

A New Era for the Music Industry: How New Technologies and the Internet Affect the Way Music is Valued and have an Impact on Output Quality

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Summary: Since its early days, the Internet has been used by the music industry as a powerful marketing tool to promote artists and their products. Nevertheless, technology developments of the past ten years, and especially the ever-growing phenomenon of file-sharing, have created the general impression that the Internet is responsible for a crisis within the industry, on the grounds that music piracy has become more serious than it has ever been. The purpose of this paper is to present the impact of new technologies and the Internet on the three main actors of the music industry: consumers, artists and record companies. It is claimed that the Internet has changed the way music is valued, and also, that it may have a direct effect on the quality of the music produced, as perceived by both artists and consumers alike.

Key words: Digital economy, Internet, copyright, Game theory, Imperfect information

JEL: A10, C73, D80, O33, O34

Introduction

What is generally being referred to as “piracy” has seemingly become the biggest problem within the music industry circles. Formally, music piracy is any form of duplication and / or distribution of music that takes place without the copyright holders’ consent. The fact that copyright owners can be a large array of people – from the artists themselves to the record companies’ shareholders and publishers – means that piracy has rightly been given so much attention in the last few years, since the Internet and new technologies radically changed its form.

In the 1980s, record companies were at first reluctant to adopt the CD as a format to release music and to agree on a standard, unless the major electronic manufacturers agreed to keep CD-recording equipment at prices too expensive

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for domestic consumers – or even off the market, for at least ten years¹. When they finally decided to replace vinyl records with compact discs as the prominent format, and despite their awareness of the duplication possibilities that would be offered in the future, they certainly could not predict that this would be the first step leading to a major crisis within the music industry. In the first years of their existence, recordable compact discs (CD-Rs) did not attract many users; for one thing, they were relatively expensive; in addition to this, the recording (or “burning”) procedure used to be overly problematic, resulting in too many unusable CD-Rs. However, by the mid-’90s, the prices of CD-Rs dropped considerably, and the corresponding hardware became more reliable and less costly. By 2000, most home computers were equipped with a CD-recorder, making duplication of compact discs as easy as a few clicks of the mouse. Having nearly the same sound quality as the source recording, it is not unusual for a listener to prefer making their own recorded compact disc, rather than buying the original product (given that the former is much cheaper).

Of course, music piracy hardly emerged with the appearance of CDs: before compact discs were introduced, there were only vinyl records and cassettes, and duplication of music on cassettes used to be fairly common practice. Nevertheless, unauthorized bootlegs on cassette had never been a big concern to the music industry; as the cassette format had always been thought of as “inferior” to the vinyl record (mostly because of its relatively poorer sound), nobody had felt really threatened. A listener who would be satisfied with a cassette bootleg was probably someone who never belonged to the record companies’ target group in the first place. However, the problem seemed to become really serious when listeners were given the tools to make copies that would sound almost identical to the originals; if the cassette was a minor headache for the record companies, the CD-R could not be similarly ignored.

The real big trouble surfaced in the late ’90s, due to the technology of encoding of music as computer files (for example, mp3 files), which meant that music could henceforth be handled like any other file. Easy exchange of such files (for example, with e-mail, or through CD-Rs or, later, DVD-Rs) became a possibility. Even then, the problem would still be under control, if exchange of music files was restrained within the listener and his or her own acquaintances. Nevertheless, the Internet served as a facilitator for removing such restrictions. What started it all was a website called “Napster”, created by a (then) amateur programmer named Shawn Fanning: each user of Napster could specify a shared folder in their hard disk, which would be accessible to all other users; one could then browse each other’s folders and download any one(s) among the available files for free. Essentially, Napster was a peer-to-peer application, that is, an interconnection agreement between two networks, and the software itself only

¹ I thank an anonymous reviewer for bringing this information to my attention.

administered the communication². Anything else depended on the users themselves, from what files they would choose to make available, to who they would let download them. Although the application could serve as an enabler for the exchange of any kind of files, its main use was supposed to be for exchanging music (usually mp3 files), the front page of the website making it look like a music portal, complete with discussion forums, news and related articles. Such files could be easily created by anyone owning a recording on digital format (be it an original CD or a copy of it) and an audio-converter software program. Napster is not a peer-to-peer application anymore, but there are several others to have taken its place (such as “Soulseek” or “Kazaa”) with millions of users all over the world exchanging any kind of files, from pictures and digital books to whole movies. Their main use still is for exchange of songs.

