Running Head: ISSUES SURROUNDING THE MP3

Issues Surrounding the mp3 and Its Effects On Business
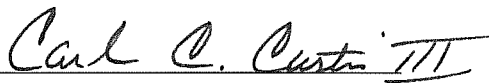
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Acceptance of Senior Honors Thesis

This Senior Honors Thesis is accepted in partial
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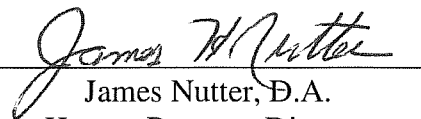Honors Program of Liberty University.

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Abstract

The mp3 is a rising issue in today's news. Through research and documentation of interviews, this thesis covers: what the mp3 is; issues surrounding its use; technology versus intellectual property; ethics involved in file swapping; past and current litigations involving the mp3; and possible solutions to the mp3 issue. The mp3 is a great technology that can be a boon to both music listeners and the recording industry alike, if both sides are willing to find a compromise that can balance fair use of technology versus the right to be compensated for intellectual property.

Issues Surrounding the mp3 and Its Effects On Business

Hardly a week goes by when there is not something about digital recording and

piracy in the news. Attempting to find the balance between the right to compensation for

intellectual property and the right to use one's purchased property as desired is a hotly

debated issue in today's society and business world. At the heart of all of this is a

technology that has revolutionized the way music is handled, stored, and played: the mp3.

The advent of the mp3 has brought many conveniences to society. Whereas ten years ago

storing music in digital form on a computer was both difficult and inefficient, today

hundreds of songs can be stored on a mp3 playback device that fits comfortably in the

palm of one's hand. With the exponential growth of computers in terms of speed,

memory, and hard drive space, it has become even more worthwhile to store these mp3

music files on the computer. In addition, programs that will do mp3 encoding from

compact disc and other digital formats are widely available. While at first mp3 encoding

was mostly used to create copies of personally owned CDs for easy listening on the

computer, the affordability of the CD writer/rewriter made copying CDs without

purchasing them an easy alternative to spending more than fifteen dollars on a CD.

Coupled with peer-to-peer (P2P) file sharing services such as KaZaA, Morpheus,

Grokster, and the like, using mp3 technology has become the easiest way to pirate music.

This pirating of music has changed the paradigm of how music is sold and marketed. In

order to come up with the most palatable solution for all parties involved, this thesis will

examine: what the mp3 is; trends involved in the mp3 such as CD burning, P2P sharing,

and mp3 use in schools and the workplace; the effects of the mp3 on business; how ethics

relate to the fair use vs. copyright infringement debate; and solutions tried thus far.

Definition and Explanation of the mp3

The mp3 is short for MPEG Audio Layer III, which is a digital file format that

uses a compression algorithm to reduce the size of audio tracks. An audio signal is in the

form of a wave, measured in hertz (hz), or cycles per second. The amount of cycles per

second is also called the frequency. Therefore, all sound is comprised of a wave that

makes a smooth curve through all the frequency ranges. First, the analog signal is

divided into sixteen binary digit parts per each second in a process called sampling.

These samples can be quite large when uncompressed; seeing as the audio spectrum of a

typical CD covers a range of 44100 Hz, "one second of CD quality sound requires 1.4

million bits of data" (WhatIs, 2002, par. 2). The mp3 encoder breaks up this audio signal

wave into blocks representing each frequency. The signal that formerly looked like a

wave now looks like a series of small steps from each frequency to the next. The mp3

encoder then changes the signal to fit the human auditory model by removing the

frequencies that cannot be heard by the human ear, such as those above twenty kHz.

Each frequency is then compared to the frequencies on either side of it; if a frequency is

very strong it will overwhelm the neighboring frequencies anyway, so the neighboring

frequencies for that section of signal are removed as well (WhatIs, 2002). This remaining

signal then is compressed and converted into an output stream. This manipulation has

reduced the amount of signal, thus reducing the total size of the file. This is a huge

benefit, even for a small sound file. For instance, the file format most used before the

advent of the mp3 was the wav format. Created by Microsoft, the wav format allowed a complete and exact digital replication of a recorded analog sound. However, the wav format also resulted in an extremely large file size, since every cycle of sound was recorded exactly. While that was sufficient for short, simple audio tracks, transferring music and other high-complexity audio signals onto a computer was an arduous task. Not only did it take an extremely long time to transfer, but it also took up valuable hard drive space on a computer or server.

