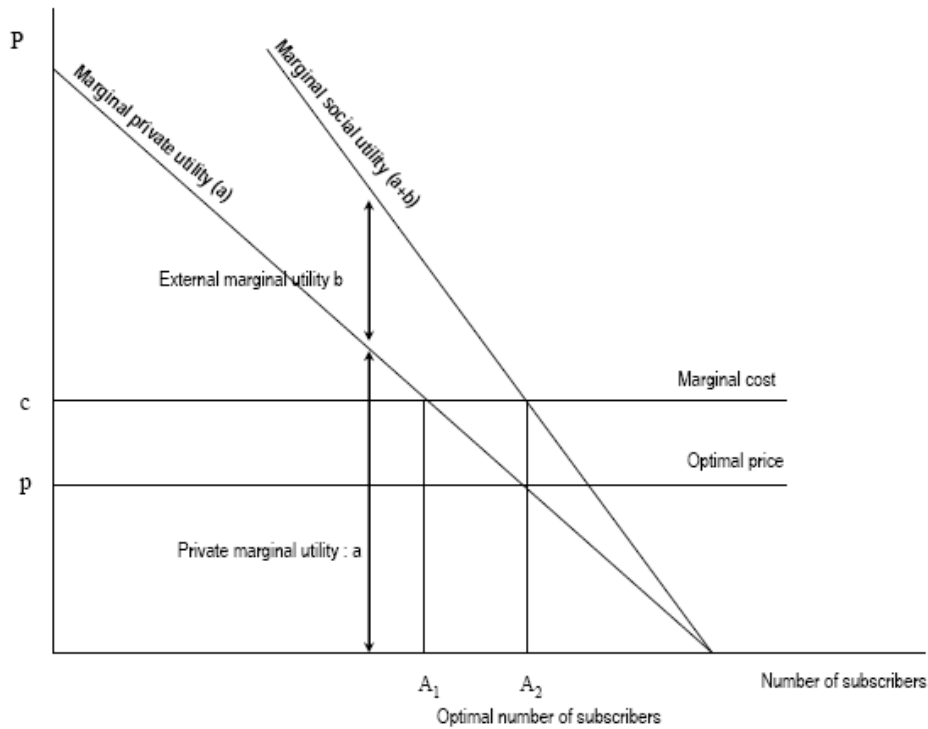


FIGURE 1. Network effect subsidies

three curves. The lowest one corresponds to demand for broadband services without copyright infringing means (P2P). It is convex because, when this service is launched in the early 2000's, most of the broadband non-infringing applications concern business uses. The residential consumer has little utility for these if he can get dial-up services.³ The middle curve reflects the marginal individual utility for broadband including P2P applications. It is distributed just as in Figure 1. The top curve again represents the marginal social utility which is higher than the others because broadband services pull the adoption of digital standards in telecom networks, terminal equipment and digital file formats.

Without P2P applications, the price required to reach the optimal number of subscribers (A_2) would have been p' . Therefore the amount of the subsidy needed to reach that point would have been $(c - p') \times A_2$. Thanks to P2P, however, this subsidy is only $(c - p) \times A_2$, meaning that P2P reduces that cost by $(p - p') \times A_2$. The beauty of P2P is that, not only does it decrease the subsidy that is required

³Access to content through the Internet was a commercial argument of the ISP even though there was almost no content legally available. In France, broadband services were sold at double the price of dial-up services. For most of the residential subscribers, this difference was justified by the access to free content (Bomsel, 2007).