In addition to these, and as of the last three or four years, users commonly download “torrents” (i.e. collections of files), via some different (but similar in vein) technology. The downloaded recordings can be listened to from the computer or be stored on a digital disc and then listened to from any kind of compatible equipment (either a conventional stereo or a specialised device, such as an i-Pod or an mp3-player). Popularity of file-sharing programs has been such that virtually any existing recording is available through them, and therefore, may be acquired for free. In a sense, this exchange of files, albeit usually anonymous, has created a social network of sorts, whose value increases the larger this network becomes (Powell and Smith-Doerr, 1994)³.

The penetration of these new possibilities has been immense, especially in younger people. As happens with the adoption of all new successful technologies, downloading music for free has expanded so much that someone who does not do it (or, even worse, does not know how to) might as well be considered as “primitive” by other users who keep up with the digital advances. With the exception of those who insistently abstain from downloading and prefer visiting the traditional record shops, consumers are increasingly resorting to online mp3 file resources (with the copyrights’ holders consent or not) as other users are doing the same thing, sometimes by force of imitation or for not being tagged as “uncool” for failing to follow the trend.

On the other hand, all interested parties within the industry acknowledge that the Internet has been helpful in promoting the artists’ works. Before the Internet, potential buyers would only be informed by the music press and the radio, and they would necessarily limit their choices to what would be available on the shelves of their local record stores. Such dependence would mean that an artist who did not enjoy media coverage or whose releases did not have wide

² Bailey (1997) offers an introduction on peer-to-peer models and discusses issues such as efficiency and interconnection architectures.

³ Interestingly, Harsanyi (1962) mentions the “social power” of consumers, several decades before the digital age.

distribution would practically be non-existent for the listeners. The internet changed the behaviour of both listeners and artists in that the former have now access to a tremendous volume of relevant information (and therefore, they do no longer exclusively rely on what would be on the next issue of their favourite music magazine), and the latter do no longer need to be backed by a record company (at least, not to such degree as before) that would handle (costly) advertising. In essence, listeners can now be informed about the work of many more artists than before, and artists can reach a much wider audience by setting up their own homepage to promote their music. A comprehensive text on current music industry economics (extending the presentation to the whole entertainment industry) is Vogel (2004).

Evidently, the digitalisation of music combined with new technologies and the Internet brought in a new era for the music industry. The aim of this paper is to present the impact of the Internet on its three major actors – the consumers, the artists and the record companies, on sections 2,3 and 4 respectively, the emphasis being on the ways the digital setting changed the way music is valued. The adoption of a standard utilitarian framework, enriched with game theoretic elements and, possibly, psychological parameters suggests that the Internet may have an effect on how music is made – a finding that complements and enriches related studies (such as Liebowitz, 2005 or Peitz and Waelbroeck, 2005) whose focus is mainly on the impact of the Internet on music sales. Section 5 concludes by making an overall assessment.

1. The consumers

The Internet has changed the behaviour of people (whom we shall interchangeably refer to as “consumers”, “listeners” or “users”) in at least two significant ways. For one thing, consumers have now access to a great volume of information and, therefore, do no longer need to depend on the music media for knowing what is new or seeking opinions on the latest works of art. Websites that offer comprehensive content and information on music have replaced the printed media to a considerable degree. The user may not only read articles and reviews, but also post their own on forums, read the opinions of other listeners and even sample new releases by listening to audio excerpts. Lack of information on not well-known artists becomes increasingly rare (even if the artists themselves would want that); any listener can know about the work of practically any artist by running a simple query. Formulation of their opinion prior to actually listening to the music is more accurate and complete, for there is now a multitude of sources where opinions can be found. Although online opinion forums manipulation does happen (for a study on strategic manipulation of Internet opinion forums, see Dellarocas, 2004), it is fair to assume that

interested consumers enjoy greater and more valid information than before, when they would only take into account what they read on magazines, listened to on the radio or heard from friends. Sampling of the music itself that used to be possible through the radio, sometimes television, or cassette bootlegs is now common on most music portals and Internet stores selling music.

