

Technology Advances Piracy: Piracy Changes Society

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Entertainment in the forms of music, movies and games has become a serious money making business. Music and movies have generated nearly 10 Billion US dollars each in the year 2007. Games in both hardware and software sold have generated sales doubling what both movies and music has done with nearly 20 billion US dollars in 2007. The infringement or stealing and distributing of copyrighted movies, music, and games has definitely made the parent companies of the entertainment industry take notice since entertainment has become such a lucrative business. There were laws were created long ago to protect copyrighted material. Today's general definitions of those who break the copyright laws are classified as pirates. Within the pirate classification, there are two types. The first type is the one that obtains the copyrighted material, mainly uses it for personal usage and possibly shares the material with limited others. The second type of pirate deals with not the person that obtains the source material (whether legally or illegally) but it deals with the distribution of the copyrighted material online or the distribution of the material as official bootlegged products. For all intents and purposes, piracy in this paper will deal with both types of pirates as a whole system that perpetuates the use or sharing of copyrighted material. The main problem with the surge in piracy is due to the changes in technology. A lot of the material from music to movies and games has now become digital and when that digital format is combined with computers, it has made piracy prevalent by means of easy copy infringement and distribution. Although piracy has damaged the entertainment industry's profits, "Software Piracy" including music, movies, games, and programs have lead the way in advancing new technology to make the entertainment medium more pervasive in our lives.

Taking a step back into time, it can be seen that in 1790 Congress adopted the first US Copyright law. The statute was revised in 1909 and once again in 1976 when media evolved

from radio to cassette tapes and movies to VCRs and known as the Copyright Act of 1976. Copyrights were enacted to protect “original works” in tangible mediums. This includes but is not limited to computer software (code), movies, music, novels, sculptures, dramatic works, and poetry. Copies of music such as MP3 files that were not purchased or CDs is an example. A movie example would be a DVD copy of a commercially existing DVD or a compressed movie file made to be played on the computer. Counterfeiting and Anti Bootleg statutes were available to states, but in 1994 the Federal Anti-Bootleg Statute was created. The differentiation between bootlegs and copyrights is that bootlegs are unauthorized copies of a commercially unreleased performance. So in the case of movies the released bootleg copies would likely come from a theatrical release or screener release that’s made for awards shows or movie reviewers that’s before the title is officially released on DVDs. As for music, again it’d be music that hasn’t been released for commercial purposes. This could be an album that is officially released in a week but because it hasn’t been released, it’d be classified as a bootleg. Both copyright law and anti-bootleg statutes have penalties that would deter violators. For instance US Copyright Law has sound and recording copyright infringement as punishable by up to five years in prison and up to \$250,000 in fines. This does not include civil liabilities of damages up to \$100,000 per infringed copyright.

Looking at technology and piracy in today’s society, it was an almost inevitable path. The first piece of technology change in movies, music, and to a lesser extent games, is the digitalization of those mediums. It’s not to say that piracy did not exist before things became digitalized. When dual cassette machines were available to the public, common people could take a cassette tape and put it in one slot and a blank tape in the other and with a push of a button, could make a copy of the original tape. The argument was that people liked making their own “mix tapes” or custom sound tracks. The problem was that there wasn’t a way to stop consumers

from making a copy of a purchased tape to share with friends or family. The same was true of VCRs. The question of copyrights came about when Betamax and VCRs first came about because movie companies didn't want people to be able to record broadcasted movies playing on the tv and to be viewed at a later date without people paying for that right.

The digitization of movies by way of DVDs was the beginning of how it changed the face of piracy. Before the release of DVDs, movie companies definitely tried to protect their property and were concerned about piracy. This was shown by the development of CSS, which stands for Content Scrambling System. It wasn't until 1999 when DeCSS, a piece of software written designed to decrypt CSS, was released that copyright infringements of movies really started. The DeCSS software started a trend that had sophisticated computer users copying protected DVD movies. Other software was designed to compress the movies from a dual layered dvd format (single layer DVDs hold 4.7GBs of data and dual layer DVDs hold 8.54GBs) to the cheaper and more available 4.7GB DVD-R so that most any movie released could be copied. During that time, compressed video formats started to appear. For those people who only wanted to play movies on their computer instead of a regular DVD player, there was software that would allow someone to take a movie that was 8GB worth of data and compress it to a more manageable 700MB (0.7 GB) that could then be placed onto a single CD-R or multiple movies onto a DVD-R.