Then the creation of the mp3 was announced. Invented by the German Fraunhofer IIS-A (Fraunhofer Institute), audio files were now able to be encoded at ten to twelve times less size than the wav file. Suddenly, it was possible to store large audio files on hard drives or servers without using up all of the available space. An audio file that previously would have taken up fifty megabytes would now take only four to five, depending on the encoding quality. All one would have to do to create an mp3 is put in the CD into the CD drive and copy the songs to the computer using a program that includes an mp3 encoder. Taking a song off of a CD and converting it to mp3 format is known as "mp3 ripping." The mp3 helped to usher in the age of digital recording. Because raw files could be converted to mp3 almost immediately after recording, it was possible to have them on CD more cheaply than ever before (Holloway, 2002). It also became possible to make CDs that could hold hundreds of mp3s instead of the average amount of wav files, which is around twenty. Not only that, but it was also now possible to upload large numbers of mp3s onto a website and share them with others. It was this

use of the mp3 that started much controversy, when the mp3s that people started copying from CDs and then uploading and sharing were copyrighted music files by artists.

<div align="center">Trends Involving the mp3</div>

CD Copying

Sharing music is not a new concept. For as long as there have been ways to make backup copies of albums or mixes, there has been music sharing. While the record industry condemned those in the 1980s who copied cassette tapes and gave them to friends, the impact was small compared to what was to come. Then came CDs, but it took years after the advent of the CD for there to be technology cheap enough to support CD copying en masse. CD copying faces the same issues as cassette copying did twenty years ago. In contrast to cassette copying, however, CD media is significantly cheaper and therefore even more of a threat to the record industry. Not only that, but, as mentioned earlier, CDs can be used as a medium to distribute mp3's, thereby making it even more of a concern. Considering that the CD is still the primary way to sell/distribute music, this poses a major concern because of its widespread availability and use. Although the record industry had always anticipated some illegal copying, nothing could have prepared them for the effects of file sharing.

Peer to Peer File Sharing

The age of file sharing and copyright piracy started in 1999 with the now infamous software application, Napster. Napster was the first large Peer to Peer (P2P) file-sharing service, where users did not have to go to a specific web site to find the mp3s they were looking for; instead, users connected to each other through the central Napster

hub. This central hub acted like a switchboard, connecting users together for downloads

(Maney, 2002). Through Napster, a user could download any MP3 or file that another

user had, as long as they were connected to Napster. Instead of weighing down a single

server with requests like typical client/server architecture would, Napster was able to

handle incredible amounts of traffic due to drawing most of the power straight from each

computer. Napster just used one central server that had the job of connecting users'

computers to each other (see Appendix). However, once the record industry got an

inkling that their sales could be decreasing because of Napster, a court suit was filed.

Though the record industry, after a long court battle, finally took down Napster by a

court-ordered shutdown of Napster's central server in July of 2001 (France, 2003), it

didn't take long for hackers to come up with something new.

P2P services like KaZaA, Morpheus, and Grokster soon appeared in Napster's

place, this time connecting users together without the use of a central hub (Maney, 2002).

Instead, these services use software called FastTrack to allow the users to access each

others' machines. Hence, there exists no easy way to order the shutdown of these

services. Faced with this dilemma, the recording industry retaliated by releasing

thousands of error-filled and mislabeled MP3s, hoping to frustrate users looking for

copyrighted songs. Much to the recording industry's dismay, the makers of KaZaA soon

reacted by adding a "rate" feature to its files. This effectively allows users to avoid

corrupt files (Maney, 2002). Despite KaZaA's early victories, the courts eventually

caught up with KaZaA; currently, after being purchased by Sharman Networks, KaZaA is

now seeking to be a legitimate file sharing service by offering only copy-protected

versions of files (Borland, 2003). (Copy-protection will be discussed in greater detail later).

The mp3 At Work

Due to the failure of the RIAA (Recording Industry Association of America) to get compensation from P2P software makers, the recording industry has set its sights on the business sector by threatening to sue companies that allow their employees to download copyrighted material. One business consulting firm, Integrated Information Systems, had to settle a lawsuit for one million dollars because it had allowed its employees to download and share thousands of mp3s (Armour, 2002). Due to this sort of pressure, many companies are taking significant steps to halt mp3 and other copyrighted media downloads. According to Websense, around 30 percent of 250 companies surveyed have some kind of software that restricts or blocks web sites that allow mp3 or media downloading (Armour, 2002). That number is expected to continue to grow as more and more companies realize they may be at risk of litigation because of employees' actions. Since any company that uses computers and has internet access could possibly be at risk, many companies are taking the preemptive step of installing this software. Punishment for employees ranges from verbal warnings or written reprimands to being fired (Bowman, 2002).