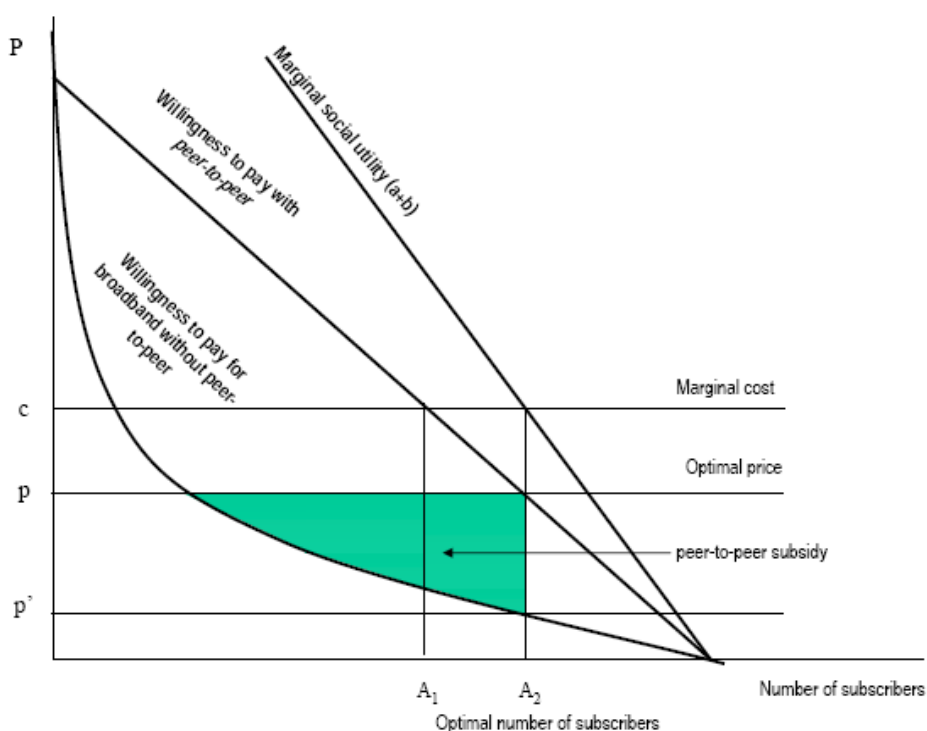


FIGURE 2. The peer-to-peer subsidy

to be paid by the Internet industries, but also the subsidy in kind is discriminated among the consumers having the lowest willingness-to-pay for legitimate services. In consequence, the social cost of that subsidy, as represented by the shaded area, is lower than what the Internet industries would have had to pay to reach the same demand optimum.

The P2P subsidy enables all the Internet industries – from the chip manufacturer to the web search engine – to boost their roll-out. It is borne by the content industry which sustains the negative externality of copyright infringement. As long as the benefits of the Internet roll-out overwhelm the negative externality of copyright infringement, there can be a social consensus on this means of subsidizing the rollout. However, once the roll-out is over, the benefits of the subsidy saturate while the costs of infringement keep increasing.

3.3. Free riding in the copyright vertical chain. By allowing transactions between the owner and market intermediaries, copyrights shape the vertical relations linking the right holder to the final consumer. If the final consumer is allowed to free-ride on copyright, then all intermediaries providing access means will have

an incentive to help him doing so. This situation propagates free-riding in all the vertical relations downstream of the right holder. In the music market, equipment manufacturers have offered products that allow the consumer to read circumvented files. Simultaneously they have engaged in a standards war on encryption software or DRMs (Farchy and Ranaivoson, 2005).

This war was made possible by the fact that MP3 players provided utility in storing and reading unencrypted files, many of which were accessible through file-sharing. Poor copyright enforcement has encouraged each equipment manufacturer to use the consumer's free-riding on copyright as a means to push his own encryption standard. It eventually resulted in the abandoning of DRMs although they were the main tools designed to protect copyrights envisaged by the digital copyright laws (Geffroy, 2009).

New copyright distribution systems are supposed to bring better discrimination since they allow consumers to be reached who were until then not interested. It is particularly true in the case of Internet which brings new selection and access means. However the use of digital devices to circumvent copyright also allows the final consumer to resell or share the product at a very low marginal cost in a non-degraded format. So while, on the one hand, it is considered that digital distribution may facilitate versioning and price discrimination (Varian, 2000), on the other, the circumvention of copyright appears as a major obstacle to this benefit.

