Stealing (From) the Music Industry

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Abstract

The record industry is desperately trying to cope with the spread of peer-to-peer (P2P) systems and salvage its business model. Meanwhile, these same P2P networks present a tremendous opportunity for technology companies to reinvent consumers' relationship with music. I argue that a new business model based on open content can be just as revolutionary for the way society interacts with music as the Internet has become for text. It may prove to be just as lucrative, too. Technologists are best positioned to capitalize on this phenomenon with their unique combination of technical experience, marketing, and vision, and can greatly expand the music market.

If a problem has no solution, it may not be a problem, but a fact — not to be solved, but to be coped with over time.

—*Shimon Peres*

1 Audience

I present a long term, strategic plan for technologists to profit from the music industry's mistakes and miscues with respect to the peer-to-peer (P2P) phenomenon. The list of potential profiteers is large. I will focus on the benefits that software companies stand to gain. The largest of the software companies – Microsoft, IBM, Google, Apple, and Adobe – have recently gained considerable power with innovative products the alter the consumer's relationship with music. With another decade of strategic decisions, these companies can further ingrain the computer into the music experience and cause it to be its centerpiece. They can solidify the computer as the nexus of information and entertainment both inside and out of the home, conferring significant market power.

Venture capitalists should also heed this strategy: a new company can rapidly grow with a single prominent idea. The business model I advocate presents new business opportunities, and new companies may be as well positioned to monetize the opportunities as the current industry stalwarts.

2 Failed copyright enforcement mechanisms

The current structure of the music industry depends on their right to control the distribution of music. P2P file sharing services undermine their ability to control how distribution takes place. Users, illegally, can obtain music without buying CDs or the rights to listen to it through online services.

Judged by their behavior, many people treat music data as sharable content. Lending a friend a copy of a CD isn't illegal, so why would the digital equivalent be illegal? The industry's problem is especially acute among the young generation [15], a lucrative segment now and one that will soon grow into their an even more profitable set of consumers. The music industry must overcome and persuade tens of millions of consumers that they should instead pay for something they currently can obtain for free. This is an uphill battle, for they must also unwind the sense of community that file-sharing networks inspire [15].

The music industry has started using legal dispute resolution mechanisms to convince file-sharers, and minors' parents, that their actions are illegal. Lawsuits serve two main purposes in this context. They stop the worst offenders. Due to the structure of P2P networks, the most active contributors are a significant source of illegal content on the networks. Stopping these large scaler content providers will decrease the P2P network's utility. Additionally, lawsuits reassert to users that the music industry owns the rights to distribute their works. Every time a lawsuit is mentioned in the press, it reminds file-sharers of the penalties. This normative quality is perhaps the most effective technique, since a lawsuit stops the defendant and will also likely stop people in the defendant's social circles. Lawsuits can also serve as a revenue stream [16], netting the music industry thousands of dollars per lawsuit.

However, lawsuits are not without their problems. The shear scale of infringement means that many more than the current 10,000 lawsuits will need to be filed. With tens of millions of infringers [13], this is not easy and is is expensive for the music industry. It also risks alienating the consumer from the industry. It breeds discontent among those that buy CDs as well as use P2P services: why should they give the industry any money if the

industry will use that money to sue them? In the public's view, an occasional act of infringement, particularly for a "valid" reason, like trying out a CD or space-shifting, shouldn't merit legal action. The industry must be careful that the lawsuits don't induce a boycott that ends up hurting their revenues. Changing these attitudes will take a deft public relations campaign.

Legal solutions may help avoid some infringement, but it is hard to see how it can stop all or even most infringement. P2P software is too easy to operate foreign countries, where the US may not have jurisdiction against the P2P operators. Requiring every country to enforce IP protection for music requires a considerable international treaty effort [14]. And while it is easy to condemn the illegal use of music files, it is an open question even in this country whether P2P software should be banished. A single country that permits P2P software would likely be able to perpetuate the P2P phenomenon in this country. As legal mechanisms start targeting the activities of users, they may start to avail themselves of anonymizers that help preserve their access to the content and significantly reduce their chances of being caught.

The music industry is also investigating, and hoping for technical solutions through digital rights management (DRM). DRM encompasses a range of technologies, some well established, but others still in very early research stages. The real question, though, is how DRM technologies affect copyright violations.