The mp3 At School

University campuses are finding themselves open to the same threat of litigation, along with businesses, as the RIAA has threatened to use litigation against colleges that have large numbers of file swappers on their network. Four underclassmen at Bryant

College in Rhode Island were hit with a multibillion dollar lawsuit for running file sharing programs through the network on campus (Knopper, 2003). One was running a program called FlatLan on a server in his dorm room, which allowed students to browse a FlatLan-created directory of songs found throughout the network. Although the students settled with the RIAA and the school avoided having to pay any damages, it still brought file sharing to the attention of college administrators. Before the advent of this litigation, file sharing was just a nuisance to college network administrators because of excessive bandwidth consumption (Holland, 2003).

College campuses are a haven for fast file sharing networks because of the fast upload and download speeds that the average college campus, with a T1 or T3 line, provides. On some college campuses, the RIAA is working with the administration to provide a course for incoming freshmen and transfer students about the illegal nature of file sharing and its consequences (Holland, 2003). Now network administrators at colleges are taking advantage of programs like Packeteer and NetReality, which both show where bottlenecks in bandwidth are on a network, and what IP address the packets are going to. Packeteer and NetReality can also be used to limit bandwidth dedicated to P2P so a large portion of the school's bandwidth is not occupied with downloads (Taschek, 65).

The Recording Industry and the mp3: Global Effects

It is obvious that the mp3 cannot be ignored by anyone who deals with music and recording. But what problems does the recording industry have with the mp3? Though the mp3 in and of itself did not cause a disruption among how the recording industry has

always made money, the combination of file sharing technologies with the mp3 became a

major concern for the recording industry. Without the mp3, file sharing would not have

become such a huge concern, because in most cases the bandwidth didn't exist for even

larger files, such as movie files, to be shared efficiently. However, without file sharing, it

is unlikely that the mp3 would have drawn both such widespread use and the ire of the

recording industry. There are three basic costs that the recording industry charges the

mp3 with causing or aiding and abetting.

Effects on CD Sales

The first assumption is that mp3 downloading has led to a substantial decline in

sales of genuine CDs. And, when the bare facts are studied, it is true that CD sales are

down since the early to mid 1990s (Fixmer, 2002). This is not necessarily the sole

responsibility of the mp3 revolution, though. In the 1990s, a lot of music that had been

recorded in the past on vinyl was re-released in CD form. Therefore, it is a distinct

possibility that CD sales were greatly increased during the 1990s by those who bought

their favorite albums of earlier times on CD (Fixmer, 2002). Nonetheless, that boost

cannot be blamed alone for falling sales. According to one survey of college students,

forty percent of the mp3s they possess were by artists whose CDs they would not

normally buy (Gallaway & Kinnear, 2001). Obviously, it cuts down on sales if someone

can get just one song from a CD instead of purchasing the whole CD. This gives a prime

example of the skewed business model within which the recording industry operates. If

any CD released by a major record label does not at least sell the 500,000 copies needed

to go gold, then the label loses money on that CD (Levy, 2002). Such facts show how the

revenue stream of the recording industry is severely unbalanced. Even performers such as Prince admit that "'all it [the recording industry] cares about is that kids on the Internet are downloading mp3s of the one hit song on the latest crappy release they put out... hoping to sell 2 million copies of the album when there is actually only one decent song on it'" (Gallaway & Kinnear, 2001, par. 5). Thus, the distribution of mp3s, legal or illegal, could threaten album sales, or at least threaten the sales of albums as they are traditionally thought of. Future albums will have to be quality all the way through if the recording industry hopes to continue to sell them.

Effects On Cost of CD Production

The second negative effect that the recording industry lists is the cost of putting copy-protection on its CDs. Millions and millions of dollars have been spent in research and development to further this end, yet much of it has been to no avail. For every new kind of copy protection that has been implemented, new programs have been developed by hackers to circumvent the copy protection. For example, Sony Music had paid InterTrust Technologies almost thirty million dollars to use technology that forced the purchaser of a CD to pay more to allow the CD to be copied. This software, called Key2Audio, was supposed to be an almost fool-proof way to stall CD burning and illegal MP3 ripping. However, the hackers were one step ahead of Sony. As it turns out, the hackers didn't even need to create some incredible program to disable or crack the Key2Audio safeguard. Instead, the technology was foiled by doing a simple thing: drawing around the rim with a felt-tip marker. Because this was where the technology was stored at on the CD, it disabled just the Key2Audio and rendered that safeguard

useless. Considering that the marker had no effect on the playability of the CD, there was nothing to lose. Once the solution was discovered, it spread very quickly across the Internet in chat rooms and message boards. Hackers then turned their attention to waiting for the next challenge. Sony tried to warn consumers about the "dangers" of "damaging" the CDs by using this decryption method (Edwards & Prasso, 2002), but since no adverse results were apparent, it was all to no avail. So the recording industry continues to funnel mass amounts of funding into the copy-protection effort in hopes of discovering a hacker-proof system, which in turn obviously raises costs.

