

P2P AND PIRACY: CHALLENGING THE CULTURAL INDUSTRIES' FINANCING SYSTEM

JOËLLE FARCHY

ABSTRACT. Digital technology makes sophisticated means available to the general public for copying works with an equal level of quality to the originals and at increasingly lower prices. Unrestricted copying deprives producers and creators of a share of their potential earnings on the sale of originals. The whole of the traditional system for financing cultural creation could be at risk. There are three mainstays to the conventional financing system: the production of private goods, direct appropriability of revenues, temporary monopoly of exclusive rights. Each one has been called into question by P2P. Content has properties that are growing ever more similar to public goods, raising the question of whether public financing might be possible. Direct appropriability in customary markets is becoming ever more difficult, raising the question of whether new forms of appropriability might be possible, both direct and indirect. Exclusive rights are becoming increasingly ever harder to enforce, raising the question of other possible institutional solutions. To date, the solutions geared to tackling these issues have been largely defensive, and aimed at maintaining the old system's core characteristics (direct appropriability and exclusive rights) through DRM. However, a brief foray into economics literature can reveal some original alternatives solutions even if each one has its advantages and its drawbacks.

1. INTRODUCTION

Digital technology makes sophisticated means available to the general public for copying works with a level of quality that is equal to that of the originals and at increasingly lower prices. The music market has been hardest hit by the growth of P2P, and now it is the turn of the movie industry. Unrestricted copying deprives producers and creators of a share of their potential earnings on the sale of originals. The whole of the traditional system for financing cultural creation, based on consumers purchasing IP-protected works, could be at risk.

In recent years, efforts to tackle these problems have mainly revolved around legal and technical solutions:

- : on the legal side: the strengthening of exclusive rights in international law and a proliferation of lawsuits brought against Internet surfers. Recent international negotiations reflect a mistrust of licences. The TRIPS Agreement, for instance, rarely allows exceptions to the general rule of exclusive rights. European Union directives have also settled for the exclusive rights option. Meanwhile, the music and film industry majors have been orchestrating bitterly hostile "information" campaigns (especially in the United States, in France and in Germany) and suing ever-larger numbers of ordinary users;
- : on the technical side: digital technology provides the content industries with the means to be able to pay the artist an amount that tallies exactly with

the service purchased. Content protection methods centre on physical digital goods (e.g. DVDs) and the networks, via Digital Rights Management systems. DRMs have wider functions than such conventional protection methods as pay TV, user licences and the necessary tracing for recovering revenue. They represent the technical equivalent of exclusive rights. Technology both permits and prevents the infringement of intellectual property rules.

However, a brief foray into economics literature can reveal some original alternative solutions, even if they are not all relevant. In France, Bomsel (2003) suggests segmenting the Internet access market by compelling providers to adopt an asymmetrical pricing system (price discrimination) for high-speed access as a disincentive to the uploading of protected material. A basic distinction is drawn between uploading (necessitating disincentives) and downloading. This solution would help further the development of paying for content usage and helping to perpetuate exclusive rights. But it could never help industry players adapt to the new economic realities. The main services made possible by high-speed access – network games, instant messaging, Internet telephony, videoconferencing, distance learning, telemonitoring, etc. – will continue to grow ever more reliant on uploading. Perfectly lawful exchanges can take place on P2P networks: distributing Linux-based products, disseminating non-copyrighted content or sending photos/videos to friends. Adopting a solution of this kind would ultimately inhibit interactivity on – and, hence, deplete the distinctive nature and vitality of – the Internet. To ensure greater access to information and knowledge, uploading must be encouraged rather than penalized, and surfers must not be reduced to the role of mere consumers. Furthermore, there are no guarantees that content producers really are benefiting from the access providers' additional revenue. In the final analysis, that revenue hinges not on the cultural content's inherent values, but on the random pricing of high-speed access, whose prices are most likely set to fall in the future.

A purely defensive approach (strengthening exclusive rights) appears far less urgent when it can be demonstrated that:

- purely technical solutions are often undermined by a host of risks (legal, economic, social and cultural); all they do is strengthen the traditional model for distributing cultural content, without making allowance for the specific features of the networks (as a means not just of distribution but also of exchange);
- alternative courses of action can minimize the negative impacts of the new practices in the consumption of goods throughout the cultural industries. It would appear unrealistic to seek to curb these new social practices for they now involve not just a few isolated individuals on the fringes of society, but many millions of surfers.

Rather than elaborate on DRM-related issues, this article will concentrate on the alternative economic routes that can be taken to finance the production of cultural works. There are three mainstays to the conventional financing system:

- the production of private goods;
- direct appropriability of revenues;
- temporary monopoly of exclusive rights.

To clarify the debate and grasp the ongoing changes, let us single out these three elements, each of which seems threatened by the spread of P2P.

