Enforcing Copyrights in a Digital Environment:

A Closer Look at the Music Industry

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Although copyrights were first formulated to encourage innovation by allowing content-creators exclusive rights over their works, advancements in technology have made copyright enforcement exceedingly difficult, endangering innovation.

Reactions to this recent development by both the government and copyright owners have proven to be ineffective and detrimental to society, chilling innovation and restricting free expression, while leaving copyrighted works vulnerable to infringement.

Instead of launching legal attacks on file-sharing networks, copyright owners should make use of technology to improve sales and reintroduce the incentive to innovate. I will analyze one such scheme that aligns the interest of technology and copyright owners, voluntary collective licensing, with respect to the music industry, pointing out its advantages, potential problems and solutions, arguing that it is a fully viable solution for the music industry, and will benefit all parties involved. I then draw broad conclusions of its applicability to other copyright-dependent industries, supporting it as a solution to the conflict between technology and copyrights.

Basics of Copyrights

Copyrights were initially formulated to ensure innovation would take place and benefit society in the long run. The word "copyrights" can give a mistaken impression, suggesting it is the inherent and inalienable right a creator of an original work to dictate how it is used, much like human rights. However, this could not be further from the truth. A copyright is a bargain made between society and content creators that provides the incentive to create original works, while allowing society to benefit from such works. Thus, it is a delicate balancing act between allowing copyright owners to restrict the use of their works, thus encouraging innovation, and spreading the benefits throughout society.

An idea or information is what economists call a public good (Lessig 56): it is non-rivalrous and non-excludable in consumption. The non- rivalrous characteristic of an idea implies that it can be shared with many parties without reducing the benefit conferred. For instance, a piece of software, once written, can be shared with an arbitrarily large number of persons without reducing any consumers benefit from the cure. The use value of Microsoft Word to me is not reduced by how many are other users there are. This is different than other conventional goods, for instance, there is a limited amount of a cake on the kitchen table, and my consumption of a slice will reduce the amount anyone else can consume, thus reducing their benefit from the cake.

The non-excludability of an idea suggests that it would be impossible to exclude anyone, from benefiting from the idea. In this case, most will be tempted to free-ride, as once information is produced, it is impossible to control its flow and exclude non-payers from making use of the information. Thus, as all users attempt to free-ride, benefiting from the public good without having to pay for it, creators and innovators no long have incentive to produce as they are not compensated for their efforts. In the absence of intellectual property rights, Microsoft Word, once published, would be non-excludable, as it is virtually impossible to control the flow of

information in the public. Any computer user would thus be able to obtain a copy of Word without compensating Microsoft its innovation, much like the sale of pirated software in countries where enforcement of intellectual property rights is weak.

The system of intellectual property rights gives content-creators legal ownership of their works, eliminating the problem of non-excludability, allowing them to sell and profit from the intellectual property. Thus, although Microsoft might not be able to stop pirating of its software in other countries, it is still able to control the distribution of its products in the United States, and profit from its innovation. In the absence of such intellectual property protection, Microsoft would not be able to profit from its works, and would suffer losses as it would be unable to recover development costs, and would not develop software, harming society in the long run.

Hence, intellectual property rights weigh the short-term benefits of spreading infinitely-extendable benefits of Word through out society, with the long-term consideration of encouraging Microsoft to develop and improve Word. Within this context, copyrights attempt to strike a balance: while there is a relatively lengthy copyright term and more relaxed standards for copyrights, there are also fair use exceptions and, ultimately, an end to the copyright term that would allow the public to freely use the work. Given that copyrights serve the long-term good of society by encouraging innovation, it needs to be maintained in some form that still provides incentives to innovate.