There are many different technologies that can all be properly called DRM. Many people regard Apple's iTunes as perhaps the canonical successful example; access to content through a limited interface (only through Apple's proprietary iTunes application) helps limit what the consumer can do with the music after they bought it. Other technologies are less apparently a form of DRM, such as the MPAA's embedding of identifying watermarks into movies that allow them to track if an Oscar viewer uploads their review copy to a wider audience. The common feature, here, is a means for a rights holder to better enforce their copyright and control distribution.

A successful DRM scheme therefore seems like it could prove a panacea; is it? The past track record for these technologies does not bode well in developing a secure scheme, however. All of the following DRM technologies have been broken: iTunes, Windows Media Player (WMA), RealRhapsody (using WMAs), DVDs, DirecTV, the Digital Content Protection System for digital HDTV systems [9], and the Secure Digital Music Initiative [8].

Of course, in some cases, vendors can easily revise their broken technologies and redeploy them, as in iTunes' case. The real problem is that successfully developing a useful DRM technology is difficult, particularly

when it is intended to run on commodity operating systems, such as OS X or Windows. These operating systems were not designed to provide the isolation that securely implementing DRM requires [3]. There are initiatives to reverse this trend, with the Trusted Computing Group (TCG)'s initiative add special hardware chips to all future computers [2]. But this too has problems – it assumes that operating systems will be bug free in order for it to work, which is not true of current operating systems. The TCG proposals also face problems enticing users to install the hardware: critics liken it to "Big Brother" ware. Current promotional materials, in fact, shy away from the DRM implications and emphasizes the benefits in system security [2].

Unfortunately, the general purpose computer as we know it is too general purpose: it can easily be repurposed to break the DRM scheme of the music it is playing with little effort. By modifying system software, most digital protection schemes can be broken. A fundamental rearchitecturing of the computer into a less open architecture is the only sure way to eliminate these threats.

Another problem with DRM technology it is often a break-once technology. If a music company sells a DRM protected video to one person, and that person manages to circumvent the copy protection, they can republish the file to P2P networks. All derivative copies will not have DRM protections. The DMCA aims to put legal teeth against this, but calls into question the whole point of DRM technology – a technological means of enforcing rights.

There is also an incentive problem with DRM technology. It often doesn't attract the best technical talent to engineer new systems to build DRM solutions. As a generalization, the computer science community, and especially the computer security community, is libertarian who espouses openness of standards. Many of the DRM standards are created in closed committee with strong corporate backing in a setting that doesn't inspire much research work. The content industry's culture repels the top minds from working on their side.

With that said, is DRM technology doomed? The technology itself will likely persist, but it doesn't seem likely to achieve the industry's goal of licensing compliance. Apple and even DVD manufacturers have made effective use of it. DRM technology presents enough of a barrier to prevent the average home consumer from distributing the content. Yet these successes don't indicate the technology's success. DRM doesn't stop the techno-wizard from infringing and illegally obtaining and spreading content. This is a critical failing of DRM. It sacrifices the honest person's fair use rights since honest people remain honest without preventing the dishonest from breaking the protection mechanisms.

The music industry needs to be careful, however, that they do not upset their customers with the DRM technology. In addition to the added inconvenience, DRM technology often has a tendency to erode fair use privileges: copying a DVD is not too easy for the average person. The industry has to make sure that the vast majority of their customers do not become upset and seek out the Darknets hidden from the industry's gaze that will surely arise to illegally obtain the content [6].

The countermeasures the industry is pursing are unlikely to halt the spread of P2P networks and other illegal distribution mechanisms. Current studies indicate the industry is losing market share to P2P networks [11, 12]. The music industry struggles in the courts and to enable technical measures while consumers continue to ask themselves why they should be the ones to pay for content that their neighbor obtains for free.

3 The Internet and the transformation of text

Let us back up and first examine the revolution in text that started over 30 years ago with the advent of ARPA network and then rapidly expanded with the Internet's commercialization and the introduction of the web in the early 1990s. Years ago, it was difficult to foresee ordinary people wanting to broadcast to the world their thoughts a multitude of topics, from politics to yesterday's lunch or a daily log of their child's soccer games. Writing, and publishing, was the domain of professionals. It was thought only "good" works were published and read.