2. INCREASINGLY PUBLIC GOODS

One aspect of the cultural industries requires special protection: prototype production, which involves high fixed costs. Cultural goods are expensive to produce but cheap to reproduce, as in the case of information goods (Arrow, 1962; Varian and Shapiro, 1998). Publishing a book or making a film can cost thousands or millions of euros, but the goods can be printed or copied on a DVD for next to nothing. Producing a cultural good involves two kinds of costs: high fixed costs on the actual creation side, and far lower additional costs for the copying (Landes and Posner, 1989). The usual argument throughout the economic literature on innovation, knowledge and ideas-based goods is that in the absence of a proper protection system, the market fails to produce such goods in sufficient quantity (Arrow, 1962; Aghion and Howitt, 1992). The solution is to give the producer temporary monopoly power. Also, in the cultural industries, IP is an incentive to produce; the aim of copyright is, as the name suggests, to protect original authors and producers from the free riders indulging in unfair competition by copying a good without contributing to the fixed costs. In giving original producers temporary monopoly power, IPR provides a solution to the risk of under-provision and encourages them to keep on producing. This positive effect on social welfare has a downside: copyright also encourages rent-seeking behaviour and creates barriers to distribution. Choosing the optimal level of IPR protection is a trade-off between underprovision and underutilization (Arrow, 1962; Landes and Posner, 1989).

Digital technology only accentuates this common feature of the cultural industries: once the content has been produced, it costs next to nothing to make an extra copy via the Internet. The real difference is that it is no longer just a matter of a few isolated producers being free riders, but masses of consumers as well. Moreover digital technology permits both the marginal cost of reproduction and the marginal cost of distribution to be reduced (Varian and Shapiro, 1998). When digitized cultural goods originally produced privately are passed around on the P2P networks, they increasingly take on the properties of public goods.

Samuelson (1954) contrasts private goods with public goods (collective consumption). Since Head (1962), it has become common to associate public goods with the properties of non-rivalness and non-excludability. With non-rivalness, one individual's consumption of a unit of the good does not diminish the quantity consumed by another. With non-excludability, individuals not contributing to the financing of a good cannot be prevented from gaining access to it (for want of legal or technical protection). These properties are conducive to market failure problems. Non-rivalness involves zero marginal costs for satisfying an additional consumer, so specific pricing is necessary. It is inefficient to try to make consumers pay when they are relatively unwilling to do so as it costs nothing to give them what they want. So there is a risk of a sub-optimal rationing of consumption. Non-excludability gives rise to problems in regard to the incentive to produce large quantities of a good that consumers can use without contributing to its financing; private producers know that they will be unable to recoup their investment. These two types of market failure provide the economic grounds for an as yet unspecified form of public intervention.

In addition to audio-visual programs not requiring a decoder (non-rival, as it is impossible to deny access to viewers once they have bought a television set), the cultural industries produce mixed goods that are rival (CDs, DVDs) or partially

non-rival (concerts, movie theatre screenings), but where access can be denied to non-paying consumers (encoded television). Such goods can therefore be produced as private goods. But on P2P networks, cultural goods increasingly take on the properties of public goods (Rayna, 2002): consumers can have their own unit of the good at zero marginal cost by copying it (non-rivalness); or they can always gain access to it through other consumers (non-excludability). It becomes very difficult to enforce private property rights (to deny certain consumers access) in these conditions.

Digital movies and music tend to be public goods (non-rival and non-excludable), even though they may not exactly be considered as such. Their level of “publicness” depends on many such factors as technology and excludability or the behaviour of consumers and firms (Rayna, 2002). They therefore face many of the same problems as knowledge, information and ideas. Not the least of them is the problem of financing in the digital world. Various institutional solutions are possible. Despite the publicness of digital goods, some economists argue that these could include a solution involving neither IPRs nor state intervention: digital goods are only quasi-non-rival – they cannot be consumed and copied at the same time – so it takes time, depending on the copying technology, for a new digital good to spread among the consumers. The first unit of a digital good is a private good, and its price can be higher than zero. As long as it is possible to price ideas (because of non-rivalness), IPR protection is useless, and perfect competition will lead to an efficient supply of innovation (Rayna, 2004; Boldrin and Levine, 2002).

3. NEW CONDITIONS OF ECONOMIC EXPLOITATION: DIRECT AND INDIRECT APPROPRIABILITY

Ironically, P2P networks are themselves the victims of the free-riding behaviour that they inflict on the cultural industries (Chantepie, 2004). Many users download goods without uploading anything in return. This will eventually mean the death of the system. Many economists have studied the possibility of incentive mechanisms designed to encourage sharing. Despite access to inputs being free of charge, the economic efficiency of P2P networks depends on complex mechanisms of that kind (Lai et al., 2003; Ranganathan et al., 2003). And their profitability hinges on indirect financing. Kazaa may distribute its software free of charge – to content suppliers and users – but in the eyes of its shareholders it is part of a highly profitable economic model based on banner advertising and the sale of ancillary services. Kazaa secures much of its revenue from selling user data to spamming companies, and not a penny of the profits is paid back to the content industries.

3.1. Reconsidering some aspects of direct appropriability. The impact of P2P networks on content industries is not clear-cut. A strong correlation has been noted in the United States, Germany, the United Kingdom or, more recently, France between falling CD sales and the growth in high-speed Internet connections or sales of blank CDs (SNEP, 2003). Actual losses, however, are hard to assess. The Recording Industry Association of America (RIAA) and other trade groups base their estimates not on net losses but on shortfalls in earnings. Not all downloaded content has been paid for, of course. Piracy is just one of the many factors behind the fall in record sales. Others include high prices and the fact that the CD, a product launched in the early 1980s as a means of revitalizing the market, is nearing

the end of its life cycle. According to Curien and Muet (2003), there is no general and direct macro-economic correlation between record sales and the number of computer-equipped households: copying has not replaced the purchasing of originals in countries such as Finland or Norway, where an extremely large number of households is equipped with computers, while sales have plummeted in Spain where the computer penetration rate is still very low. Studies seeking to gauge the impact of P2P on recorded music consumption often arrive at conflicting conclusions (for more finely balanced conclusions, see Boorstin, 2004; Liebowitz, 2003a; Liebowitz 2004; Molteni and Ordanini, 2003; Peitz and Waelbroeck, 2004; Zentner, 2004).