The Impact of Technology on Copyrights

Previously, a centralized distribution system and limitations of media allowed copyright holders to enforce copyrights. As copyrighted works originated from a single source, for example, a movie studio, and was distributed through a centralized network, such as retail stores, copyright owners had substantial control their works. For instance, a movie studio could easily identify a retail outlet that sells illegally duplicated copies of its works, and hold it responsible in court. At the same time, limitation of storage media reduced the demand for infringing material. For instance, an individual that wanted a television program without paying the copyright holders would have to obtain a video tape and either tape the program on television or duplicate an existing copy, and then store the tape. The difficulty of storing large amounts of media, as well as the relative inconvenience of obtaining a copyrighted work restricted infringing activities to a minimum. Easy enforcement of copyrights maintained the incentive to innovate.

However, current technology has virtually removed all barriers to copyright infringement. Firstly, decentralized peer-to-peer (P2P) systems of file sharing has reduced copyright owners' ability to control their works. While a movie production company previously sold its work through retailers, which it could hold accountable for any large scale violations of copyrights, now there is no centralized control for propagation of copyrighted material over the Internet. With decentralized P2P networks such as BitTorrent, an individual may easily, with a few clicks of the mouse, obtain copyrighted work for free. Furthermore, storing duplicates has become far easier. Instead of having to store a VHS tape, individuals can now store it cheaply on digital disks or magnetic drives. The non-excludable characteristic of intellectual property surfaces again, as copyrights become exceedingly difficult to enforce, and threatens innovation in the long term.

Reactions to the Perceived Threat

Both the government and copyright holders have turned to legal and regulatory measures to stem the tide of copyright violations. For instance, Section 1201 of the Digital Millennium Copyright Act (DMCA), deems distribution or use of technology that circumvents copyright protections illegal (4). Similarly, copyright holders have taken P2P networks to court over contributory and vicarious copyright infringement, in hope of shutting them down to reduce copyright violations. For instance, the Recording Industry Association of America (RIAA) successfully forced Napster's closure with a series of lawsuits, while the Motion Picture Association of America (MPAA) halted distribution of DVD decryption software DeCSS from United States-based sites under the DMCA (EFF Unintended Consequences 6).

However, the legal measures taken have and will continue to cost society dearly, both by indiscriminately precluding the possibility of fair use and by discouraging innovation, directly contrary to the spirit of copyright laws. While the DeCSS program provided many non-infringing uses, such as compatibility between DVD's and Linux machines or the ability to view DVD's legitimately purchased other DVD-encoding regions, the DMCA applied a blanket rule that made no exception for fair use, denying DVD owners their fair use rights. Similarly, the Adobe eBook Processor (AEBPR) software produced by ElcomSoft was found to be in violation of the DMCA (EFF *Unintended Consequences* 4), and users of Adobe's eBook file format are essentially denied fair use, such as making a backup copy of their eBooks, as merely circumventing copyright protection is illegal.

Furthermore, lawsuits, or threats of lawsuits, filed either under the DMCA or for contributory and vicarious infringement, greatly restrict and discourage innovation and research. For instance, after the Secure Digital Music Initiative (SDMI) threat to sue Princeton Professor Edward Felton and his research team if they presented their findings on the SDMI watermarking

technologies, at least one member of the team choose to give up research in the field (EFF *Unintended Consequences* 2). The concern over the chilling effect was also voiced by Justice Souter, in the Supreme Court hearing of *MGM v Grokster*, pointing out that the iPod inventor would not have the confidence to go ahead if he knew he was going to be sued immediately (14). Clearly, the chilling effect on innovation is significant, and should not be ignored. Such lawsuits simply attempt to trade innovation in the creative arts for innovation in technology, and certainly run contrary to the spirit of copyrights by discouraging innovation.

Furthermore, the legal route has shown limited success. Upon Napster's closure, users merely switched to other file-sharing services, such as Gnutella. Recent decisions in courts, such as the ruling by the Ninth Circuit Court of Appeals in favor file-sharing networks Grokster and StreamCast in *MGM v Grokster*, suggest that copyright holders would not be able to hold software developers responsible for copyright violations that take place over decentralized networks. Furthermore, the decentralized structures themselves mean that the supposed owner or creator of the network also has very little control over it. As Fred von Lohmann established in the oral argument before the Ninth Circuit Court, the Grokster network would still continue running even if the company were shut down (11); putting firms out of business will hardly dent infringing activity over the network. Similarly, the P2P program BitTorrent is open source, and the public has access to the source code and could easily duplicate the program. Thus, any possible lawsuits against Bram Cohen, creator of BitTorrent, will not disable the network. Thus, even if the current and future lawsuits against networks and their owners were to succeed, infringing activity over the networks will still be significant.