A diverse set of parties have already benefited from the Internet. Overwhelmingly, the public is the primary winner. It is now trivial for anyone with a computer to begin posting their opinions, ideas, and research to the web. Free blogging and hosting services bring the cost of publication down to the cost of Internet access, and libraries increasingly offer free computer time to patrons, ultimately bringing the cost to publish to a global audience to zero. The Internet becomes the greatest vanity press. Just as the content creator benefits from this new global audience, the public benefits from a vast army of free writers creating works. It is now possible for anyone to read thousands of computer science papers studying facial recognition, for example, without even having to subscribe to expensive scholarly journals.

The sea of free text, though, does not preclude businesses from profiting from the Internet. In fact, the opposite is true. The shear volume of material places a greater emphasis on tools to manage the text. Society has created so much informational clutter that dealing with it —filing, searching, and

creating it— has become big business. Note, though, that out of this clutter quality work does emerge. It is the job of information management companies to help us find the the important documents out of the clutter while adapting to each person's separate notion of importance.

I will discuss three basic categories of information management companies, and in the following section show how these categories naturally extend into the world of free music. Many businesses do not neatly fall into exactly one category due to the inherent interdependencies.

Searchers and organizers When lots of content is available, finding a specific piece of information becomes a challenge. Many companies have sprung up to serve this market in the case of text. Search engines are regarded as necessary glue that holds the Internet together. Search engines attempt to gauge the relevance and prominence of content, and then deliver only the most useful in response to a user's query. Originally, this classification into "good" content was done with humans, as Yahoo used to employ many website categorizers. Technology has replaced this laborious classification, instead inferring the quality of a document from the structure of the web itself. Search engines evaluate millions of content creators' decisions in order to rank content.

Content hosters Another category of Internet profiteers include the companies that host a user's content. Internet service providers that provide their members space for content may be the original participants, but the category is far more encompassing. Photography sites, such as Flickr or Kodak's EasyShare Gallery allow users to upload their photographs and and share them with others. Blogging hosters, such as LiveJournal, Blogger, or DiaryLand allow a user to freely post text. Free email services, from Hotmail to GMail, provide an archive for a user's email.

Content facilitators Finally, there are an innumerable number of content facilitators. These companies create software to help a user deal with, and interact with the Internet. At the lowest level, are operating system vendors, Apple and Microsoft. But corporations that help people generate their websites, from Macromedia to Adobe and even Apple, have also ridden the content bandwagon.

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How does the market think of these searchers, organizers, and hosters? Apparently quite well. Yahoo, Google, Blogger, and Hotmail all primarily deal with free text and have had many billion dollar valuations. Clearly, Wall Street is impressed with the importance of text.

The key point is that these companies provide service for people to manage free text and images. With this alone they've become profitable. Even content creators, such as newspapers, find it difficult to compete with free, and most profit off of their advertisements instead. This is the type of revolution that technologists can profit from with free audio content.

4 Enable the sharing of music

The success of the textual Internet provides a handy blueprint for music. Just as the big winners with text didn't produce text, so must the technology industry in this setting help foster the production of music by users and others. With a proliferation of content, the public will require services that help them generate, manage, and find music. It is the creation of these tools that will prove lucrative.

Producing effective tools, even for text, is not easy. There have been multiple generations of products and technology before a successful and effective textual tool become amenable for widespread public use. Email is one example: the current free email services leverage experience with the original ARPA mailers, then centralized and managed email services, before they finally evolved into distributed web-based solutions. Managing music has many of the same problems of managing text, but it is a technologically more difficult problem. Music files are orders of magnitude larger than a typical text document; its structure is more opaque to automated software tools; and finally, easy to use software for editing and producing sound have only started to appear within the prior few years. These new challenges will require technical innovation.

Fortunately, music management can utilize many of the lessons that text management has already solved. Text services already deal with a large corpus. With Moore's Law, it is no longer inconceivable to index or store a million or even a billion music files, as it was even a few years ago. Furthermore, the business models of the textual Internet took many years to discern; discovering their musical analogues should be comparatively quicker.

The technology industry must enact two fundamental policies. The first, is to promote the spread of open content. In the second, they must prevent

technical solutions that help the music industry lock-in their hold on copyrighted music.

Promoting open content. By facilitating music content production, the technology industry can ultimately create a large volume of music files that will further spur the need for management tools. The technology industry will be well positioned to take advantage of the demand for additional tools. The need for management systems, though, demands a wealth of content for the tools to interact with. I will first outline the steps necessary to foster open content and secondly the set of tools that will increase the value of the existing corpus of content.