Moreover any new distribution system may also cannibalize existing markets: consumers can switch from one version to another. For example, the advent of television led to an irreversible reduction in theatrical revenues. For this reason, the level of competition changes – and generally increases – when a new distribution system appears. However, if the new entrants stimulate free-riding, the distributors that keep enforcing copyright are disadvantaged by this unfair competition. Not only the right holders encompass a negative externality, but the distorted competition amongst content distribution systems generates incorrect investment signals. It deters investment in loyal distribution systems and creates incentives to innovate in circumvention technologies.

This situation challenges the cost-benefit analysis of copyright. On the one hand, digitization allows the roll-out of a new system bringing substantial potential benefits, and on the other, it raises sharply and possibly permanently the enforcement cost of the copyright. During the roll-out phase, politicians are more sensitive to the positive externalities of the Internet than to the negative of massive copyright infringement. And right holders embark in lawsuits against infringers which may prove more symbolic than effective (because of their cost) to enforce the institution.

However, once the new system is rolled-out, the industry enters another phase. The positive externalities of the new network tend to saturate. The negative externalities of massive infringement are peaking. Internet access suppliers can hardly get new subscribers and rather aim at raising their average revenue per user. Copyright enforcement, the costs of which have risen sharply during the former phase, becomes then a key condition to reap the benefits from the institution.

4. COPYRIGHT ENFORCEMENT IN A DIGITAL ENVIRONMENT: THE SCOPE OF A GRADUATED RESPONSE.

We assume in this section that the roll-out of broadband access is over. In such a context, right holders have stronger arguments to defend their views on copyright. However the Internet players are still not incited to prevent free-riding while right holders lack the means to enforce their copyrights.

4.1. A critical view on the existing legislation against online piracy. The adoption of a new set of laws shows that the environment for copyright has changed with the digitization and the spreading of the Internet. The *Digital Millennium Copyright Act* in the USA in 1998 and the *European Union Copyright Directive* in the EU in 2001 have both been introduced as the implementation of the 1996 *World Intellectual Property Organization (WIPO) Copyright Treaty*. Both notably led to higher fines for counterfeiters and prohibited circumvention of technological measures for the protection of works (Article 11 of the WIPO Treaty; Section 103 (17 U.S.C Sec. 1201(a) (1)) of the DMCA; European Directive 2001/29/EC). In 2006, France adopted the law on authors' rights and related rights in the information society,⁴ which stands as the implementation of the EU Copyright Directive.

Although these laws are more repressive than the previously existing ones, they have not succeeded in preventing piracy. The main reason is that the extension of sanctions to DRMs' circumvention is insufficient to deter Internet users from illegally downloading content. In fact this extension did not raise the perceived cost of infringing for the user. This cost depends on the probability of being caught and the fine associated to being caught. The behavior of the internet user is determined by the expected fine – the perceived probability of being caught multiplied by the amount of the fine.⁵ The laws focused on the second aspect. As a result only a few cases (compared to the number of infringers) were brought to courts.⁶ Not

⁴Droit d'Auteur et Droits Voisins dans la Société d'Information.

⁵The expected fine is important only if the user is risk neutral, which is unlikely to ever be the case. Most households would be risk averse, and infringing activists might be risk seekers. We use expected values as a simplification.

⁶For example in the USA 30 000 Internet users have been prosecuted. Most cases have led to out-of-court settlements for a few thousands dollars. One case ended in front of a jury for 220 000 dollars penalty but the judgment runs for appeal.

only has it not been profitable for the claimants but while the content industries wanted these cases to be threatening, they only appeared as unfair and pointless. And piracy in general did not decrease.

In fact, such sanctions may prove to be a deterrent only if they apply in last resort against a few habitual infringers. The more numerous the infringers are, the less efficient the sanction is. Therefore a solution is for the right holders to find a way to threaten a greater number of people, possibly to deter infringers before they get fined. This can be achieved through two means, either directly by the ISP or indirectly through the application of the law.