In addition to pursuing networks for contributory and vicarious infringement, copyright owners are suing individuals for direct infringement. Although the RIAA, which vigorously pursued this measure, would like to claim it a success, its real effectiveness, as a deterrent is yet

to be proven. In a Pew Internet and American Life survey, of the one in ten respondents that claim to be former file-sharers, 28% citedthe fear of lawsuits as the reason they stopped file-sharing activity (8). Thus, RIAA's efforts against individuals are relatively ineffective, having deterred only approximately 3% of file-sharers. While shutting down a network that many rely on has great potential gains, significantly reducing file-sharing activity, the deterrent effect of prosecuting individuals is uncertain and unlikely to be as effective as targeting entire networks, and cannot be a long-term strategy.

Furthermore, for the recording industry in particular, shutting down P2P networks and completely enforcing copyrights might not significantly boost revenues. Although the recording industry has seen a twenty percent fall in revenues between 1998 to 2003, an internal survey by one of the big four recording companies (Warner, Sony/BMG, Universal, and EMI) has suggested that file-sharing contributed to about a quarter to a third the fall (Economist *Brighter Future*). While the movie industry and the video gaming industry have face similar difficulties as the music industry, their revenues are still strong, implying that the music industry faces more fundamental problems, and that stopping infringement alone will not help. The downturn in the economy, stiff competition for shelf space from DVD's, as well as a fall in the quality of music can be blamed for the fall in revenues for the music industry (Economist *Brighter Future*).

While copyright protection is an integral part of promoting innovation, industries should adapt their means of enforcement as well as mindsets to better suit current technologies, and leverage on the advantages that technology brings to boost sales and profits.

Working With Technology

As Fred von Lohmann pointed out in the oral arguments of *MGM vs. Grokster*, new technology inevitably brings a wave of lawsuits from copyright holders seeking to nip the technology in the bud (13). Yet, when copyright owners are unable to stop the technology, they are find much more opportunity in taking advantage of the technology. For instance, the movie industry that once sought to outlaw Sony's Betamax Video Cassette Recorder now makes more from the sale of home videos than theater receipts.

The new technology has several clear advantages, such as reduced cost of distribution and storage. For example, sale of music that would previously have required physical media, CDs, a transportation network for the CDs as well as logistical support, incurring costs on the producer. On the other hand, online distribution incurs very little cost for the copyright owner, as no transportation costs are incurred, and the cost online distribution networks are smaller, and the cost of P2P distribution networks is borne by the users. Furthermore, music producers will not require physical media, significantly reducing storage and logistical costs.

Consumers, on the other hand, are attracted by the convenience of obtaining music online, and the wide selection available. For instance, the iTunes Music Store's five hundred thousand available songs certainly exceed the selection at any brick and mortar music store, and consumers are able to obtain specific songs more easily.

With iTunes' success, there is reason to believe that advancement in the Internet and networks does not need to come at the expense of copyright holders, and copyright owners can and should use the Internet and networks to their advantage.

Voluntary Collective Licensing in the Music Industry

The need for a solution is the most urgent in the music industry, which has seen revenues fall by 22% from 1998 to 2003. The Electronic Frontier Foundation (EFF) recently published a white paper recommending voluntary collective licensing as the best solution to the apparent conflict between copyrights and technology. Voluntary compulsory licensing, the paper argues, benefits all parties involved (3) and would hence benefit society.