P2P networks do not always have a negative impact on the content industries: they also help raise consumer awareness and, in drawing attention to and promoting a few titles, rebalance the structure of supply (Zhang, 2002). Molteni and Ordanini (2003) show how P2P has given rise to new patterns of consumption with respect to experience goods – where satisfaction is only registered once the good has been consumed – and is leading the way in terms of changing tastes. The effects of P2P networks can also be mixed throughout the music market: negative in terms of the artists losing royalties paid to them by producers; but also positive in terms of giving them greater exposure and, hence, drawing more punters to their concerts (Krueger, 2004). Artists react to piracy in a far greater variety of ways than the producers (Gayer and Shy 2004). They are not all affected in the same way. When an Internet surfer downloads songs by a superstar, it is presumably not so much to discover their work as to avoid the cost of buying the records. Lesser-known artists, on the other hand, have a great deal more to gain from the promotional effects. Copying has been found to have a very positive promotional effect on the cultural industries. New patterns of consumption are emerging, e.g. testing a musical good on the Internet before buying it. P2P can have a positive impact on CD sales by feeding the consumer's general addiction to music, and/or increasing the chances of him/her discovering a particular artist.

These positive effects can be seen in the light of the relatively long-standing concept of superdistribution (Kawahara, 1990). Superdistribution expands the modes of distribution by restricting not the copying but the utilization of works. It combines exclusive rights backed by technical protection with the network effects of P2P (Rosenblatt, 2003). Superdistribution can also come into effect through compulsory licensing. Such commercial strategies, which are suited to the “word of mouth” effect of P2P (inherent to the logic of sharing), are conducive to direct appropriability of revenues. In 2003, for example, the French singer MC Solaar distributed 300,000 extracts from his album that could be listened to until 1 December, the date of the album's release. To boost the promotion effect, the extracts could be e-mailed *ad infinitum*.

On the subject of losses, while the sharing of copyrighted works may have a negative impact on sales of originals – which, as we have seen, is very hard to gauge – it can affect company profits in many, largely undetermined ways (Meurer, 2003). Indeed, there are ways of offsetting losses or capitalizing on changes in consumer behaviour in order to develop new markets.

3.2. Opening up new markets. The existence of P2P makes direct appropriability in the customary market (CDs, DVDs) more complicated. But at the same time it can potentially help expand the music sales market. As with superdistribution, legal supply on the Internet is conducive to direct appropriability.

Attempts by the majors to charge consumers for content previously available to them for free have famously fallen short of the mark. Their reactions have been rather too slow to enable them to compete with the free sites, whose success is also attributable to diversity of supply. Setting aside the difficulties, however, legal fee-paying services have a number of features in their favour: e.g. being more user-friendly than relatively disorganized P2P networks; offering consumers greater flexibility and a fuller range of services, etc. Also, with P2P, users are subjected to excessive spamming, the risk of viruses, spyware, fakes, dubious quality files, high transaction costs, etc. Legal services can really show differentiation on all of these points.

The film economy has changed profoundly over the past few decades. After suffering from the competition of televised output in the 1960s and 1980s, cinemas in the European Union have finally managed to find ways of attracting audiences of close to a billion people a year through product differentiation (Farchy, 1999; 2004). Furthermore, the proliferation of broadcast media has greatly increased the size of the film market. Europeans are spending infinitely more than during the golden age of cinema-going in the 1950s, a time often remembered with nostalgia. As with the P2P networks of today, the invention of the cassette – first audio, then video – was very badly received by the record and film industries respectively, which feared an increase in unpaid-for copying. In 1982, Jack Valenti, president of the powerful Motion Picture Association of America, solemnly warned the United States Congress of the dangers of video cassettes and recorders, saying that “the VCR is to the American film producer [...] as the Boston strangler is to the woman home alone”. Having overcome their initial hostility, the Hollywood majors now glean most of their turnover from video sales.

To convert users into paying consumers, the market can be segmented by means of versioning: releasing downmarket versions of limited quality, quantity or potential while offering premium goods at higher prices. Mixed paying and non-paying alternatives are having to be developed; free Internet connections have not stopped large numbers of users from paying for high-speed access; and the existence of public television stations has not put people off subscribing to multi-channel cable or satellite. We can suppose that new markets, then, definitely will emerge. But given the competitiveness of free services, Internet surfers will probably only agree to pay for high value-added goods.

3.3. Offsetting losses due to copying: indirect appropriability. Economists have been discussing the effects of unauthorized copying on social welfare for years. Producers can indirectly appropriate revenue from users who are not the original purchasers. As long ago as 1985, Liebowitz described how producers could resort to price discrimination, charging libraries more for the purchase of copyrighted works – books and journals – in order to offset future losses due to photocopying (cross subsidies between consumers). “Although it is often suggested that copyright is required if creators of intellectual products are to be able to appropriate revenues from users of their products, copyright is only one of several possible methods whereby authors or publishers can appropriate revenues from those who use intellectual properties [...] Another potential form of appropriation [...] concerns the ability of authors to appropriate revenues indirectly from users who do not directly pay authors for the right to use their creation.” (Liebowitz, 1985, p. 947). Appropriability will now be considered direct when the user is the purchaser (thanks

to IPR or technical protection) and indirect when the user does not contribute to financing.