In the USA, the concentration of the studios and the dominance of cable in supplying broadband services have allowed right holders to oblige their distributors to cooperate in tracking and annoying infringers (by sending warnings and suspending the service). This can be achieved through incentives written into distribution private contracts. Some loopholes still remain like the coverage of a University campus where infringing students are difficult to track, or the competition with DSL providers who are less dependent than cable operators on distribution contracts. But by and large, the Coase theorem could apply, meaning that right holders and distributors might agree together on ways to master the piracy externalities.⁷ Or that concentrated right holders can directly negotiate with suspected infringers under the threat of the law to be applied in last resort.

In countries like France (as in Canada, New Zealand and in many European countries), the right holders are highly scattered and the telecom industry leads the broadband roll-out. As a result, the players of the Internet sector (notably the ISPs) cannot be forced to cooperate with right holders to fight against piracy. First, they do not want to annoy the customers who they have implicitly encouraged to free ride. Second, they do not want to lose markets to the benefit of their free riding competitors. And third, the law grants them safe harbors making them non-liable for how the consumer uses their service. While it may be that the major ISPs would be ready to operate in a piracy free environment, they do not want to cooperate spontaneously with right holders. We show how the French voluntary agreement aims at achieving their cooperation.

4.2. Analysis of the French voluntary agreement. We first briefly describe the agreement before analyzing its economic aspects. In the end, we show that the agreement aims at having intellectual property rights enforced at the consumers' level while avoiding free-riding on the ISP market.

⁷However, in a decision of August 2008, the FCC has prevented Comcast from spoiling the service of customers suspected to be massive copyright infringers. This decision was justified by the wish to preserve network neutrality, e.g. to prevent the content owners from interfering with the management of the network infrastructure (Sieradzki and Maxwell, 2008).

The French voluntary agreement aims at enforcing copyright law in the digital environment. It was signed in November 2007 at the Elysée Palace by the five major Internet access providers and thirty-five institutions representing the music and audiovisual industries. The agreement has two main aspects. First it insists on the need to promote a legal offer. Among the proposals are a change of the regulated release windows for movies or a reduction of the value added tax for all cultural goods and services. The second aspect is a scheme of graduated response to piracy over the Internet. The economic goal of the agreement is explicitly to raise the cost of piracy for the Internet user.

According to that scheme, the infringers will be tracked by the right holders over the Internet. Then a watchdog will relay their warnings through the ISPs to the suspected infringers. The watchdog is named HADOPI (High Authority for the diffusion of content and protection of rights over the Internet)⁸ and has to be empowered by a law. After two strikes, the ISPs will be requested by the watchdog to suspend and blacklist the detected infringers. An official indicator of piracy will be published every month to assess the efficiency of the scheme. In this framework the watchdog is needed, on the one hand, to enforce ISPs to cooperate with right holders, and on the other, to avoid free riding on the ISP market.

The law was voted unanimously by the French Senate in November 2008 and in a more tumultuous context by the National Assembly in April 2009. However, in June 2009, the Constitutional Court (the French Supreme Court) invalidated the sanction mechanism of the law by ruling that only a court decision could suspend the Internet access of a French citizen.⁹ The law was then changed in order to allow the suspected infringers to be sued in courts. It was re-voted in September 2009 and finally validated by the Constitutional Court. The new procedure, whose implementation will be more costly than the administrative suspension, keeps the principle of graduated sanctions – including access suspension and fines. In the end however it should be more repressive for the infringers. It is estimated that 10,000 warnings should be sent every day while about 50,000 cases will be judged and sanctioned during the first year of enforcement.¹⁰

It is still too early to predict what will be the effects of this law. As far as costs are concerned, the law will obviously generate in the short run new enforcement expenditures. If the law is poorly applied or does not impact consumers' behavior, this money will have been spent for nothing. But if the law deters the consumer from

⁸Haute autorité pour la diffusion des œuvres et la protection des droits sur Internet.