Although many other copyright-dependent industries have been affected by the proliferation of P2P services, I will focus on the feasibility of voluntary collective licensing in the music industry, and highlight the advantages has over the current practices in and state of copyright enforcement and offering solution to potential problems. Based on this analysis, I will draw broad conclusions of voluntary collective licensing's applicability to other industries, and how differences may affect it.

Under voluntary collective licensing, record firms would form a collecting society and offer unlimited file-sharing at a reasonable regular fee. Consumers who have paid this fee would be free to share files as they please, without fear of being prosecuted, and the music industry divides the royalties among artists based on the popularity their music.

There are clearly many advantages to this. While record companies and artists get paid, and are motivated to produce more music, file-sharers also may also obtain files they want, legitimately, without fear of being prosecuted. Furthermore, the music industry would cease to hinder innovation, and might even spur growth in file sharing applications and technology.

Although the sharp decline in revenues in the recording industry can only be attributed partly to online file-sharing, the effect should still be addressed. By recognizing the recording industry's copyrights and compensating it for its works, voluntary compulsory licensing ensures the music industry continues to produce music that consumers want.

The music industry stands to gain tremendously through a combination of increases in revenue and decreases in cost that voluntary collective licensing would. Notably, the EFF suggests collecting $5 a month from users, and estimates a total of $3 billion will be generated from America's 60 million file-sharers (*Better Way Forward* 2). Due to the nature of P2P networks, any income from such a licensing scheme would come at minimal cost, and give the music industry a much needed shot in the arm. Existing networks are supported entirely by users, and the record companies need not invest in any distribution networks or bandwidth, and supplying music would come at virtually no cost. Thus, the estimated $3 billion in revenues would be almost pure profit, certainly an enticing prospect.

Furthermore, legalizing online file sharing need not "cannibalize" CD sales. While it is certainly true to some extent that music files would take the place of CDs, this is certainly not a new development, and legalizing file sharing will merely capitalize on this trend, instead of causing it. In other words, users are already obtaining music files, and have shifted consumption away from CDs, resulting in the fall of revenues. Voluntary collective licensing will not cause any significant further shifts, but allow record companies to profit from file sharing.

Additionally, it is possible to avoid having online music swapping compete with CD sales by making CDs more attractive to consumers. For instance, DVD sales grew by 61% in 2002 (Borland) in part due to the better value-for-money offered by DVDs, including special content, such as director commentary, that is usually unavailable over file-sharing networks. The music industry could similarly improve CDs, by including song lyrics, artwork or even songwriters' and artists' interpretation of lyrics. By sufficiently differentiating CDs from online music, record firms could even use the popularity of songs over file-sharing networks to boost CD sales, creating a complementary relationship between file-sharing and CD sales.

Furthermore, by legalizing and encouraging file-sharing, voluntary collective licensing empowers artists to reach a wide audience, which would be beneficial to a new artist, an also reduce artists' dependence on major record labels, and produce an environment more conducive to creativity. A recent Pew survey found that 35% of musicians agreed that file sharing services promoted an distributed an artist's work (6); while 35% of musicians believed that free downloading has helped their careers, only 5% that believed the opposite (5). Under the traditional model of music production, musicians are forced to rely on the four major record companies for publicity, and are otherwise unable to control or promote their own careers. On the other hand, P2P networks allow musicians to reach a wide audience easily instead of having to rely on the major record labels. For instance, Sweet Chap, a British musician, released his music on Kazaa, and, as a result, 70,000 sampled his music and over 500 paid for some of his music (Economist *Brighter Future*). When combined with P2P networks, the system of payment under voluntary collective licensing encourages users to try out new artists. While music-lovers might be hesitant to pay for a song of uncertain quality, they would be perfectly willing to try out a new song if it is already paid-for in a fix monthly fee, benefiting new artists.

Furthermore, with the threat of lawsuit removed, artists, both established and new will be able to reach fans directly, eliminating the need for record companies. In the traditional model in which the four major firms wielded great power, a musician's contract with a recording firms was often considered an "absolute disgrace" (Economist *Fightback*). Artists' ability to reach fans directly would put pressure on firms to behave more competitively, and offer better terms on contracts, or be bypassed by artists. Clearly this benefits artists and thus encourages creativity.