Selling complementary goods and services emerges as the most common indirect appropriability mechanism for offsetting losses. Debate on the subject dates back to Plant (1934, 1953), Breyer (1970) or Novos and Waldman (1984). A good can be copied and distributed free of charge or at a loss when it can only be consumed using equipment that is profitable to produce. The price of the equipment will include that of the copied good (cross subsidies). In the cultural industries, methods of indirect appropriability through complementarity have been limited save in the case of vertical integration between the music industry majors and the copying equipment manufacturers (Sony). Until recently, Sega used to produce both video games and consoles. Meanwhile, Apple, the newcomer to the sector, has experienced rapid success with its online music site, iTunes Music Store. The site itself may be far from profitable, but for Apple it serves chiefly as a means of selling the iPod digital music players with which to listen to tracks purchased through iTunes.

Losses are also offset through network effects. Copying generates positive network externalities. It can therefore have a positive impact on the distribution of goods to consumers and on the revenues of copyright holders (Conner and Rumelt, 1991; Takeyama, 1994; Shy and Thisse, 1999). Unauthorized copying of video games and utility software gives rise to significant network effects and enables some companies to gain a sizeable share of the market. File sharing via P2P definitely does generate network externalities: a P2P site's usefulness increases with the number of surfers exchanging files. But these network effects do little to create irreversibilities in regard to the purchase of specific goods and services. Unlike in the case of software, when there is competition between works it can hardly be equated with a standards war. A well-known musical group does not need to create a fan base but to appropriate short-term revenues for each work produced.

Indirect appropriability in the market goes hand in hand with indirect appropriability in the realm of public redistribution.

4. INSTITUTIONAL FRAMEWORK: CHALLENGING EXCLUSIVE RIGHTS

4.1. Institutional framework without IPR.

4.1.1. *Private contracts.* Breyer first argued the case for abolishing copyright and forming contract-based clubs of voluntary contributors to finance cultural goods, as in the case of public goods, in a groundbreaking article released as long ago as 1970. It is an idea that, with the development of digital technology, is generating fresh interest among economists (Kelsey and Schneier, 1999; Harrison, 2002). At a broader level, many economists – the relevance of whose views shall not be discussed here – argue that a world of contracts could ultimately replace intellectual property rules in the digital environment (Friedman, 1996; Dam, 1999). The efficacy of such arrangements would be ensured by content protection technologies geared not to toughening up IPR enforcement but to protecting the producers' investment. Digital technology makes it possible to develop new ways of excluding the consumer by means of contracts, i.e. new alternatives to IP rules.

4.1.2. *Direct state production and subsidies.* There is nothing new about seeking state intervention to secure the financing of goods vulnerable to the threat of free riding. In the current context, that intervention can come in a number of specific

institutional forms. David (1993) considers three public answers to the underprovision problems arising due to the special nature of creative works: IPR allocation, of course, but also direct state production (DSP) and subsidies. Although perfectly acceptable in many countries in the realm of scientific research, DSP is far less well received in that of cultural production. Subsidies, a more common solution, are not too highly thought of either. Funded by the state, they generate a great deal of rent-seeking behaviour. Beyond the consequences in terms of taxation and market distortions, they run the risk, as with DSP, of promoting academism in goods created by government fiat. Subsidies, although not applicable for all content, can be an effective means of offsetting the losses of more vulnerable copyright holders. The work of the smallest content producers may be the least copied in the overall copying market, but those producers can still be seriously weakened by copying against which they have no means of protection. Eckersley (2003) shows that introducing subsidies can lead to better results in terms of social welfare than a DRM-backed system of exclusive rights, not least because the cost of DRM technologies is infinitely higher in terms of infrastructure and ensuring security against infringement.

4.2. Non-exclusive IPRs. IPRs can – and increasingly do – provide the framework to support the development of more complex, public forms of redistribution. Some forms of redistribution and compensation have been highly successful. The principles of *droit d’auteur* have two main characteristic features: first, *droit d’auteur* is an exclusive right to authorize or forbid utilization, not merely a right to payment; and second, contrary to most Anglo-Saxon copyright practices, remuneration must be proportional to revenues and not a lump sum. Current practices have watered down these principles, a fact that has largely gone unnoticed.

4.2.1. Compulsory licensing. These past few years have seen the emergence of compulsory licensing as another means of implementing *droit d’auteur*, with which it actually has little in common. Compulsory licensing compels owners to drop their rights in exchange for a lump-sum payment determined by law or by negotiated contract. Remuneration is no longer proportional to revenues, and the owner’s exclusive rights are called into question. Compulsory licensing facilitates access for users by removing the need to seek the author’s consent.

Economists regard this solution as a *bona fide* alternative to copyright in the digital world (Ku, 2002; Nadel, 2003) or as an additional means of, *inter alia*, offsetting losses due to unauthorized copying (Netanel, 2003). Compulsory licensing has many drawbacks. Once remuneration has been collected, the collecting societies have to distribute it among the authors, performing artists and producers, with all the difficulties that that might entail. The licences therefore lead to a build-up of indivisible sums whose allocation is a source of conflict.