Even though acquisition of such information may, in some cases, be legitimate (through “official” audio excerpts on the Internet, usually made available by the artists themselves, mainly through their “myspace” web pages), consumers have another even more powerful tool: file-sharing. Users have the option to download the entire content of the product they are interested in, and store it on digital format. For the sound quality is almost identical to that of the original recording, digital downloads are thought to be substitutes for compact discs having the same content. The fact that (some) people continue buying CDs suggests at least two things: a) not all listeners have access to (or are willing to use) file-sharing programs and b) digital downloads are not perfect substitutes for the corresponding products available on record stores.

The latter observation is interesting in that it would probably seem more logical that consumers would value music regardless of the artifact it may be on: the vinyl or plastic disc were originally supposed to be mere means of storage that would not exist if purchase of music could somehow be done without them. But if it were so, and given that the digital downloads can be practically acquired for free, no consumer would be rational to ever buy an original recording on CD or vinyl again. What is somewhat ironic is that music itself is not even air: formally, it is vibrations in the air made by instruments and vocal chords. In this sense, the dematerialisation and the “weightlessness” of commodities (Coyle, 1999) brought in by the internet would seem all the more apt when it came to music. It seems however reasonable to contend that when consumers purchase music, not only do they value the actual recording, but also the physical product, the accompanying artwork and anything that may come with it, such as booklets with printed lyrics or the packaging. As CDs are now generally thought to be disposable (at least, more than vinyl albums ever were), it follows that unless they provide some “added value” to the listener other than being mere “carriers” of the music, consumers are expected to satisfy demand by use of file-sharing programs, it being the less costly alternative.

A formalistic expression of the above assertion, using the neoclassical framework, is that if we denote as $u_{pk,i}$ the utility consumer k receives by purchase of a music recording indexed i and as $u_{Dk,i}$ the utility the same consumer receives by downloading the same product for free over the internet, it must be assumed that these utilities are not only functions of the quality of the recording (as valued by the consumer), but also of the “attractiveness” of the artifact. In other words, were the actual product and the corresponding digital download priced the same, $u_{pk,i}$ would always be greater than $u_{Dk,i}$. This is a

plausible assumption, for the commodity to be purchased does not only contain audio material (that can be easily converted to digital files), but it also has additional features such as the artwork or the actual plastic (or vinyl). It should be mentioned here that what makes the product more desirable is not just the fact that it is a physical commodity, as opposed to being a “weightless” good⁴, but mainly because it is not unusual for music enthusiasts to get sentimentally attached with a vinyl record or a CD, thinking of it as an item to be treasured – a feeling that could hardly be prompted by digital files on someone’s computer.

The implication of this is that the very same work of art may be valued a lot differently when listened to from its original artifact than when listened to in its pure digital format. For this reason, it makes sense to infer that a fraction of the consumers who download a recording for free shall want to purchase the actual product afterwards. In this case, file-sharing does not satisfy demand by offering a near-substitute at near-zero cost, but serves as a sampling procedure that reveals to the consumer the real quality of the music, which is not fully known before downloading takes place. Prior to deciding whether to purchase (P) or download (D) work of art indexed i , the consumer does not know $u_{Pk,i}$ and $u_{Dk,i}$ with certainty, but only has an expectation about them, according to what they expect the quality of the recording (denoted as $b_{k,i}$) shall be. The parameter $b_{k,i}$ can be thought of as consumer k ’s evaluation of product i , according to any criteria consumer k uses to make their judgement (naturally, these criteria may differ substantially across listeners). If $E(u_{Pk,i}) > E(u_{Dk,i})$, then the consumer will be rational to proceed by choosing (P); if $E(u_{Pk,i}) < E(u_{Dk,i})$, then the consumer will proceed by choosing (D).