Thirdly, with voluntary collective licensing, the music industry would instead spur innovation in file-sharing technology instead of suppressing innovation like it does now. With the threat of lawsuits withdrawn, file-sharing technology would be allow to bloom and evolve

freely, without having to implement inefficient filtering technologies. The popularity of sharing music online under the license would also prompt developers to create better file transfer software. The music industry would be encouraging innovation where it once tried to stifle it.

Lastly, music fans would be able to obtain an unlimited amount of music, at fairer terms, without worry of lawsuits. A problem with the previous industry structure is that four major record labels controlled the market and were able to dictate conditions not only for the artists, but also the consumer. As the Economist points out, part of the success of file-sharing stems from consumers' knowledge that a minute percentage of a CD's purchase price really goes to artists (*Fightback*), arguably the main creative force behind the music. The success of iTunes has shown that consumers are willing to pay for reasonably priced music, and, under voluntary collective licensing, music-lovers would be better off as they are able to contribute to artists and obtain music at a fair price. In return, they would have access to a wider range of music, with millions of songs now available on Kazaa, compared to iTunes' 500,000 (EFF *Better Way Forward* 1). Furthermore, they would no longer have to deal with "spoofing" by the music industry, that would make file-swapping a far more pleasant experience.

Clearly, voluntary collective licensing is a great improvement over the current approach, as it benefits every party involved and encourages innovation while widely spreading widely the benefit of such innovation, as the copyright intended. Industry-wide adoption of voluntary collective licensing would prove profitable for all parties involved, and serve as an example of how best to approach technological changes to benefit society the most.

Potential Problems and Solutions

However, the advantages of voluntary collective licensing only start accumulating when there is large-scale adoption by both record labels and consumers, and it faces several hurdles that currently prevent its widespread adoption. For instance, how division of license payment will occur, how to ensure individuals pay, and how to convince parties to agree to such a suggestion are yet unresolved.

Firstly, tracking of file swapping activity will be difficult, making fair division of royalties complicated. Previously, CD sales were relatively simple to track, and payment made to artists accordingly. However, with numerous users sharing files by many different artists, tracking music transfers and dividing royalties will be far more complex. Although tracking file-swapping traffic with software installed on end points is the most practical solution, but privacy and security should never be compromised.

With the proliferation of malware, many are rightfully concerned with their privacy and security, and would be understandably reluctant to allow the music industry to install tracking software. A clear solution to this problem is to mandate open-source anonymous tracking software that would be open to public scrutiny and responsive to public demands. With open source software, users can examine its code and determine if it is harmful to them, and thus make informed decisions with regard to whether the tracking software is in their interests. Strict enforcement of the open-source policy would ensure the privacy and security of users.

Another problem arising out of division of payments is the method by which data is collected. As collecting information of every user would be virtually impossible, the EFF has suggested sampling to determine the make-up of files traded (2), much like the way TV ratings are collected. However, internet traffic exhibits different distribution than TV ratings, and approximately follows Zipf's law (Schwartz), an exponential function. In the case of file-sharing,

popularity of a file is likely to be self-perpetuating, as more users are made aware of the song and download it, if out of curiosity alone. While a reasonable sample size might reflect a song to be immensely popular, the sample might not be able to capture files that are traded with less frequency, even if those files make a majority of the file-swapping traffic. This would present a skewed distribution of royalties and distort the incentive to innovate.

This can be resolved with some mathematical modeling, together with user cooperation. Based on empirical observations and modeling of behavior, the music industry could obtain a reasonable extrapolation of file-swapping traffic, and divide revenues accordingly. Furthermore, users could be allowed and encouraged to direct a percentage of their monthly subscription fee to a particular group or artist, ensuring that small acts are not unfairly denied payment. As getting every user involved in management of payments is unrealistic, this option should be applied only in addition to other reliable methods. However, giving the user choice over who payments go to would allow them to explicitly express preferences, and reward the innovation they value the most that again serves to encourage creativity.