Effects On Costs of Litigation

The third cost that the recording industry charges the MP3 revolution with causing is the cost of litigation to stop MP3 copyright pirates. Barely a week goes by when there is not another court case mentioned in the technology sector. In fact, it seems the first response of the recording industry to a new threat is to hire lawyers to try and stop it. Instead, it would be wiser if the recording industry embraced the new technology as it is developed (Wallace, 2002). To do so, however, would involve risks that the recording industry seems unwilling to take.

The Recording Industry and the mp3: Local Effects

In view of all this, how has the MP3 phenomenon affected individual record stores? Has the MP3 made a large impact on the day-to-day business of these stores, or are its effects yet to be seen? To help answer these questions, interviews were conducted by the author with two music stores in the area. Although neither was very willing to divulge much information, due to privacy issues, enough data was gleaned to draw some

general conclusions. Instead of reproducing the interviews here, the results are grouped

by topic to facilitate easier reading.

Effects of the mp3 on the Recording Industry as a Whole

One group of questions concerned their opinions on the effects of the mp3 on the

recording industry as a whole. The first interviewee stated that because of the mp3,

overall CD sales had most likely gone down. Basically, his comment was that if one was

going to get songs for free, why would he or she pay for them? The other interviewee,

however, saw things in a slightly different light. He made the point that many people

download songs to see what an artist sounds like or to see what the rest of the songs on an

album sound like to see if they want to buy the album or not.

Effects of the mp3 On Individual Store Sales

Flowing out of the last question, the next query asked if the mp3 had any direct

effects on the stores themselves. Though neither interviewee was willing to release any

specific information in regards to the issue, the second interviewee offered his opinion

that while the mp3 may be responsible for some sales shrinkage, it also could be

responsible for some growth. The interviewee shared that he had many people come in

asking about artists that they would not have heard of if they hadn't gotten the mp3.

Even if these people are a small percentage of the total people who come into a store,

they have the potential to increase sales.

Effects of the mp3 on the Future of CD Sales

The last group of questions discussed the future of CD sales in the growing era of

the mp3. The first of these questions asked if the interviewees thought the mp3 would

eventually replace the CD as the standard medium for music distribution. While the first

interviewee declined to make any predictions about the role of the CD in the mp3 age, the

second interviewee made a few valid points. He believes that although the mp3 will

increase in popularity and use among consumers and the recording industry, the mp3

lacks the luster and "perks" of a CD. A CD includes more than just music; when a CD is

purchased, the consumer also gets the cover art, CD art, and lyric booklet as well. Many

CDs now are also "enhanced," meaning they include extras such as music videos or other

media also on the CD. Thus, when a consumer buys the CD of a band, he or she in

essence buys the band. The consumer becomes, at least in his or her mind, an indelible

part of the band. Therefore, even though the consumer could pay to download all the

mp3s on a CD for less than buying the whole CD, the CD provides both tangible and

intangible benefits that the mp3 just doesn't have. Following up closely on the previous

question was the last question of the interview, which inquired how the interaction

between the mp3 and the recording industry's marketing of those mp3s would affect the

interviewee's store. Both of the interviewees stated that whatever change came along,

their respective stores would change along with it. When asked what changes might be

made to their store's way of doing business, the first interviewee mentioned the

possibility of using devices such as kiosks to allow customers to create CDs in the store

from a massive database, and then bringing those CDs to the register to be purchased.

The second interviewee saw the other side of the equation; since there will also be a

demand for out-of-print and such CDs for nostalgia's sake, he felt that business as usual

would not change all that much (C. Koffner & T. Maclean, personal interviews, March 14,

2003 & March 22, 2003).

Results of the Interviews

After completing these interviews, it can be deduced that the localized effects of

the mp3 vary from store to store. While the mp3 may be at least partly to blame for

slipping industry-wide CD sales, its effects on each specific store could be different.

Even though the sales volume of one store might go down, another might go up. This

conclusion may seem obvious at first, but it is the difference between stores that will

dictate their survival. In some respects, smaller independent record stores may be less

affected by growing mp3 use than larger record store chains, because many smaller

record stores appeal to particular audiences or carry more varied material than a larger

chain store. It appears that while the recording industry is willing to rise up in arms over

the mp3 controversy, local stores are prepared to weather the storm and conduct business

as usual.