After (P) or (D) has occurred, the consumer can now formulate their judgement on product i , which reveals $b_{k,i}$, and, therefore, $u_{Pk,i}$ and $u_{Dk,i}$ too, as long as neither utility is a function of other uncertain parameters. Apparently, these utilities can depend on other factors other than quality, but henceforth, such factors will be considered to be known with certainty. More specifically, it is assumed that $u_{Pk,i}$ and $u_{Dk,i}$ are also decreasing functions of prices, which has the intuitive interpretation that the more one pays for a commodity, the less utility they derive from it. Therefore, $u_{Pk,i}(p_i, b_{k,i})$ is the utility consumer k receives when they purchase item i , its price being p_i and its quality (as valued by consumer i) being $b_{k,i}$. Accordingly, $u_{Dk,i}(p_i, b_{k,i})$ is the utility consumer k receives when they download item i , the cost of the download being p_i and its quality as a recording (as valued by consumer i) being $b_{k,i}$. Because of file-sharing, it is also assumed that it costs (almost) nothing to a consumer to acquire an authorized digital copy of recording i , and therefore, $u_{Dk,i}(p_i, b_{k,i}) \approx u_{Dk,i}(0, b_{k,i})$.

⁴ For a comprehensive discussion on physical vs. digital commodities, see Bandt (1999) or Coyle (1999).

If (P) occurs, whether the consumer's expectation on $u_{P_{k,i}}$ was upset or not is irrelevant (as unimportant). If (D) happens, there are two possible subsequent actions: (i) if $u_{P_{k,i}}(p_i, b_{k,i}) > u_{D_{k,i}}(0, b_{k,i})$, then the consumer purchases the product; (ii) else, if $u_{P_{k,i}}(p_i, b_{k,i}) < u_{D_{k,i}}(0, b_{k,i})$, then the consumer stays with the digital download. (The case where $u_{P_{k,i}}(p_i, b_{k,i}) = u_{D_{k,i}}(0, b_{k,i})$ is trivial and uninteresting. If it so happens, the consumer is obviously indifferent between (P) and (D)).

The above arrangement helps in determining the fraction of the number of consumers who purchase product i after having acquired it for free as a digital good to the number of all consumers who downloaded recording i . Apparently, this fraction can be reinterpreted as the probability that a random customer will proceed with a purchase after having downloaded the recording. Apparently, this is equal to the probability that $b_{k,i} > b^*_{k,i}$, where $b^*_{k,i}$ is the level of $b_{k,i}$ for which $u_{P_{k,i}} = u_{D_{k,i}}$. If, therefore, an artist has an expectation of $b^*_{k,i}$, that is, if the ways consumers value music are known (with uncertainty) to the ones who make it, then the latter shall try to align the quality of their work as perceived by themselves with the quality of their work as perceived by the listeners and produce the compliant output (provided, of course, that the artists are only after the maximisation of their profits). Obviously, this is an explicit modelling of the interaction between artists and consumers from a game theoretic point of view; the game is dynamic: at $t=1$, the artist makes the recording and determines $b_{k,i}$. At $t=2$, the consumer does nothing or selects (P) and the game ends, or selects (D) and proceeds to $t=3$. At $t=3$, the consumer either does nothing (and hence stays with the download) or selects (P). If $b_{k,i}$ is seen as a control variable of the artist in the first period, then backward induction indicates that the very making of the product at $t=1$ will be in accordance of the artist's expectation of $b^*_{k,i}$, in such a way that $b_{k,i}$ reaches (or even surpasses) $b^*_{k,i}$, and thus, more people who make it to $t=3$ actually select (P).

This last point will be revisited in the next section, where the perspective of the artists shall be presented; what is important, for the time being, is the inference that consumer k is essentially in a position to determine the output quality (as perceived by themselves) via $b^*_{k,i}$, that is, by "setting high standards". This result is consistent with the Digital Economy literature, confirming that the Internet is giving consumers more power by making information on qualities of a wide range of goods more accessible. To quote Alberthal (1998) in his paraphrasing Jorge Luis Borges, "*I do not know whether the producer or the customer is creating the product*"; if we paraphrase this anew, we get "I don't know whether the artist or the listener is creating the recording".