Another potential problem is the desire of consumers to free-ride; people who were previously downloading music for free would seem unlikely to agree to make payment. Subscribers to voluntary collective licensing would not be able to stop free-riders, and, without a critical mass of subscribers, royalties might not be sufficient to maintain the motivation to innovate. However a combination of good pricing and business agreements could limit this problem.

By making deals through large organizations such as ISPs, the music industry would be able to target large groups, and substantially reduce the free rider problem. For instance, the music industry could convince ISPs to offer special accounts that bundle “unlimited downloading” licenses with them. ISPs, on the other hand, would not be averse to the idea as the

prospect of having unlimited music downloads is certain to draw customers. Similar deals can also be made with large organizations, ranging from universities to workplaces.

Additionally, a low price, or monthly subscription would naturally limit the number of free riders. Many consumers are willing to pay for music, however, their existing choices, to be overcharged or download files illegally, are equally unattractive. A low subscription and the desire to compensate artists for their work, together with unlimited file-swapping rights, would form a far better option than illegal downloads, and the music industry could limit free-riding with a competitive pricing strategy.

Lastly, the music industry has shown great resistance to voluntary collective licensing, and had rejected similar proposals made by Napster and Kazaa (EFF *Making P2P Pay Aritsts*). This, perhaps, can be attributed to the fact that voluntary collective licensing requires a rather large change in mindset and business model (Berkman 12). However, the file-sharing market is large, and the music industry and artists must be encouraged to investigate its potential, even if it is unwilling to make an immediate change.

The music industry should be encouraged to explore options. Through a combination of random surveys and studies, the music industry could gauge the demand for voluntary collective, and the price such services would fetch. Furthermore, vast size of the market would give it latitude to experiment with different pricing schemes and determine the best policy.

While voluntary collective licensing has its problems, they are not intractable and the scheme provides such great benefits to society that it is worth further investigation and support.

Voluntary Collective Licensing and other Copyright-Dependent Industries

As the movie and video gaming industries share the same fundamental characteristics of innovation and creativity as the music industry, I believe that voluntary collective licensing is also applicable to them. However, there are several differences that might affect each industry's readiness for such a proposal that we must take into account.

Firstly, while the music industry has seen consistently falling revenues both the movie and video gaming industries have experienced strong growth. While the MPAA has taken several legal measures against file-sharing, file-sharing is still not a threat to their business. Similarly, the video gaming industry has, despite file sharing, seen growth in sales, and, while file-sharers are undoubtedly infringing video game copyrights, it does not face problems of the magnitude that the music industry faces. Thus both the movie and video games industry might be less willing to agree to voluntary collective licensing simply because they have deeper pockets and better bargaining power.

Secondly, despite the advancements in file transfer technology, online sharing of movies or video games is far more inconvenient than music sharing because of the sheer size of files. While music files are typically a few megabytes, video game and movie files are usually larger than a gigabyte, making the file-sharing process slower, and storage more expensive, thus naturally limiting sharing of large files. This would potentially delay either industry's acceptance of file-sharing as a fact of life, and its willingness to embrace voluntary collective licensing.

However, changing economic factors and advancements in technology would potentially change the situations these industries face, and their openness to voluntary collective licensing. If voluntary collective licensing is successfully carried out in the music industry, it might provide a working model for the other two copyright-dependent industries and prompt them to accept it.

Conclusion

Copyrights were initially formulated to reward innovation and thus benefit society in the long run, and need to be preserved. On the other hand, advancements in technology have irreversibly changed the nature of copyrights, and both the government and rights holders have been slow to accept this, hurting society with their attempts at restoring the traditional model.

Voluntary collective licensing is certainly a viable model that uses technology to the advantage of copyright holders, and should be introduced in the music industry. Furthermore, while the movie or video games industry might not be ready for such a scheme yet, it is still a possible solution in the long run, and successful application to the music industry would provide impetus for various industries to embrace such a scheme.

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