Music has been an easier testing ground for digitization and pirating since CDs came out before DVDs. CDs was a technology developed in the early 1980's, but didn't catch on until the mid-late 1980's in the consumer market. In the mid-late 1990's, computers with CD-ROM burner drives were cost prohibitive for the average consumer. During that time as computers became more powerful, the implementation of the compressed sound media just started to become viable. Usually, music from a CD if converted as a whole would have taken 650MB

(0.65GB) worth of space. To put that into perspective, in 1995, an average computer cost about \$2,000 and the computer hard drive only stored a little over 1GB of data. If one were to have an operating system and programs installed, it would leave about 700MB free. That means to have a single music CD on a computer would take up the rest of the free space available. It was at that time where the implementation of compressed audio formats, the MPEG-1 Audio Layer 2 and later MPEG-1 Audio Layer 3, commonly known as MP2 and MP3, came about that it was more manageable to have songs on the computer. For instance if a typical 5 min song was about 50MB, the compressed version that was in an MP3 format would take up approximately 5MB. The 10 to 1 ratio, with the acceptable audio loss quality, was an extraordinary feat.

When looking at computer software and games. Piracy has been an issue ever since people were able to copy 5 ¼ inch floppies. Eventually, 3 ½ inch floppies became common along with CD-ROM technology, especially CD-ROM burners. In a sense, software has always been digital.

The importance of digitization in movies, music, and games falls into place in the whole scheme of prolific piracy, is the fact that previously huge files were suddenly small enough to make file transfers manageable. The ability to play a compressed video format without a lengthy conversion and compressed audio format through media players was also a contributing factor in the popularity of the formats.

The internet was a huge factor in piracy of movies, games, and especially music. Of the media formats, music is the smallest size at only 5MB per song whereas the other media ranged from 50MB up to several GBs if games and movies spanned more than one disc. In the late 1990's the internet was booming and people wanted to communicate and share things. Whether it's dial-up or high speed access through universities, businesses or public infrastructures, file sharing was quite the common thing to do. The introduction of the peer-to-peer (P2P) file

sharing program on the computer completely changed the speed at which people could obtain music and other files. Up to that point, traditional file sharing involved uploading files onto a server and the server would respond to requests for the file and had to share its resource to other people downloading files. This would often lead to very slow downloads. Programs such as Napster, Kazaa, and Limewire let users download files not from a central server, but from other users. Instead of everyone going to one central place to obtain a file, users would get pieces of the whole file from many users. Some people had high speed internet options and some had dial-up modems, but everyone was sharing files with one another to some degree. This meant that even if one source had to shut down his/her computer for the night, the progress of downloading from other peers who had it continued. Also, the vast amount of variety in music (and files) from all over the world exposed the pirates to not only popular songs but rare and regional music as well. It's safe to say that the advent of MP3 technology along with P2P technology changed the music industry. P2P technology has also changed the movie and software industry because the same way music was shared, movies and games also were shared.

During this time of booming piracy, the parent companies that control music, movies and games were working on changes to either fight piracy or adapt to the new changes. Hope for the future of creative media and revenues are renewed as the industry uses new technology to combat piracy and adopt to the new business model. First was the music industry and they actually did both to fight and change. The RIAA strikes back against college students who download music files. It was targeting and sending a message to the whole community that piracy of music files, both sharing and downloading, was not to be tolerated any longer. Most students who had pending legal cases against them, could not afford the penalty of each infringement (up to \$100,000 per song) and settled out of court with the RIAA. In 2005, a teen was convicted under an Arizona state law for illegally downloading music and movies from the

internet. In the case, Mr. Brad Buckles for the RIAA estimated that internet piracy has cost the industry up to \$300 million each year in CD sales.

A different approach was used by Apple in changing with the consumer's new attitude towards purchasing music. A lot of consumers liked having individual songs and didn't want to purchase whole albums at an average of \$16 just for one song. So with Apple's iPod and iTunes music player/purchaser software, they adopted digital rights management (DRM) technology to combat piracy and at the same time offered a \$0.99/song model. DRM in iTunes, is used to verify and validate songs that were purchased and also that the players, namely iPods and iTunes players on the computer, were limited to less than five computers. It keeps track of purchased songs in that it doesn't let the iTunes music files be exploited in the same way that unprotected MP3 music files had been.