⁹The Government has defended the law by putting forward the artists who are beneficiaries of the rights. By doing so, it has explicitly taken the defense of some notorious owners instead of defending the property institution. This might have influenced the Constitutional Court in its decision to protect the average citizen against the owners' greed.

¹⁰Projet de loi relatif à la protection pénale de la Propriété Littéraire et Artistique sur Internet. Etude d'Impact. June 2009.

free-riding, it will restore copyright proof investment signals both in the creative industries and in their distribution networks. In particular, the law will generate administrative costs for the ISPs through the relaying of the warnings and the implementation of the eventual suspension. Those costs will create a market for technical solutions (such as watermarking, filtering or monitoring) to prevent the consumer from the disutility of being sued. As a consequence, the restoring of a credible infringing cost for the consumer would pass the copyright enforcement costs onto the industry. The enforcement costs should then be progressively reduced thanks to piracy proof incentives in the vertical chain. In other words, the graduated response mechanism operates like an internalization of the piracy externalities, in a way close to the ‘polluter pays’ principle.

5. CONCLUSION

Copyright is a property right institution that shapes the organization of all creative industries. The digitization of copyrighted goods and their dematerialized distribution should bring new benefits thanks to more efficient distribution, but also new costs in enforcing copyright laws. Digitization and dematerialization have made it very difficult to exclude consumers from the consumption of content. As such they have led to the development of massive online piracy, so massive that the traditional means of heavily fining copyright infringement appears insufficient: it is too costly and more and more it is seen as unfair by the society.

As we have argued, such a situation is made possible by the behavior of the actors of the broadband industries. On the one hand, piracy promotes the roll-out of their infrastructure, equipment and services; on the other hand, every player of the chain fears losing market shares by punishing its consumers when they are infringing. As a consequence, incentives arise all along the vertical chain to let the consumer free ride on copyright. Innovation signals can be then distorted in the sense that copyright infringement may drive industrial research and development, with the consequence of increasing more and more copyright enforcement costs. In other words, as long as the consumer can free-ride on copyright at nearly no cost, the whole copyright institution and the growing benefits it can bring to creative industries are threatened by the powerful incentives given to new infringing means.

Graduated response mechanisms are designed to increase the expected value of the sanction – a fine, an Internet suspension, a jail sentence – by making it cheaper to apply and socially more balanced. Their objective is therefore to increase the expected cost of infringing for final users. Such mechanisms help to internalize copyright enforcement within the Internet industry. The cost of piracy at the consumer level should create new signals for innovation within the network architecture. The Internet players in charge of implementing the graduated response will invest in

technical solutions – tracking, filtering, monitoring copyrighted files, etc. – in order to decrease the administrative costs. Such solutions will challenge the network neutrality doctrine which advocates innovation to be more driven by capacity increase than by usage valuation (Shelanski, 2007). And therefore, it is probable, as shown by the 2008 FCC decision against Comcast (Sieradzki and Maxwell, 2008), that copyright enforcement will be at stake in the network neutrality debate. However, it is not only copyright enforcement but, more generally, the internalization of all the negative externalities created by the development of the digital networks which are now to be considered in this debate.

Graduated response can be implemented through private contracts when the market power of the right holders is strong enough to prevent all distributors to free ride. When this is not possible a voluntary agreement between major industrial players, possibly constrained by law, may stand as a solution. The French voluntary agreement on copyright is an application of this approach. It is all the more interesting as an object of research that it is now examined by other European countries.