Under an open content regime, the right to distribute is no longer the means to profit. I imagine open content to have minimal distribution and sampling restrictions associated with it. Lawrence Lessig provides one such example with the Creative Commons license designed to facilitate sharing [1]. His book, Free Culture, describes how society can benefit with open content [10]. This proposal draws much inspiration from Lessig's efforts.

As I detail below, the technology company profits from the mere existence of content. If content is so abundant that people are regularly dealing with, searching for, and modifying it, then businesses that aid each of these tasks can flourish.

The technology industry must first make early adopters —struggling bands with promise— see the advantages of this regime. This involves supplanting roles the music industry traditionally takes by taking on the tasks of distribution, marketing, and production. Much of this can be done with effective software tools and services. I will outline three target musicians classes representing increasingly larger number of users.

First, there must be compelling, open content for the industry to profit from the open content. The technology industry should foster struggling small bands and create an online distribution network. Creating the distribution channels is not difficult since technology companies can reuse their experience from creating text and image delivery networks for this problem. Obtaining professional studio time, marketing, and promotion is expensive, and the technologists can provide this gratis, in exchange for online distribution rights. The industry must provide the promise for bands to become well known, allowing them to profit from merchandising, concerts, and even CDs. The technology industry's support, however, should only be delivered to bands that release their content compatible with open licensing. The reason is that the initial leap-of-faith campaign is aimed squarely at creating

compelling, open, online content for anyone to use. The industry's goal is not to "own" the rights for a particular song, but rather to create a large corpus of works the public desires and that necessitates technology to manage this music. Seeing the success that open content enjoys, others may also release their music under this relaxed licensing regime.

Secondly, talented musicians who may not aspire to be professionals should be encouraged to embrace open licensing. Being enthusiasts, their enjoyment with music comes primarily from creating and sharing music, and they expect little financial gain. Under the current music market, they would not seek nor receive any sort of distribution rights: the record industry is not interested in producing casual or amateur musicians. Again, software tools and services should be restricted to ensure that the resulting content is open. This group may be the easiest to recruit to the open content initiative: they have no financial motive and need only a little encouragement to share their works with others.

Finally, those with interest, but not necessarily talent should be helped in creating content. Lacking sufficient talent for record companies to even consider publishing, these people may be seeking to publish to extremely small audiences. Their skill may be in generating clever lyrics, and they may not have the talent to create intricate drum beats, for example. What they most need, though, is easier mechanisms to create content. Simplifying the creation of derivative works would greatly benefit this group. Movements within the group are already afoot. As an example, a genre known as Nerdcore Rap draws inspiration from research and academia. Pairing beats and rhythms customarily found in Rap with lyrics from Physics or Computer Science research, they target an extremely small market. Their chief contribution is their novelty and creativity of lyrics. They seek to broadcast to a target audience of hundreds or maybe thousands of people. The record industry is currently not set up to foster content targeted at a few hundred people worldwide, yet as evidenced by its emergence, there is interest already. These are the musical bloggers – those willing to experiment and broadcast their abilities to their friends and other interested audiences.

Each of these three target audiences can be served by tools and services that parallel those of the textual Internet. The tool makers would likely develop in concert as the promise of open content trickles from few to many.

As with the textual Internet, finding interesting content is of primary importance. Recommendation systems are already deployed at large Internet sites, and online music review sites serve a similar purpose. But these systems are at their infancy and suffer from a distinct problem of insufficient training data. For example, Amazon's recommendation system bases its de-

cisions on the items a customer has purchased and the pages they browse at the site. However, a music recommendation system can gather much more data: how often someone listens to a particular piece of music, what time of day, and the order in which they listen to music. Ultimately, it would be able learn more data about a person's listening habits simply by availing itself of the data already there, so that music recommendation systems may become more accurate than the corresponding systems for purchasing goods.

As content grows, searchers and organizers will increasingly serve a second audience: not just passive listeners, but also music creators, whether amateur or professional. Such a musicians would use the system to find interesting beats, vocals, or tracks to sample from. Current technology does not serve this market at all: it is impossible to specify a rhythm similar to a particular snippet for use in a new composition. With a vast corpus publicly available, though, developing a tool would be highly valuable. The technology is within reach. Current efforts used to fingerprint music, could more easily be repurposed to the searching task. In fact, it may be better suited to this purpose, since false-positives and false-negatives in the search setting are not problematic when compared to identifying copies and do not have to overcome parties trying to circumvent the technology.