<div align="center">Ethics and Fair Use of Copyrighted Materials</div>

Definition of Intellectual Property

Although both the global and local effects of the mp3 on the music industry are

huge, there is more to the mp3 than just the profit margin. What is at the center of many

of the issues involving the mp3 is not just its effects on business or profits, but the fair

use of technology versus intellectual property rights. Intellectual property can be "books,

articles, plays, songs (both music and lyrics), works of art, movies, and software…

protected by copyright" (Baase, 2003, p. 235). The concept of protecting intellectual

property actually goes back to the US Constitution. In Article I, Section 8, Clause 8, the Constitution states "[Congress will have the power] To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." These rights are held together by the idea of the copyright. The copyright itself was created by the Constitution so that creators of works would be encouraged to continue their creative work with hope of just compensation (Baase, 2003). As newer technologies came into being, copyright law was modified to protect them. An author who writes books for a living, for example, is much more likely to continue to write books if he or she is allowed to receive compensation for his or her work. If someone else were allowed take the author's work and publish it again under another name, the aforementioned author would be much less inclined to produce more works, and he or she would instead devote time to something more profitable. This metaphor can easily be extended to movies, software, and most importantly for the purposes of this thesis, music. Proponents of copyright law support new laws that threaten litigation for infringement; Opponents of copyright law and the idea of intellectual property argue that while the ideas once had a good use, they are outdated given the new era of technology that society has entered.

The Digital Millennium Copyright Act Versus Fair Use

The biggest piece of legislation regarding copyrighted materials is the Digital Millennium Copyright Act, signed into law in 1998. Originally designed to make it illegal to hack the encryption of copyrighted materials to make them copyable, it was enacted in part due to Napster's growing popularity (Murdoch, 2003). The RIAA sued

Napster and then other makers of P2P file sharing programs under the DMCA, with only limited success. Because the wording in the DMCA is vague, courts have not been able to come to a consensus concerning the issue. Those who seek to benefit from a liberal interpretation of the law applaud it as a way to keep companies and would-be pirates in line; critics of the DMCA claim that it curtails free speech and fair use more than discouraging piracy (Foster, 2002). On the other side of the copyright is this doctrine of fair use: that making copies of purchased copyrighted materials for non-commercial, personal use is legal (Baase, 2003). Examples of this include making a backup copy of software for oneself, recording a song off of the radio, or taping a program off of the television. What exactly is considered fair use varies from application to application and from court interpretation to court interpretation. However, this begs the question of where to draw the line.

Many champions of copyright protection hope to ban many technologies, software, or research that could be or are used by copyright pirates, citing the money saved for businesses and ultimately the consumer. The RIAA, among others, seeks to ban or severely restrict the use of mp3 technology (Battersby, 2002). They assert that since the technology to create mp3s is there, and software exists to distribute it illegally, that it is likely that piracy will result. The attitude of these groups may be stated as follows: "You own all the tools necessary to commit an act of thievery, and whether you know it or not, you're going to steal music" (Battersby, 2002, p. 26). This kind of thinking has long-reaching and disturbing implications. It was that kind of thinking that caused the RIAA to sue Apple Inc. over the manufacturing of such things as the iPod,

which is a portable digital music player. Apple was able to get the suit dismissed under

fair use, but the ramifications of this are not over. If the position of companies like the

RIAA is followed, then simply because a technology or piece of software can be used

wrongly, it should be made illegal (Baase, 2003). Court decisions concerning copyright

infringement had traditionally supported the right to use a device or software in

legitimate ways, even if it could possibly be used illegally. It wasn't until the adopting of

the DCMA that the courts began to reevaluate whether a device or piece of software was

mostly legitimate or not (Baase, 2003).

  The biggest problem with the line of thinking that the RIAA is following is that it

can be followed into absurdity very easily. Should all cars be banned because someone

could use one for a drive by shooting? Should all guns be banned because there are those

who would illegally obtain and use them? Should all computers be banned because

hackers can use them? Should all matches be banned because someone can use them to

commit arson? (Baase, 2003) So why should something like a portable mp3 player, or a

CD burner, be any different? The ability of the DMCA to limit innovation as well as fair

use is also a concern (Murdoch, 2003). Due to the number of customers interested in

digital music increasing very quickly, many computer manufacturers and other

entrepreneurs are taking the fair use side in terms of legislation (Murdoch, 2003). Just as

there are groups that are on the extreme side of copyright protection, there are also groups

that argue that the age of the copyright is coming to an end. They claim that copyrights

were of value when culture was dictated by property, but since culture is now dictated by

information, then value is created by the passing of information and not by the passing of

property (Moglen, 2003). They also argue that the RIAA and other companies are just like middlemen that are no longer needed, and that technology has now provided a way that the artists can be heard widely through the World Wide Web and paid directly through online payment services like Paypal for their music (Moglen, 2003). While this is by far the smallest school of thought concerning the issue, it helps to give another side to the debate.