The above approach would be more complete if it was enhanced with psychological parameters, for it can plausibly be asserted that a consumer valuing a work of art shall want to reward its creator accordingly. It would

therefore make sense to introduce a level of “disutility” that would occur after action (D), which would be increasing with $b_{k,i}$. This disutility could be interpreted as the consumer’s feeling of “unfairness” after having acquired an artist’s product for free. It can easily be seen that this psychological twist lowers the value of $b^*_{k,i}$: action (D) yields a level of utility equal to $u_{Dk,i}(0, b_{k,i})$, which is offset – to a degree – by a level of non-negative disutility which we denote as $v_{Dk,i}(b_{k,i}) \geq 0$. Thus, total utility is $u_{Dk,i}(0, b_{k,i}) - v_{Dk,i}(b_{k,i})$, which is clearly less or equal than $u_{Dk,i}(0, b_{k,i})$. If the disutility did not exist, $b^*_{k,i}$ would be defined by the equation $u_{Pk,i}(p_i, b^*_{k,i}) = u_{Dk,i}(0, b^*_{k,i})$. For the setting enriched with psychological parameters, this level of $b^*_{k,i}$, denoted $b^{**}_{k,i}$, is given by the equation $u_{Pk,i}(p_i, b^{**}_{k,i}) = u_{Dk,i}(0, b^{**}_{k,i}) - v_{Dk,i}(b^{**}_{k,i})$, which suggests that $b^{**}_{k,i} < b^*_{k,i}$, since the functions u_P , u_D , v_D are increasing functions of $b_{k,i}$. The essential thing is that this level still stands as a sort of “quality” (or, more generally, a measure of “wantability”) threshold for consumers; this threshold may be taken into consideration by artists trying to eliminate free downloading, provided, of course, that the latter are able to understand, with some fair degree of accuracy, the criteria with which consumers value their works of art.

From a methodological perspective, the previous paragraph suggested a standard enrichment of the framework with more arguments in the utility function to cover for potential sentiments such as “guilt” for downloading rather than buying. Another way of modelling this sense of “fairness” would be to follow Rabin (1993), where the consumer is thought of as willing to reward the artist’s good intentions (regardless of whether the former actually enjoys the product or not). This could be applicable to cases where, for example, the listener approves of the artist’s integrity and respect for the listener, which would prompt the consumer to sacrifice a part of their own material well-being in order to support the artist – not necessarily for the music per se, but mainly as an appreciation of their attitude. This approach turns on the consumer’s second-order beliefs, for action is influenced by the user’s own perceptions of the artist’s motivations.

2. The artists

Although a term like “creators of music recordings” would perhaps be more appropriate, we will use the word “artists” to refer to anyone recording music and offering it for sale. In the context of this study, an artist need not be an individual, but may best be viewed as an artistic unity, be it one person only, or a group of people who co-produce a work of art.

The impact of the Internet on artists has been significant from day one; it offered an opportunity for promotion that, for the better part of them, could not be possible otherwise. In the pre-Internet days, artists were overly dependent on

the music press and the radio; were they not featured on them, they would be practically unknown, only enjoying local recognition in places they managed to visit and perform on stage. The Internet, as a medium without geographical constraints and as an extremely powerful advertising tool⁵, enabled them to potentially reach a wider audience, by using it as a means to gain the exposure they lacked by the “traditional” media. Today, virtually every recording artist has their own homepage or a “myspace” page, where they provide information on themselves, sell their products directly and offer free samples of their music.

Evidently, it is possible that not all artists have had a benefit from the Internet. For example, artists already over-exposed by the “traditional” media may have experienced a decrease in demand for their products, once a multitude of other artists became known to the listeners. Moreover, the artists who could not quite handle the new medium as a promotional tool, might have been out-sold by their peers who managed to use it in their favour. In the aggregate though, it is reasonable to claim that the Internet generated more demand for music recordings, because of the considerably bigger volume of information now available to consumers.

The above discussion suggests that the Internet brought in new roles for the artists (or their managers), except for the one of music making: handling advertising over the Internet in order to make one’s presence felt is unavoidable, if the artist wants to reach a bigger audience. Artists today have the opportunity to manage their exposure and promotion themselves, without needing backing by a record company or other people’s promotional efforts. This was practically impossible in the pre-Internet years: any artist who was not signed to a (however small) record company was condemned to record and perform in relative anonymity, hardly standing a chance for recognition or acclaim. In stark contrast, today’s artists have the means to stand alone, if they want to: they can distribute their products through their own website, communicate with people directly and conduct alliances with other artists – for example by exchanging links or advertising other artists’ products.