Content hosters – analogues of the blog hosting services – serve a similar forum for people to interact regarding their musical creations. The community they foster would likely help identify and promote useful content. Interestingly, whereas current music is released in finished form, content hosters may even want to facilitate creators who decide to publish their music's source material. Trent Reznor, of Nine Inch Nails, recently released the source files for one song from his latest album "With Teeth" to the Internet in Apple's AppleLoop format. This allows anyone with Apple's GarageBand to open the data source data files that were used in creating the album. While he chose a license that restricts its use to noncommercial use, there are already 500 remixes produced by fands posted on Reznor's website. A less restrictive license might prove to be even more successful.

Finally, music facilitators would be most useful to amateur musicians and hobbyists. They produce simple sound editing software, hardware, and interaction mechanisms. Apple's Garage Band is one start, but there are many other opportunities to help users create music.

Blocking the music industry. Some of the strategies the music industry is pursuing require the complicity of the technology industry. For

example, next generation audio formats will be unlikely to succeed without support from the computer industry: consumers now expect their computers to act as a stereo replacement. Withholding support for a DRM enabled copy protection system will help stymie business as usual practices.

Recent legal initiatives that impose constraints on technology, such as the Hollings Bill or the Broadcast Flag, should be vigorously opposed. The more extreme of these measures would cripple the technology industry and provide the music industry with its own technology platform supporting their closed media. Other technology mandates erode fair use and perpetuate the notion that music *must* be regulated.

If the music industry can manage to enact legislation that curtails peer-to-peer networks, the open content strategy will be dealt a severe blow. The technology industry has to ensure that non-infringing uses of P2P networks become popular enough to ensure that undue burdens are not placed on the growth of the networks. The easiest and most convincing way is to produce enough open content that uses the P2P networks for content delivery, so that P2P networks become more popular for delivering open content than illegal content.

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The above approach is not incompatible with alternative business models. For example, mandatory (or voluntary) licensing, instead of a Creative Commons style open licensing model also ought to prove lucrative for the technology industry. Many of the same market opportunities exist in both cases. However, open licensing is an easier solution to implement. It works globally, and doesn't require all Internet connected companies to comply with the licensing terms. Additionally, by freeing the content, it simplifies the job of amateurs and automated software tools to find and use content. If all content is marked as open, enforcement and licensing management costs disappear.

5 Analysis

Open content changes the concentration of power and profits in the music industry.

Open content shifts the power balance away from big media companies since they will not be able to profit by charging for music. They will have to either form partnerships with technology companies to engage in promotion, start more aggressive cross-promotion marketing campaigns, or search for new business models as they lose their crucial revenue source.

Similarly, the very largest of bands will not benefit under open content. Artists that make a primary source of their revenue from selling CDs will no longer have that revenue stream. However, only the most successful bands are in this category.

The converse of the above is also true: open content also helps smaller bands gain a foothold. Since achieving a coveted record contract with its attendant promotion is no longer a requirement to success, an undiscovered band can be judged based on its musicality. If its music proves popular even among a small group, word of mouth and search engines will rate it highly. Bands that may have niche audiences can more easily find their market online. Lower distribution costs eliminate much of the risk in promoting quality: with cheaper and more effective tools, bands can produce their own content for little money. This is a similar situation to printed text years ago. Before computers, generating professionally typeset documents was expensive. Now, everyone can produce their own typed documents with the software that comes with most computers. Producing professional documents only requires a modest software investment.

Listeners also benefit from this world. In addition to the volume of content they have free access to, they are freed from having to worry about how licensing impacts their use of the material.

Perhaps the biggest winners, though, are amateur artists. Open content facilitates sampling and modifying existing artists' works. The proliferation of content creates interest in new genres that don't have sufficient audience sizes to warrant traditional distribution channels. People can gain fame among small groups of people by creating new content out of the works of others. For example, the Grey Album, an illegal album produced by DJ Danger Mouse, was sampled from Jay-Z's Black Album and the Beatles' White Album. It was surreptitiously leaked to the Internet and achieved critical success (Album of the Year by Entertainment Weekly) [7]. Such projects would no longer be illegal with open content.

Of course, the premise of open content is meant to assure the technology industry of profits. As I have previously outlined, there are many business opportunities that parallel the textual Internet's business models. By replacing the music industry's role as musical groomers, the technology industry also gains clout and power. They move one step closer to facilitating the consumer's interaction with all of their data: whether textual, aural, or visual. The unification of interaction likely confers unforeseen business advantages for cross-business promotions.