Conventional wisdom argues that compulsory licensing represents the most effective way to reward rights owners because prohibitive transaction costs make it impossible to uphold exclusive rights by means of private management or voluntary collective administration. Gallagher (2002) makes a more original case from the point of view of economic incentives. When rights owners have considerable market power, or the duration of rights is extended, the exercise of copyright becomes remarkably owner-biased and fails to fulfil its traditional role of providing an incentive to create and produce. Compulsory licensing can be means of combating such abuses and restoring balance between the various parties.

Whether or not the licensing system in French radio broadcasting should be extended to the Internet is a hotly debated topic. The European Grouping of Societies of Authors and Composers (GESAC) backs an exclusive right to authorize or prohibit utilization and to freely negotiate remuneration. The major record labels and their representatives support that right, and are openly hostile to compulsory licensing on the Internet. Representatives of the performing artists appear much more open-minded, recognizing its potential to secure them a greater share of revenues than is currently the case under contracts negotiated with the majors. Implementing compulsory licensing in the digital world can only work if the cost of identifying the users and rights owners is kept to a minimum. The P2P networks carry films, games, music and more, so all of the various actors must be made to see the potential of this solution and the need to find the right way to redistribute revenues. Who should be granted right of use, for what territory, and on what basis should one assess remuneration and allocation among owners? In the light of the sums allocated under current licences, there are reasons to believe that the cultural industries as a whole would lose out. In some cases, compulsory licensing can be the only means of securing at least some form of financial compensation. Lessig (2002) maintains that a licensing system could have enabled P2P exchanges to generate revenues for authors and producers and stimulated significant growth in the online music market.

4.2.2. *Mechanisms for offsetting losses due to copying.* Lawmakers have dreamed up a variety of mechanisms for offsetting losses due to copying. In virtually every European country, legislation applying first to written work then to music and audiovisual goods has authorized private copying (as an exception to the rule of *droit d'auteur*) in return for a sum paid to the rights owners to make up for lower earnings. It is a very similar mechanism to the US Audio Home Recording Act adopted in 1992. In line with a classic principle from environmental economics – the “polluter pays” – copiers indulging in over-consumption should be made to pay compensation to the original producers, thereby encouraging them to cut down on their copy consumption. There may be clear economic grounds for these various rights of remuneration, but they are radically transforming the exclusive rights-based legal paradigm (without that being the clearly stated aim).

On the Internet, the real problem resides in transfers within the value chain between the content industries and firms – often strangers to the world of culture and communication – that use the content as loss leaders for selling computer hardware, players, high-speed Internet connections or any number of other things. In a similar vein, since the beginning of 2004, a number of French newspapers and magazines have been seeking to boost their profit margins by charging readers a slightly higher price in return for a DVD or CD offered as a “free gift”. The Italian press has sought to do likewise by offering books with newspapers. Since March 2004, Coca-Cola has been giving purchasers of drinks the chance to win vouchers for downloading music to a cellphone. The supposedly free consumption of cultural goods is a largely an illusion since the consumer has already had to make some considerable outlays: subscription fees, connection costs, purchasing equipment, etc. Widespread application of the “loss leader” model gives rise to two sorts of problems: the symbolic downgrading of artistic production and, at an economic level, the need to ensure the transfer from those financing the content to those that are using it.

A good many authors have raised the possibility of introducing taxes to compensate for P2P-based copying: the access providers,¹ telecommunications operators or hardware manufacturers actually benefit a great deal from unlawful downloading, as it enables them to increase traffic, attract new subscribers or sell equipment. A variety of measures can be taken: an uploading tax (Strahilewitz, 2002), a computer hardware tax (Ku, 2002) or a non-commercial use levy (Netanel, 2003), for example.

Introducing new taxes also has its drawbacks. It leads to market distortions: in the case of private copying, it penalizes blank media manufacturers whose goods are often used not to copy protected content but for other purposes that have no adverse effects on sales of originals (compiling and storing personal data or out-of-copyright works). Furthermore, as stressed by Liebowitz (2003b), it raises a number of questions at the practical application level: which ancillary product markets should be taxed? Recording devices, blank media, Internet subscriptions? At what rate of taxation? How can it be made flexible, given that experience has shown how some rates have not moved from their starting level for decades? What kinds of digital goods should be taxed? Film, music, software? Is this solution compatible with international laws? These transfers are the most irreversible option and must be seen as a last resort solution (Liebowitz, 2003b).

4.3. An end to IPRs within the framework of IPRs. The paying public domain and the free movement share the idea that content must be freely accessible.

4.4. The paying public domain. Intellectual property rights are temporary. At the end of a specified period laid down in a country's laws, the works belong to the public domain and can be used both freely and free of charge. The challenge for the paying public domain is to reverse the free-of-charge principle without restricting freedom of use.