REFERENCES

- Arrow, K.** (1962), “Economic welfare and the allocation of resources for invention”, in Nelson, R. (Ed.), *The Rate and Direction of Inventive Activity: Economic and Social Factors*, Princeton: Princeton University Press, pp. 609-626.
- Benhamou, F. and J. Farchy** (2007), *Droit d’auteur et Copyright*, Paris: La Découverte, Coll. Repères.
- Besen, S.** (1987), “New technologies and Intellectual Property: An Economic Analysis”, RAND Report, N-2601-NSF.
- Blaug, M.** (2005), “Why Did Schumpeter Neglect Intellectual Property Rights?”, *Review of Economic Research on Copyright Issues*, 2(1); 69-74.
- Bomsel, O.** (2007), *Gratuit! Du Déploiement de l’économie Numérique*, Paris: Editions Gallimard, Coll. Folio Actuel.
- Bomsel, O. and A.G. Geffroy** (2006), “DRMs, Innovation and Creation”, *Communications & Strategies*, 62; 35-47.
- Burnett, R.** (1996), *The Global Jukebox. The International Music Industry*, New York: Routledge.
- Caves, R.E.** (2000), *Creative Industries: Contracts Between Art and Commerce*, Harvard: Harvard University Press.
- Coase, R.** (1960), “The Problem of Social Cost”, *Journal of Law and Economics*, 3; 1-44.
- Demsetz, H.** (1967), “Toward a Theory of Property Rights”, *The American Economic Review*, 57(2); 347-59.

- Demsetz, H.** (1970), “The Private Production of Public Goods”, *Journal of Law and Economics*, 1(2); 293-306.
- Farchy J. and H. Ranaivoson** (2005), “DRMS: A New Strategic Stake for Contents Industries: The Case of the Online Music Market”, *Review of Economic Research on Copyright Issues*, 2(2); 53-67.
- Geffroy, A.G.** (2009), *Splendeurs et Misère des DRMs Dans la Distribution de Musique en Ligne*, PhD Thesis, MINES ParisTech.
- Gordon, W.J.** (1982). “Fair Use as Market Failure: A Structural and Economic Analysis of the ‘Betamax’ Case and Its Predecessors”, *Columbia Law Review*, 82(8); 1600-1657.
- Katz, M. and C. Shapiro** (1994), “Systems Competition and Network Effects”, *Journal of Economic Perspectives*, 8(2); 93-115.
- Landes, W.M.** (2003), “Copyright”, in Towse, Ruth (Ed.), *Handbook of Cultural Economics*, Cheltenham: Edward Elgar, pp.132-142.
- Landes, W.M. and R.A. Posner** (1989), “An Economic Analysis of Copyright Law”, *Journal of Legal Studies*, XVIII; 325-363.
- Liebowitz, S.J. and S.E. Margolis** (2002), “Network Effects”, in Cave, M.E. et al. (Eds.), *Handbook of Telecommunications Economics*, Volume 1, Elsevier Science B.V, p.p. 75-95.
- Plant, A.** (1934), “The Economic Aspects of Copyright in Books”, *Economica*, 1; 167-195.
- Ranaivoson, H.** (2003), *La Gestion du Patrimoine Musical. La Concentration du Patrimoine Musical et les Stratégies des Majors de la Communication*, Mémoire de DEA.
- Rohlf, J.H.** (1974), “A Theory of Interdependent Demand for a Communication Service”, *Bell Journal of Economics and Management Science*, 5(1); 16-37.
- Shelanski, H.** (2007), “Network Neutrality: Regulating With More Questions Than Answers”, *Journal of Telecommunications and High Tech*, 6; 23-40.
- Sieradzki, D. and W. Maxwell** (2008), “The FCC’s Network Neutrality Ruling in the Comcast Case: Towards a Consensus with Europe?”, *Communications and Strategies*, 72; 73-88.
- Varian, H.R.** (2000), *Intermediate Microeconomics: A Modern Approach*, New York City: W.W. Norton & Company.
- Varian, H.R.** (2005), “Copying and Copyright”, *Journal of Economic Perspectives*, 19(2); 121-138.
- Watt, R.** (2000), *Copyright and Economic Theory: Friends or Foes?*, Cheltenham: Edward Elgar.

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