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One of the biggest advantages of the open content business model is the ability to avoid the difficulties in "solving" the P2P phenomenon. This new business model takes advantage of the large installed base of P2P software. It does not require changing many consumers' behavior with lawsuits, new laws, or levies. Instead, it requires businesses to encourage consumers to create and publish content.

Many have recently promoted the notion of "long tails" to describe the popularity of seemingly unknown or unpopular artists [5]. In fact, many online merchants are already taking advantage of the long tails: NetFlix, Amazon, and RealRhapsody are just a few of the most prominent. RealRhapsody is an online music subscription service that allows users to stream DRM protected music files. It offers users a smorgasbord of over 735,000 tracks to listen. What is interesting, though, is the distribution of interest in their titles. Of the top 100,000 tracks it streams, every one is listened at least once a month. This pattern holds for the top 200,000 and top 300,000 tracks as well [5]. This indicates the diversity of music listeners tastes. It is inconceivable for the traditional music companies to facilitate such easy access to such a large library of music through CD sales.

As surprising as this "long tail" phenomenon is, what is more surprising is the success of these distributors to take advantage of it now. Open content is a great extension of the "long tail". The existing services take advantage of the currently available and licensable tracks of music. With open content, tracks that would otherwise never have found a distributor will be added to music enthusiasts libraries. Just as amateur political commentary never had a large, national voice before the blog, the amateur musician can now gain a voice – and people will listen.

Another advantage to changing away from the business as usual is the unexpected new business opportunities that may be created. Entrepreneurs may likely be able to take advantage of the existence of a large group of open music to create currently unforeseen businesses.

There are a number of difficulties, problems, and challenges to starting a new business model based on open content. The music industry is well entrenched in their current role, and they enjoy significant advantages given their past. Their legislative clout is significant. Ultimately, a new business model becomes a gamble about fickle consumer attitudes and desires.

One significant problem in moving towards an open content regime is the legacy problem. The music industry owns the distribution rights to many thousands of popular albums, and they would be loathe to relinquish their rights to help found a new industry that exists without themselves. Consumers clearly are still interested in the old record catalogs.

The record companies' existing catalogs can and will prove profitable for many years. But open content can still become the new model for all new content. New content most often targets the youth; this demographic, as claimed by the record companies, is increasingly turning towards P2P networks anyways. Furthermore, the youth are less interested in purchasing from the existing catalog.

A likely transition story involves both regimes coexisting for some time. As open content increasingly gains more and more popular artists, the significance of legacy content shrinks. Increasingly, as legacy content becomes associated with the "oldies", it will lose prominence. Of course, the record industry will seek to monetize their catalog. Options here include staying with traditional CD and media sales including iTunes, or even RealRhapsody style subscription sales. But open content will drive down the price of even these oldies.

The record industries also contain significant legislative clout. The Recording Industry Association of America (RIAA) wields considerably more influence than their software counterpart, the Business Software Alliance. The RIAA's power enables them to use legislation to help them entrench their business model. The BSA and the technology industry need to bolster their legislative power and block these potentially damaging threats.

Analogously, there is a risk that the Supreme Court will issue rulings that stunt P2P networks. For example, suppose the Supreme Court rules in the *MGM v. Grokster* case that P2P software created under an "active inducement" test is illegal, a possible outcome based on the oral arguments [4]. Applying this test to the current crop of P2P services may well find that they fail the test, for there is evidence that Grokster may not pass an active inducement test. Meanwhile, the proliferation of open content will only develop if an effective distribution mechanism is in place. Current P2P services fill this role: they are widely deployed and have the ability to efficiently distribute open content. However, if the existing P2P services are forced to shut down, it will take time for new peer-to-peer services to be developed. While new P2P services that pass this particular inducement test can be developed and deployed, they would be unlikely to have as broad penetration that current P2P services enjoy for some time. P2P clients have large market penetration due in part to the way they are set up to establish large networks. For example, when most P2P clients are installed, they automatically share music files that are found in the most common locations on the user's hard drive. This increases the power of the P2P software through network effects. Without these types of design decisions available to P2P software developers that help spread infringing content, there will likely be

less content available in the illegal P2P networks. This in turn implies that fewer users will have the software available on their machines to share legitimate content, hindering the spread of open content.