The idea of extending IPRs is not new and can be applied to the scenario of a paying public domain for living authors, a concept championed by Victor Hugo in 1878. All works with no direct heirs would enter the paying public domain, and the proceeds would serve to support young authors. The legal arrangements for introducing a paying public domain, a frequently debated subject in France, have remained confined to a few periods (in France) and places (in some african countries) (Chantepie, 2003). Nevertheless, it is an appealing looking system. On the one hand it enables authors to enjoy a more stable source of income than public subsidies or patronage, and represents a possible alternative to the extension of copyright periods (a much-demanded option not at all conducive to securing fair payment for the authors, as the only beneficiaries are their heirs and producers). On the other hand, while the expiration of IPRs should theoretically allow for free and unrestricted access to works, once they are in the public domain it actually has little impact on the price paid by the end consumer for a book or a record, mainly because of persistently high distribution costs. With a paying public domain, the consumer would hardly notice the difference. That leaves the very important matter of an independent publisher or producer's access to out-of-copyright works, which should remain unrestricted in return for a small financial contribution.

¹The P2P networks' success has led to a number of technical problems for the access providers due to the resulting overconsumption of bandwidth and the fact that their networks were not designed to carry such large quantities of data.

4.5. Cooperation-based solutions. Instead of being compelled to surrender exclusive rights by the government in return for compensation via a variety of financial mechanisms, authors can freely choose to relinquish those rights. The “free” movement first emerged in the field of software, underpinned by a philosophy of sharing. By the late 1990s, shareware was no longer a utopian ideal and had proved itself as an efficient means of production (Zimmermann, 1999; Benkler, 2002). Linux now enjoys a sizeable share of the operating systems market – dominated by Microsoft’s Windows – especially in public services and among developers and young Internet surfers. The voluntary “loss” of exclusive rights may only be temporary, but it allows a network of creators to cooperate on “collective” works without each of them having to pay to work on protected material. Contrary to the commonly held view, the free movement does not necessarily mean the death of copyright but a shift of emphasis from the right to prohibit to the right to authorize. Furthermore, sharing does not necessarily mean not having to pay. Shareware can be sold.

Copyleft Attitude and other such movements regard this model as applicable not just to software but also to literature and art. They are now calling for a community of user-creators to be able to take a work and modify, enhance and redistribute it. A clear distinction needs to be drawn between the sharing of works with an author’s consent – where there is interactivity between users and creators – and the sharing of end products among strictly users (Meurer, 2003). The rationale of P2P networks such as Kazaa – with goods produced in a market economy being given away free without the consent of their creators – is diametrically opposed to that of the non-market economic model of free use with authorial consent.

The rationale of sharing is rooted in the fact that artists down the ages have always reprised and been influenced by the ideas of others. The word “author” stems from the Latin “augere” (to increase), which reflects a desire to see one’s work added to a collective whole. In the nineteenth century, Pierre-Joseph Proudhon cited the cumulative nature of the artistic creation process as a means of justifying his opposition to the right of authors to have ownership of their works (Sagot-Duvauroux, 2002). Authors draw freely from the public pool of ideas and rework them to produce something new. Once the new work is published and sold, they lose ownership of it and it becomes the property of the purchaser. When authors decide to publish a work drawing on that pool of ideas, the new work automatically enters the public domain.

Internet-based collective works are bound to grow as a result of the inputs and interactivity of successive user-creators. Furthermore, the nature of the institutional context within which the Internet was first born is not enough to explain the current prevalence of non-market services and the vitality of cooperative behaviour based on the free software model (Dang and Pénard, 2003). The sustainability of that cooperative behaviour will be ensured thanks to the fact that the very structure of the Internet economy is conducive to role reversibility and a lack of a clear dividing line between customers and producers.

The free software movement’s philosophy could be usefully applied to cultural production as long as those taking part continue to do so on a voluntary basis, and as long as that philosophy remains confined to very specific cases: e.g. cooperation-based collective creation, MIT-type productions (whose authors are on a salary) or even the production of works by authors seeking only to make a name for themselves. The free software economic model is built largely on the reputation and

prestige that computer scientists gain in the eyes of their peers, and which subsequently enable them to reach the higher-paid levels of more traditional labour markets. Setting up foundations (cf. Richard Stallman's FSF) or resorting to more atypical forms of financing can bring additional benefits. Advocates of the free software approach suggest that the practice of giving donations when downloading music should be encouraged more widely, introducing an obligation-free social practice as in sectors (e.g. the catering trade) where tipping is a key feature (Samudrala, 2000). The free software philosophy can never under any circumstances be extended to productions where the fixed costs are extremely high (e.g. certain kinds of movies).

5. CONCLUSIONS

The three mainstays of the conventional financing system have been called into question by P2P. Content has properties that are growing ever more similar to public goods, raising the question of whether public financing might be possible. Direct appropriability in customary markets (CD or DVD sales) is becoming ever more difficult, raising the question of whether new forms of appropriability might be possible, both direct (through the opening up of new markets) and indirect. Exclusive rights are becoming increasingly ever harder to enforce, raising the question of other possible institutional solutions, be they private or public, with or without the backing of IPR. To date, the solutions geared to tackling these issues have been largely defensive, and aimed at maintaining the old system's core characteristics (direct appropriability and exclusive rights) through DRM.

However, purely technical, defensive solutions are impractical when it comes to addressing the proliferation of ways in which copyright can be infringed. Companies are eventually going to have to adapt to the in-depth changes taking place in the cultural industries. The role of economists is to help release these issues from the narrow arena of strictly legal and technical solutions.