Direct Ethical Concerns

While there might be good arguments on both sides of the fair use versus copyright protection battle, neither truly answers the question of the ethics of the mp3 and copying. Take this scenario for example: a man walks into a music store and begins to look through the CDs. Finding one he seems to be interested in, he walks over to the CD listening booth and scans it. While none of this is out of the ordinary, it is then that he makes his move. The man pulls out his notebook and begins to write the names of the songs that he likes from the CD in it. After doing this with a few more CDs, he returns the CDs to the shelves, leaves the store, and gets into his car to travel home. Starting up his computer and logging onto a P2P file sharing program, he enters the names of the songs he likes. Within a few hours, the man now has those songs, copies them onto a CD, and puts the CD in his CD case. Is this ethical or not? In one poll taken of 18-34 year olds, fifty-five percent agreed with the premise that downloading and sharing music was stealing (Carlson, 2003). Apparently, however, this reasoning doesn't carry over into actions; in the same survey, fifty-four percent also agreed with the idea that downloading and sharing music is a good way to get music for free and shouldn't be restricted (Carlson,

2003). This brings some to say that technology has created a generation of heartless copyright pirates who care about nothing but getting what they want when they want it. While evidence such as the poll above might seem to suggest something along those lines, to make that bold of a statement could be too harsh a response (Levy, 2002).

Reasons for Copyright Piracy and Responses

Why do those who illegally share or copy music do so? Although the obvious first response would be because of getting music for free, there are many other reasons as well. Other attractions of file sharing programs include having a varied and huge inventory of songs from which to choose, being able to obtain songs or versions of songs that are not available for purchase (such as live recordings, B-sides, etc.), and the ability to easily make "mix" CDs (Baase, 2003). If they don't use these services, then all these features are unattainable. When asked why it is ethical to share or copy music illegally, many people will come up with numerous varied reasons that justify it, including: not being able to afford the product; the company having plenty of money; not having any intention of buying the product if it wasn't available for free; copying it is just being helping out a friend; personal copying not being important compared to large scale piracy; and the widespread use of such file sharing services (Baase, 2003). Upon deeper examination of these reasons, it becomes evident that they don't stand up. For instance, there are many things that most people can't afford, and yet they don't take them illegally. It would be foolish to apply the "cannot afford it" philosophy to automobiles. If one does not have the money to purchase a car, one cannot just go out and steal one. Hence it should be the same for music, even if the effect is small; ethics should not be dependent

upon size. Also, pirating music hurts the artist as well as the record company (Holloway,

2002). And, of course, the amount of people doing something doesn't make it ethical or

right. Ultimately, despite a measure of ambiguity, the ethics do depend upon a mix of the

fair use of property and reasonable assumptions.

Proposed Solutions To the Struggle Over the mp3

Copy Protection

In trying to find a solution to the problem of piracy, there have been many

solutions suggested. As mentioned previously, copy-protection on physical devices is

one proposed solution that has been tentatively tried. Yet this copy protection comes

with a high price. It's hard to be able to innovate and come out with new technologies if

copy protection and anti-piracy devices have to be included by law (Maney 2002). For

right now, the only kind of copy protection that is close to hacker proof does not allow

the CD to be read at all in CD-ROM drives. While this effectively prevents the

possibility of the CD being ripped into MP3s, it also would be a hard sell with consumers:

not only would it not play on a computer, but also it could have problems playing on

many car stereos and high-end CD players as well (Robischon, 2001). Many car stereos

and high-end CD players use CD-ROMs instead of the typical CD player because the

CD-ROM is less prone to skipping. Also, a new trend in car stereos is the sale of stereos

that play mp3s that have been copied onto a CD, allowing for an average playback of one

hundred fifty to two hundred songs that have been copied onto one CD. In 1998, the

RIAA also sued Diamond Multimedia Systems, the manufacturer of the Rio mp3 player,

in an attempt to keep Diamond from producing the Rio. Diamond won the case, however,

by explaining that the Rio didn't copy music, it merely played the mp3s that had been moved onto the device. It was the computer that actually did the copying (Baase, 2003). Still attempting to thwart music pirates, the RIAA created the SDMI (Secure Digital Music Initiative) project in 2001. Basically, a device that was SDMI compliant would refuse to play compressed tracks (like the mp3) that didn't have the SDMI watermark that would come on all new CDs. This too was a failure. A report issued by the scientific community stated that since the new SDMI device would have to play old CDs that didn't have a watermark at all, all a hacker would have to do is create a small program that would hide the CD's watermark and make it seem as if none was there (Livingston, 2001). Despite all of this, the recording industry isn't giving up on copy-protection (Buderi, 2002). As soon as some kind of feasible copy protection is found, the recording industry will employ it.