Indeed, the number of artists who decide to represent themselves and self-release their work is ever increasing, to even include major selling artists such as Radiohead, who, in October 2007, surprised everyone by letting each customer decide for themselves how much to pay for downloading the band’s latest recording. Another telling example is the presence of several online stores selling albums by artists who mostly make self-produced recordings or own their private independent record companies. Obviously, nearly all artists have been able to acknowledge the power that the Internet gave them and were accordingly forced to acquire the new skills needed for being part of the new setting. Katz

⁵ For an excellent discussion on the effects of advertising, see Schiller (1999). Also, Choi, Stahl and Whinston (1997).

(1999) offers a comprehensive study (in a different – and more general – context) on how the Internet requires new skills.

Nevertheless, this increase in the level of exposure and demand has not been without its cost. The phenomenon of file-sharing programs has caused a lot of skepticism within the artists' circles, some of them thinking of it as a mechanism that shall actually boost sales (since consumers will have the opportunity to sample before they buy), and others considering it as a blatantly menacing form of piracy. As was mentioned in the previous section, the rational reaction of an artist wanting to maximise their profits given the existence of file-sharing is to align their perceptions on the quality of their work along with those that they think the listeners have. In other words, what motivated artists to create music before may be different now that the consumers are able to sample the output and get accurately informed on its quality. Apparently, if the artists' and consumers' perceptions on quality converge, the result will be better quality output, as evaluated by both. If however this is not the case, the artist gets stuck in a situation where they need to produce "tailor-made" music in order to satisfy their audience and regardless of their driving inspiration and their need for artistic expression.

This last conclusion does not seem to worry artists too much. For one thing, artists who are mere profit maximisers do not usually care about artistic integrity as such. If the real issue is bigger revenues, it is only fair to claim that the artist cannot afford to not be in touch with an audience that can now "sample" the music and then decide whether to buy or not. On the other hand, this does not mean that an artist not obeying to what the audience wants should lose royalties from unauthorized downloading of their recordings. This is a matter that annoys (to say the least) most artists, but not as much as the record companies, as shall be seen in the next section; after all, most recording artists who (try to) make a living from their art do not financially rely on sales of recordings, but on live performances⁶; hence, free unauthorized downloads may even be a blessing, if they shall lead to greater exposure. Given this, it is not unusual for some artists to upload their own songs on file-sharing programs, on the hope that this move will help "spread the word".

3. The record companies

What will be covered in this section is the case of profit-making record companies. We need to explicitly mention "profit-making" in order to distinguish these record companies from several smaller ones that may be run

⁶ This is just an instance of the commonly held assertion that the artists' and the record companies' interests do not generally coincide (contrary perhaps to intuition). Also see Gayer and Shy (2005).

under alternative objectives, which are mainly aesthetic. Such companies (“independent labels” as they are called) are usually founded by artists themselves as a means to produce and distribute their work legally. Some of them may prove to be very successful financially, but this is the exception, rather than the rule. Most parts of this section may apply to both kinds of companies, but the distinction is necessary, if only for the reason that profit making companies have the biggest share of the market and are the main actors to influence the music industry in total.

Similarly to the case of artists, record companies first saw the Internet with enthusiasm, for it presented an opportunity to cut down on advertisement costs and promote their artists more effectively. Distribution became more efficient, and so did cooperation between different branches of the companies all over the world. However, if CD-Rs alarmed the industry for profit losses because of piracy, the phenomenon of file-sharing created panic: buying a CD and then making two or three copies for close friends (who would probably never buy the product themselves in the first place) was one thing, but buying a CD and then uploading its content on the Internet for the rest of the world to download for free was quite another.

Organizations such as BMI (Broadcast Music Inc.) and the RIAA (Recording Industry Association of America) are devoted to the fight against piracy but, even if they have won a few battles (like, shutting down Napster), it looks like the “war” is far from being over (see Schiller, 1999. Also, for a study on the RIAA and the war against piracy, see Denegri-Knott, 2004). Despite the multitude of existing lawsuits, threatening those engaged in file-sharing does not seem effective enough. In addition to this, the regulations as to what constitutes a copyright infringement are fuzzy to most outsiders, and besides, there is a considerable fraction of artists themselves who are opposed to the operation of such organizations on the grounds that they essentially rip artists off their royalties in the name of copyright protection.