It is a matter not of two conflicting models (P2P versus DRM) but of a production-remuneration continuum extending from the absolutely free through public forms of redistribution to direct payment by the user. New ways of exploiting works will probably need to be identified; exclusive copyright is just one possible form of remuneration which is well-suited to some types of content but less so to others. DRM-protected exclusive rights are fine for a few market niches: premium content with high fixed costs and an audience that is more than willing to pay. There are no magic solutions. Each has its advantages and its drawbacks, which need to be discussed publicly in a more cool-headed manner. Economics is merely the science of alternative choices.

REFERENCES

- Aghion, P. and P. Howitt** (1992), "A Model of Growth Through Creative Destruction", *Econometrica*, **60**; 323-51.
- Arrow K.J.** (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.
- Benkler, Y.** (2002), "Coase's Penguin or, Linux and the Nature of the Firm", *Yale Law Journal*, **112**.

- Boldrin, M. and D.K. Levine** (2002), "The Case Against Intellectual Property", *American Economic Review*, **92**; 209-12.
- Bomsel, O.** (2003), *Les Enjeux Économiques de la Distribution des Contenus*, Paris, Centre d'Économie Industrielle de l'École Nationale Supérieure des Mines de Paris (available at http://www.cerna.ensmp.fr/cerna_numerique/prog/Contango.htm).
- Boorstin, E.** (2004), *Music Sales in the Age of File Sharing*, PhD Thesis, Princeton University (available at <http://www.princeton.edu/~eboorsti/thesis/Music%20Sales%20in%20the%20Age%20of%20File%20Sharing.pdf>).
- Breyer, S.** (1970), "The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies and Computer Programs", *Harvard Law Review*, **84**; 281-351.
- Chantepie, P.** (2003), *Etat des Lieux des Analyses Relatives à l'Allongement de la Durée de Protection des Droits Voisins*, Paris, Report to the General Inspection of the Ministry of Cultural Affairs.
- Chantepie, P.** (2004), *Analyses Économiques de la Distribution de Contenus Numériques Sur les Réseaux*, Paris, Report to the General Inspection of the Ministry of Cultural Affairs.
- Conner, K. and R. Rumelt** (1991), "Software Piracy: An Analysis of Protection Strategies", *Management Science*, **37**; 125-39.
- Dam, K.W.** (1999), "Self-help in the Digital Jungle", *Journal of Legal Studies*, **28**; 393-412.
- Dand-Nguyen, G. and T. Pénard** (2003), "Economie de l'Internet: Vers de Nouvelles Formes de Coopération", working paper, Université d'été Carry le Rouet.
- David, P.** (1993), "Intellectual Property Institutions and the Panda's Thumb", in M.B. Wallerstein (ed.), *Global Dimension of Intellectual Property Rights in Science and Technology*, Washington D.C., National Academy Press; pp. 19-62.
- Eckersley, P.** (2003), "The Economic Evaluation of Alternatives to Digital Copyright", SERCI Annual Congress, Northampton MA, USA.
- Farchy, J.** (1999), *La Fin de l'Exception Culturelle?*, Paris, CNRS Editions.
- Farchy, J.** (2004), *L'industrie du Cinéma*, Paris, Presses Universitaires de France.
- Friedman, D.** (1996), "A World of Strong Piracy: Promises and Perils of Encryption", *Social Philosophy and Policy*, **13**.
- Gallagher, T.** (2002), "Copyright Compulsory Licensing and Incentives", in R. Towse (ed.), *Copyright in the Cultural Industries*, Cheltenham UK and Northampton MA, Edward Elgar.
- Gayer, A. and O. Shy** (2004), *Publishers, Artists, and Copyright Enforcement*, (available at <http://econ.haifa.ac.il/~ozshy/piracyconflict8.pdf>).
- Harrison, J.L.** (2002), "Online Music: Antitrust and Copyright Perspectives", *The Antitrust Bulletin*, **Summer-Fall**; 465-89.
- Head, J.G.** (1962), "Public Goods and Public Policy", *Public Finance*, **17**; 97-219.
- Kawahara, M.** (1990), "Superdistribution: The Concept and the Architecture", *The Transactions of the IECE*, **E.73**; (available at <http://www.virtualschool.edu/mon/ElectronicProperty/MoriSuperdist.html>).
- Kelsey, J. and B. Schneier** (1999), "The Street Performer Protocol and Digital Copyright", *First Monday*, **4**.
- Krueger, A.** (2004), "The Economics of Real Superstars: The Market for Rock Concerts in the Material World", Princeton University and NBER (available at <http://www.irs.princeton.edu/pubs/pdfs/484.pdf>).
- Ku, R.** (2002), "The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology", *University of Chicago Law Review*, **69**; 263-324 (available at http://law.shu.edu/faculty/fulltime_faculty/kuraymon/Ku-CreativeDestructionofCopyright.pdf).