Litigation

The current trend of the RIAA hasn't been as much in the technology sector, though, as the legal sector. The RIAA has been involved in litigation since 1999 when it began proceedings against Napster, and hasn't stopped since. Following the taking down of Napster in 2001, the RIAA sued P2P services KaZaA and Grokster in 2002. Expecting an easy victory, the RIAA was surprised when the judge ruled that KaZaA and Grokster could continue to operate (France, 2003). According to the judge, KaZaA and Grokster could not be held responsible for the actions of their respective users, since all they did was provide the technology that made it possible. In light of its defeat, the RIAA did what no one expected, and began to sue individual file sharers based on data

collected about the songs they had been sharing. In September of 2003, the RIAA sued

its first batch of individual file sharers. The 261 alleged file sharers were spread across

many demographic factors, from a twelve year old girl to a college professor. Because of

the public outcry created by the litigation against teens and preteens, the RIAA offered an

amnesty program (France, 2003). The amnesty program offered those who had been

sharing files the chance to sign a contract saying they would no longer illegally download

files in return for the threat of litigation being removed. However, critics of the amnesty

program point out that it just states that the RIAA will not sue, but the actual copyright

owners (the artists) would still be able to press charges. Because of this, some say that

the amnesty program was just a publicity stunt to try and save the RIAA's image. The

campaign at first appeared to be going well, as most of the accused file sharers settled

soon after being sued rather than face a lengthy court battle.

In December of 2003, the court passed down a ruling saying that Internet Service

Providers were no longer required to release the names of accused file sharers to the

RIAA (Graham 2003). In spite of this setback, the RIAA plans to continue its string of

litigation against those it finds sharing copyrighted materials. With the threat of litigation

hanging over the heads of P2P software users, file sharing by Americans has fallen by

almost half (Stone, 2004). However, there are still over a billion mp3s traded each week

across the world (Graham, 2003), so the RIAA's efforts have not been completely

successful. Worldwide P2P service use hasn't slowed much, mostly due to immunity

from American litigation. In fact, Sharman Networks, the owner of KaZaA, is actually

based in a small Pacific island called Vanuatu whose primary export is an herb that

reduces stress (Maney, 2002). Filing a lawsuit there would be near impossible, and thus the actual company is safe from having to pay reparations even if a court in the United States decides so.

Selling the mp3 Directly To the Consumer

The third kind of proposed solution has taken many incarnations but only recently has started to become viable. This would be for the music industry to embrace the mp3 and allow distribution of mp3s through legal channels. Mp3 technology, coupled with the Web, offers the chance to sell music at lower markup but astonishing volume (Fixmer, 2002). Costs associated with international shipping of CDs would be reduced significantly through the Internet as well, since the international customer could merely download the mp3s after paying instead of the company physically shipping CDs to the customer's country. Other costs associated with the making of CDs could be reduced as well. The selling of an album's mp3s online would reduce manufacturing and packaging costs to almost zero. All of this cost cutting would enable the reduction in prices necessary to sell music online. In addition, the exposure of new artists to the greater public could also massively increase sales. A poll of college students showed that seven percent of those surveyed actually purchased more prerecorded CDs than they would have if they had never been exposed to the artist. While that might seem like a small amount, seven percent of all the college students in the US would be a substantial number. Those college students would be much more likely to purchase music online if a suitable replacement for something like Napster or KaZaA could be found.

The first systems that claimed to be like "Napster with a fee" offered at best a poor selection at often exorbitant prices. Because of this, they were no competition to the free downloading systems available. An adjusted system that has a large selection and is fully legal would be a much more enticing competitor, despite the price (Levy, 2002). When Napster was forced to shut down, it was purchased by Roxio with the intention of being reworked as a "pay for play" solution (Allbritton, 2004). While Roxio was reworking Napster and negotiating with the record companies to come to an agreement of fair terms for licensing, Apple revamped its iTunes player and made iTunes available for Windows as well as Mac operating systems. Apple had convinced the record industry to license them for song sales, at 99 cents per song and ten dollars per album. Opening in April of 2003, iTunes sold over 1 million songs within the first four days (Allbritton, 2004). iTunes boasts over 400,000 songs and continues to grow in popularity as the sales of Apple's iPod portable music player also skyrocket. As of right now, the sales of songs at iTunes are holding steady at one and a half million per week (Stone, 2004). Unlike some other proposed services, which only let the user download the file but not copy it onto a CD or portable music player, iTunes allows for unlimited burning and unlimited copying onto the iPod. The iPod can be purchased with different size hard drives, providing up to forty gigabytes of total space. Since a typical song takes from three to five megabytes of space, and there are 1024 megabytes in one gigabyte, the iPod can hold a generous amount of songs. With seventy percent of the current market share of legal digital music (Graham, 2004), iTunes is working out to be a successful compromise to the legal quandary that illegal music file sharing has created. Although all the bugs aren't