As a result, the face of the music industry as was known until the mid-’90s changed dramatically in the last decade. Today, record companies are considered to be more reluctant than ever to support an artist who is not a priori sure to bring in commercial success. Structural changes have happened too, with big record companies merging (like EMI and Virgin or Sony and BMG) and former competitors forming alliances. In general, the companies’ strategic moves throughout the years reflect a strong effort to fight piracy, since efficient legislation does not exist. Because such moves may differ across record companies, it is interesting to see a few among them separately in the subsections that follow.

3.1 Decreasing of prices

In September 2003, Universal Music Group, the biggest record company in the world, announced that it would reduce the price of its CDs by about 5 dollars on average. The rationale behind this move is obviously to make the physical product more attractive than the digital download. In the light of the framework presented in section 2, a price decrease results in an increase in $u_{pk,i}$, and therefore in an increase of the number of consumers who will choose to purchase the album rather than download the corresponding digital files.

3.2 Lavish packaging

A considerable number of newer music products are not just packaged in the standard “jewel case” as was common ten or more years ago, but receive special treatment with luxurious editions, carefully designed artwork and bonus material, such as bonus DVDs or posters. The idea is to not just sell a music recording, but a whole “entertainment package”, the content of which is considerably richer than its corresponding digital equivalent. Again, this method is consistent with the framework of section 2, as it is supposed to prompt more users to buy the physical commodity by increasing $u_{pk,i}$.

3.3 Copy-control discs

In 2002, EMI, followed by BMG, began releasing their products on a new format that is called a “copy-controlled” disc. Its appearance is identical to a CD, but formally, it can not be considered as one, for it does not satisfy the corresponding ISO regulations. Copy-control discs incorporate auto-executable software that prevents conversion of their audio content to digital files. Although these discs will play regularly on conventional stereos, they are overly problematic when inserted into CD-ROM players and devices such as portable CD-players or car stereos, hence raising the frustration of most consumers. As a business decision, the introduction of copy-control discs is doubtful, and its effectiveness as a tool for preventing digitalisation is uncertain. After all, it only needs *one* person to hack the disc and upload the files on a file-sharing program; that done, availability of these files shall multiply in avalanche-speed. Moreover, selling to customers a product inferior to a standard CD and practically implying that any listener is a potential “pirate” may not seem a good idea, if the purpose is to increase sales. Clearly, the translation of this, with regards to the setting of section 2, is that $u_{pk,i}$ decreases, and since file-sharing can still happen, this inevitably leads to a decrease in sales. Indeed, there are several examples of online forums where customers recite with glee how they unlocked copy-control discs, which suggests an incentive to “cheat” from the part of the consumers, when it comes to this particular format. Accordingly, this may mean that the disutility $v_{Dk,i}$, as defined in section 2, may even be negative (i.e. end up being additional utility). Given the overall controversy, it is not surprising that the rest of the record companies do not consider joining EMI and BMG in this venture.

3.4 A new format: no format at all

Several record companies today sell their products on a new format, or rather, on no format at all: as digital files. Upon purchase, the customer is being given a password or a personal link which enables them to download the purchased item. Such business move entails at least two big advantages for record companies: a) manufacturing costs are reduced (and they reach zero if the product is only available as a digital download) and b) customers are implicitly discouraged to upload the files, on the basis that they would not want that everybody else enjoys for free what they paid for personally. On the other hand, it is obvious that the equilibrium described in (b) is unstable, for, once again, if one and only user makes the files available, others shall follow rapidly. And if this is common knowledge, purchase of digital files can never be a rational decision, if these same files may be acquired for free.

The aforementioned cases are only a few among the different reactions that record companies adopted since the problem of music piracy appeared to seem menacing. They clearly show that adaptation to the new reality is an imperative; even if it is not really the record companies' job to fight a criminal act like piracy, they cannot afford to stay indifferent to its existence and wait until the problem solves itself. Unless a robust legal framework is established, it is clear that record companies shall be making efforts to protect themselves against the possibly harmful effects of the newer digital setting (econometric studies of such effects – the results of which do not always converge – include Oberholzer-Gee and Strumpf (2007), Zentner (2005) or Peitz and Waelbroeck (2004)). Presently, it looks like unauthorized exchange of files can hardly be totally restrained, if only for the reason that such venture would imply some violation of Internet users' privacy. Seemingly, record companies have no other option but accept the new reality and anticipate that music piracy will most probably not be possible to be completely eradicated⁷.