Related to the computer industry's weak lobbying clout is the requirement that it act as an alliance advocating and promoting open content. Open content cannot flourish without a concerted effort involving many companies from throughout the software industry. There is no company with enough experience to enable open content alone. The software industry, however, has not typically enjoyed much success with collaboration.

Part of the reluctance to collaborate among software companies is differing viewpoints on intellectual property. Companies may fret that promoting open musical content may send signals that software should behave similarly. Though the merits of open source are distinct from open musical content, the concern must nevertheless be addressed. How do you convince Microsoft to embrace open musical content without contradicting itself with its stand on open software?

Software companies promoting open musical content do not have to engage in any such compromises. Consumers currently recognize the difference between software and data; software is a tool that helps them manipulatie their data. Their view of data as free is independent of the mechanisms to interact with the data. The software industry can perpetuate this notion without drawing parallels between two similar intellectual property assets.

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Businesses based on open content seek to displace current media companies as purveyors and dealers of music. Rather than attempt to fight the public's use of P2P software, an open content based model relies on it in a Judo-like fashion. P2P networks provide free distribution of music tracks from the artist to the listener. Changing consumers' behavior to ignore this free distribution channel and instead pay for the distribution, even under threat of lawsuit, is an uphill battle. The record industry will need to persuade millions of people to change attitudes against their intuition about how music should be marketed. This effort will be expensive, difficult, and ultimately may not even be successful.

I have outlined an alternative here. While the music industry pursues strategies to entrench their existing business model, markets, and distribution channels, the technology and software industry can legally profit from the market turmoil. Promoting open content is that future. Open content neatly sidesteps the problem of consumers undercutting distributors, since

the content is intended to be widely disseminated. Revenue for all parties involved – P2P providers, content creators, and software companies – depends on widespread dissemination.

With a widespread growth of content, software services to manage, find, edit, and create music content gain power. These are not trivial services to create, but the software industry has gained much experience with the textual Internet in both the technical problems as well as marketing problems.

References

[1] Creative commons. `creativecommons.org`.

[2] Trusted computing group. `https://www.trustedcomputinggroup.org/home`.

[3] *The Digital Dilemma: Intellection Property in the Information Age*. National Academies Press, 2000.

[4] Oral arguments in *Metro-Goldwyn-Mayer Studios, Inc., v. Grokster, LTD.* `http://www.supremecourtus.gov/oral_arguments/argument_transcripts/04-48%0.pdf`, March 2005. 04-480.

[5] Chris Anderson. The Long tail. `http://www.wired.com/wired/archive/12.10/tail.html`, October 2004. Wired Magazine.

[6] Peter Biddle, Paul England, Marcus Peinado, and Bryan Willman. The darknet and the future of content distribution. In *Proceedings of the ACM Workshop on Digital Rights Management*, 2002.

[7] David Browne. The Grey Album. In *Entertainment Weekly*, March 15 2004.

[8] Scott A Craver, min Wu, Bede Liu, Adam Stubblefield, Ben Swartzlander, Dan Wallach, Drew Dean, and Edward Felten. Reading between the lines: Lessons from the SDMI challenge, 2001.

[9] Scott Crosby, Ian Goldberg, Rob Johnson, Dawn Song, and David Wagner. A cryptanalysis of the High-bandwidth Digital Content Protection System. In *ACM Workshop on Security and Privacy in Digital Rights Management*, 2001.

[10] Lawrence Lessig. *Free Culture*. Penguin Press, 2004.

[11] Stan Liebowitzb. Will MP3 downloads annihilate the record industry? the Evidence so far, 2004.

[12] Felix Oberholzer and Koleman Strumpf. The effect of file sharing on record sales: An empirical analysis, working paper, March 2004. `http://www.unc.edu/~cigar/papers/FileSharing_March2004.pdf`.

[13] Lee Rainie and Mary Madden. Sharp decline in music file swappers: Data memo from PIP and ComScore media matrix. Pew Internet & American Life Project, 2004.

[14] Pamela Samuelson. Intellectual property arbitrage: How foreign rules can affect domestic protections. *University of Chicago Law Review*, 71(1):223 – 239, Winter 2004.

[15] Lior Jacob Strahilevitz. Charismatic code, social norms, and the emergence of cooperation on the file-swapping networks. *University of Virginia Law Review*, 89:505, May 2003.

[16] Fred von Lohmann. Is suing your customers a good idea?, October 2004. `http://www.law.com/jsp/article.jsp?id=1095434496352`.