The movie industry also changes its business practices as downloadable movies (officially sanctioned ones) have become less taboo and viewed as an opportunity to make money. Through the same type of content management software (DRM) used in music, movies have also been through a growing phase. As video game machines and digital video recorders (DVRs) have become more advance and popular along with high speed internet throughout homes since the latter half of the year 2000, the movie industry has started to come up with ways for people to view movies. Specifically, the Xbox 360 video game system, PlayStation 3 (PS3) video game system, and the Netflix movie rental company offer downloadable shows and movies. In the case of the video game systems, each now have hard drives that store the videos and they both can connect to the internet. Netflix has been able to use software to stream movies to a computer, provided the customer has subscribed to the monthly service. As opposed to current pirate downloading methods where the whole movie must be downloaded, patrons of the pay service can start the movie after a few minutes of buffering time. Then the movie goes on

continue to download as they're watching the movie. The successful business model works because of the small leadtime involved in being able to almost, instantaneously watch any movie available at any time.

Extra incentive goes to owners of the PS3 and purchasers of content. If that person also has a PlayStation Portable (PSP), a portable widescreen gaming unit, it will allow gaming content as well as movie content to be played from the PS3 console wirelessly over the internet through to the PSP handheld device. This means that a movie like Click purchased through the PS3 online store, the PlayStation Network, could be viewed anywhere throughout the world that has internet access on a little player that's portable.

The software industry has also fought hard to combat piracy with mixed results. In the case of computer gaming, unsuccessful attempts at applying anti-piracy methods end up frustrating gamers. SecuROM (DRM technology) was applied to a recent computer game named Bioshock. Bioshock was released on the PC in the summer of 2007. The controversy has been that the method for SecuROM has made legitimate purchasers of the game frustrated due to difficulty of getting the game to run due to the copy protection scheme. Also, those who bought the game has to verify the copy through the internet before being allowed to play the game. This has unfortunately made the comparison of a pirated version more tempting. Instead of going through the long process of validation, a pirated version only needed to be downloaded, installed, and a patch applied to circumvent the copy protection. Then the game could be played without the need to be connected to the internet, installation of security validation, or even game disc.

Fortunately the change of business models has made anti-piracy a bit better. Networking based games have become the new method to combat piracy. Massively Multiplayer Online Games (MMOGs) or Massively Multiplayer Online Role Playing Games (MMORPGs) have been quite popular around the world. The biggest success has been the World of Warcraft. It is

a game that uses a subscription based model. In order to play the game, the software must connect to the game server which handles the world and other players. This business model was used in order to not only generate monthly income, but also is a smart way to keep track of which users are using legitimate software.

The history of protection of copyrighted material went from a small problem to a big problem with the advent of technologies such as P2P and digital movies/music. However, due to the rampant piracy that took place, the industry changed for the better. The industries incorporated new technology such as DRM into portable music players and streaming movies. Through the frequent use of MP3s, due to the public getting used to the small digital format, it has advanced and integrated MP3 technology into how our society uses music today. Music players doesn't have to be the minimum size of a CD anymore, it can be as small as a bottle cap. It can also be virtually invisible since it's being incorporated into cell phones, car stereo systems and even watches. Movies seen at home used to have to involve driving to the video store to rent a movie. Now, digital versions can be seen almost instantly at any time. Portable movie players can also be used to watch content that a person has already purchased if both devices are at a place where the internet is available. Although anti-piracy measures in games have had issues, a simpler business model did come forth to change the way games are being played. Not only does a game have to be a solitary experience, but interaction with other players has come about through the MMOG concept. Piracy of current entertainment media has never been "right" legally or morally. However, it can be argued that because of it, our society got used to the simple benefits of it, whether it be smaller sized files, portable music, digital movie downloads, or spreading the use of games. The advancement of technology has not only lead to the ease of piracy, but piracy has lead to advancement in new technologies that make our lives easier. This

advancement not only lets people legitimately buy and use media, but provides new ways to enjoy movies, music and games.

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