- Lai, K., M. Feldman, I. Stoica and J. Chuang** (2003), "Incentives for Cooperation in Peer-to-Peer Networks", Workshop on Economics of Peer-to-Peer Systems, Berkeley, CA, June 5-6 (available at <http://www.sims.berkeley.edu/research/conferences/P2Pecon/papers/s1-lai.pdf>).
- Landes, W. and R. Posner** (1989), "An Economic Analysis of Copyright Law, *Journal of Legal Studies*", **18**; 325-63.
- Lessig, L.** (2002), *The Future of Ideas*, New York, Vintage Books.
- Liebowitz, S.** (1985), "Copying and Indirect Appropriability: Photocopying of Journals", *Journal of Political Economy*, **93**; 945-57.
- Liebowitz, S.** (2003), "Will MP3 Downloads Annihilate the Record Industry? The Evidence so Far", in G. Libecap, *Advances in the Study of Entrepreneurship, Innovation and Economic Growth*, JAI Press (available at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID414162_code030627500.pdf?abstractid=414162&mirid=1).
- Liebowitz, S.** (2003), "Alternative Copyright Systems: The Problems with a Compulsory License", SERCI Annual Congress, Northampton MA (available at <http://www.serci.org/2003/liebowitz2.pdf>).
- Liebowitz, S.** (2004), "Pitfalls in the Analysis of file-sharing", working paper, University of Texas at Dallas (available at <http://www.utdallas.edu/~liebowit/intprop/pitfalls.pdf>).
- Litman, J.** (2004), "Sharing and Stealing", Working paper, Wayne State University Law School.
- Meurer, M.** (2003), "Too Many Markets or Too Few? Copyright Policy Toward Shared Works", SERCI Annual Congress, Northampton MA.
- Molteni, L. and A. Ordanini** (2003), "Consumption Patterns, Digital Technology and Music Downloading", *Long Range Planning*, **36**; 389-406.
- Nadel, M.S.** (2003) "Questioning the Economic Justification for Copyright Law's Prohibition Against Unauthorized Copying", SERCI Annual Congress, Northampton MA.
- Netanel, N.** (2003), "Impose a Non-commercial Use Levy to Allow Free Peer-to-Peer File Sharing", Law and Economics Working Paper N°. 009 (available at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID352560_code021130630.pdf?abstractid=352560&mirid=2).
- Novos, I. E. and M. Waldman** (1984), "The Effect of Increasing Copyright Protection: An Analytic Approach", *Journal of Political Economy*, **92**; 236-46.
- Peitz M. and P. Waelbroeck** (2004), "The Effect of Internet Piracy on CD sales: Cross-Section Evidence", *The Review of Economic Research on Copyright Issues*, this volume.
- Plant, A.** (1934), "The Economic Aspects of Copyrights in Books", *Economica*, **1**; 167-95.
- Plant, A.** (1953), *The New Commerce in Ideas and Intellectual Property*, London, The Athlone Press (University of London).
- Ranganathan, K., M. Ripeanu, A. Sarin and I. Foster** (2003), "To Share or Not to Share: An Analysis of Incentives to Contribute in Collaborative File Sharing Environments", Workshop on Economics of Peer-to-Peer Systems, Berkeley, CA: June 5-6 (available at <http://www.sims.berkeley.edu/research/conferences/P2Pecon/papers/s1-ranganathan.pdf>).
- Rayna, T.** (2002), "La Rationalité du Piratage des Biens Numériques: Le Logiciel, un Bien Public?", working paper, Greqam, Crea, Paris.
- Rayna, T.** (2004), "Piracy and Innovation: Does Piracy Restore Competition?", DRUID Summer Conference (available at <http://www.druid.dk/ocs/viewpaper.php?id=269&cf=1>).
- Rosenblatt, B.** (2003), "Integrating DRM with P2P Networks: Enabling the Future of Online Content Business Models", DRM Watch (available at <http://www.drmwatch.com/resources/whitepapers/article.php/3112631>).
- Sagot Duvauroux, D.** (2002), *La propriété intellectuelle c'est le vol: Pierre Joseph Proudhon et les majorats littéraires*, Dijon, Les presses du réel.

- Samudrala, R.** (2000), "Philosophie de la Musique Libre", in Blondeau, O. and F. Latrive (eds.), *Libres Enfants du Savoir Numérique*, Paris, L'éclat.
- Samuelson, P.A.** (1954), "The Pure Theory of Public Expenditure", *Review of Economics and Statistics*, **36**; 387-99.
- Shy, O. and J.F. Thisse** (1999), "A Strategic Approach to Software Protection", *Journal of Economics and Management Science*, **8**; 163-90.
- Strahilewitz, L.J.** (2002), "Charismatic Code, Social Norms, and the Emergence of Cooperation on the File-Swapping Networks", John M. Olin Law and Economics Working Paper, Number 162, University of Chicago (available at http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID329700_code020925570.pdf?abstractid=329700).
- Syndicat National de l'Édition Phonographique (SNEP)** (2003), *L'économie du Disque*, Paris, Annual Report.
- Takeyama, L.** (1994), "The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Demand Network Externalities", *Journal of Industrial Economics*, **42**; 155-66.
- Varian, H.R and C. Shapiro** (1998), *Information Rules: A Strategic Guide to the Network Economy*, Harvard, Harvard Business School Press.
- Zentner, A.** (2004), "Measuring the Effect of Music Downloads on Music Purchases", working paper, University of Chicago (available at <http://home.uchicago.edu/~alezentn/musicindustrynew>).
- Zhang, M.** (2002), "Stardom, Peer-to-peer and the Socially Optimal Distribution of Music", MIT (available at <http://web.mit.edu/zxq/www/mit/15575/P2P.html>).
- Zimmermann, J.B.** (1999), "Logiciel et Propriété Intellectuelle: Du Copyright au Copyleft", working paper, Greqam, Marseille.