Assessment

The aim of this paper has been to illustrate the radical changes in the behaviour of the main actors of the music industry (listeners, artists and record companies) brought in by new technologies and the Internet. It has been claimed that the Internet affects all actors in several different ways; consumers have expanded their information set and have a tool which they can use to either “cheat” the industry and enjoy products for free and / or use it as a mechanism that reveals

⁷ On a more general level, a discussion on adaptive organizations can be found in Carley (1999).

the true quality of a product and serves as a “purchasing guide”. Hence, consumers themselves may have an effect on the recordings to be produced, in a manner similar to “voting”. But to continue with another parallel from the Public Choice field, there is always the danger that, if recordings are considered by consumers to be some kind of “public good”, and it is left to the discreet will of the listeners whether they are going to credit the creators or not, a free-rider problem emerges: everyone enjoys a work of art, but nobody wants to pay for it, and ultimately, the work of art is not produced. The “escape route” out of this problem is, commonly, an attitude of “fairness” from the part of the listeners, in the sense that they shall seek to actually purchase the products that they value highly, even if they can acquire near-substitutes at almost zero cost.

The Internet has enabled artists to handle their own promotion and interaction with listeners, and because of this very fact, it is possible that the former’s creativity may have been restrained, having to be in compliance with the listeners’ preferences. In a sense, quality of music shall be on a par with the tastes of the consumers, or, in other words, “the listeners shall get the music they deserve”. Nevertheless, there is no reason to believe that the artists’ and the consumers’ perceptions on quality differ radically; after all, each artist is thought of as aware of the kind of audience they want to reach, and as such, they are already – to some degree – being influenced by their listeners’ reactions anyway. What is probably making most artists skeptical is the realisation that file-sharing and, in general, disrespect to copyright owners may set a dangerous precedent for future generations who will come to devalue creative work. For their part, record companies have been engaged in a war against piracy, responding with several reactions that range from pessimism to panic, blindly (and perhaps inaccurately) assuming that any decrease in CD sales must reflect the negative effects of the Internet and the file-sharing phenomenon on the industry.

In a sense, the new setting seems more just to the listeners who now have the possibility to sample the music for themselves, as opposed to making their judgements based on word of mouth or the opinion of others. It is kind of ironic then, that what starts this whole issue is a criminal act: violation of copyright. Of course, technological innovation has always been known for its potential to destabilise issues of property rights (Pejovich, 1996), which is all the more true when it comes to property rights over intellectual goods (such as music). This inevitability, however, hardly justifies the ease with which users may acquire others’ work of art at near-zero cost without their consent. On the other hand, listeners clearly have the right to know what they are buying, and the Internet is an ideal tool for removing imperfect information – way better than, for example, the odd listening-post in large record stores.

It is hard to predict how advances in technology or a legal framework supposed to prevent piracy would change things in the years to come, but what is suggested as a more prominent way to battle the harmful consequences of piracy

would be to offer better quality output, no matter the different meanings this can have across artists or listeners. Seeing each artist as a different case suggests adopting an ad-hoc approach, and according to what one's motives for producing art are, it is only right to claim that they can either offer the audience what they want to listen to, or make art for art's sake (or both, of course). After all, if illegal downloading is unfair for artists and record companies, it is perhaps equally unfair for listeners to spend money on a recording that did not live up to the expectations.

Even if consumers seem to be the ones that are "better off" from the digital setting, it must be said that, at least to the eyes of the ones who experienced the pre-Internet era, something seems to be lost in all this: listeners today may have exactly the information they want, at any given time, and access to virtually any recording they desire to listen to. Efficient though as this may be, it definitely lacks other features that contributed to the enjoyment of a work of art before: anticipation and enthusiasm over music, the appeal of the unknown and the excitement over an unexpected discovery in a record store – these are sentiments that the newer generations shall not experience as strongly as the previous ones. In this sense, music is indeed devalued, not only because of the disappearance of the artifact and its emergence as a non-physical good, but also because it comes more or less devoid of the emotional components that used to be attached to it before the Internet existed.

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