worked out yet, and Apple is still currently losing money on the deal (Graham, 2004), it is a step in the right direction. The only real downside to Apple's iTunes is that the format for music doesn't actually use the mp3 format; while the iTunes jukebox will play mp3s, and mp3s can be transferred to the iPod, songs that are downloaded from iTunes are done with Apple's own compression algorithm. It's not compatible with any other portable player, but Apple is counting on the popularity of the iPod to outweigh that. Apple's success so far has not gone unnoticed among the other competitors in the digital music world.

Not to be outdone at the very thing it started, Napster 2.0 has been released for Windows users. It has a slightly larger song selection, but prices are comparable to Apple's iTunes (Allbritton, 2004). Napster 2.0 also offers a premium service that allows for unlimited downloading of certain songs and commercial-free radio. In addition, another plan is to make for the provision of some mp3s before the release of the album and/or special versions of songs for those willing to pay a membership fee to a record company's web site. There are many songs that currently are only available in MP3 form today, such as live versions of artist's shows, special acoustic sets, etc. A large number of fans might be willing to pay a fee for the special privilege of getting MP3s early or getting special members-only versions of songs by their favorite artists (Levy, 2002).

Conclusion

Though the debate concerning the mp3 is far from completely over, it has become more and more apparent that the mp3 is here to stay. Just as eight track tapes took over from vinyl records, and cassettes took over from eight tracks, and CDs took over from

cassettes, the mp3 is where the future of music is going. It is a wonderful technology that offers a boon to digital recording and personal audio. With many times more room than a CD, with no skipping and no worrying about scratches, the mp3 portable music player is the wave of the future. If the recording industry will embrace technology as other industries have done, then much time, effort, and money can be saved. To try and hold back technology once it has been unleashed is a futile task, especially when so much can be gained by putting forth the effort to learn how to make the technology work to produce the best profit margin. The true winners in this situation will be those who can use the new technology to its fullest potential, not the established businesses that stay with the old, fading business model. Although there will be those who will break the law and pirate copyrighted music no matter what is done, careful consideration of both fair use of mp3s and fair compensation to the owner of the copyright will bring about a balance of mutual benefit. The RIAA and record companies will have to learn to adjust how they do business; consistent file sharers will have to learn that there really is no free lunch; the owner of the copyright will receive the just and fair compensation for his or her intellectual property; and the owner of the mp3 will be able to enjoy all the benefits that using mp3s can bring.
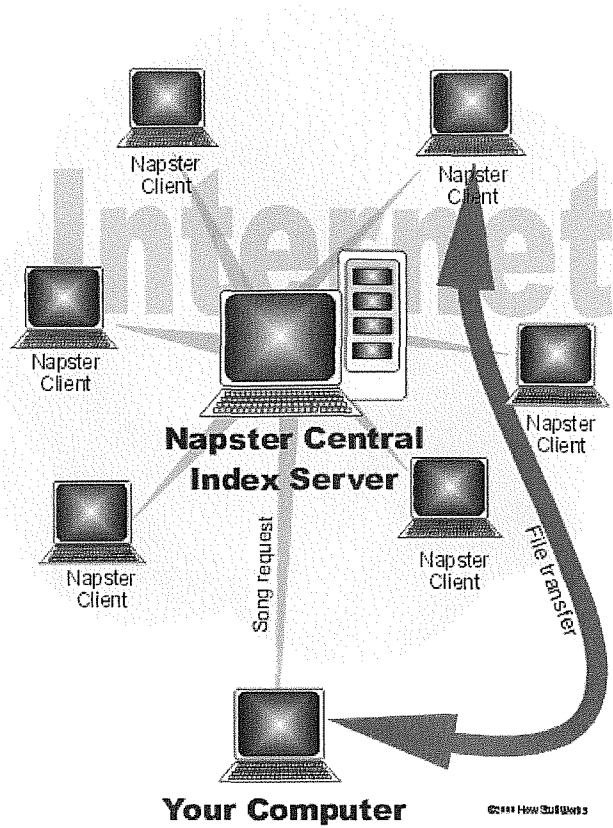
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Appendix

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