

Steal This Essay: Content Is a Pure Public Good

by Dan Kohn

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1)

Steal this essay, or, why these sorts of essays represent the future of all publishing. Hint: I'm not getting paid for them.

"Freedom of the press belongs to those who own one." - A.J. Liebling

If you or anyone you know has ever or will ever produce content (writing, music, video, etc.) and hopes to get paid for it, you should be afraid.

To see why, start by downloading (for free, of course) one of the numerous peer-to-peer file sharing systems such as Aimster, LimeWire, and eDonkey2000 that have emerged hydra-like to take the place of Napster, whose head was cut off this spring by the Recording Industry Association of America (RIAA). You will find that much the same selection of MP3 music that was on Napster is still available for free, as well as being accompanied by more and more movies ("ripped" directly from DVDs), and nearly all other forms of content, from Shakespeare's works to hard core adult materials.

<http://www.aimster.com/>

<http://www.limewire.com/>

<http://www.edonkey2000.com/>

<http://www.napster.com/>

<http://db.tidbits.com/getbits.cgi?tbser=1206>

What you will not find - even if you are the RIAA - is anyone to sue. Because unlike Napster, there are no companies underlying the software infrastructure, no servers to confiscate, no officers on whom to serve papers. The next generation of peer-to-peer clients relies on no central infrastructure whatsoever, and is being developed by a loose knit group of developers spread around the world, all donating their significant efforts without any real hope of getting paid for their work. All of the developers are men - or teenage boys - and though not following the typical societal track toward prestige, they are just as competitive as any rival athletes or entrepreneurs. Many are distributing their software as open source, so anyone else can fix bugs and make improvements. What this means is not just that the RIAA is applying makeup to the corpse of the music industry as we've known it. In fact, it heralds an even larger change about how all content is created and distributed, and raises serious questions as to whether content creators (such as the author of this essay) will ever be compensated for our work.

Read a few dozen articles by top technology analysts, and it is often difficult to find one that doesn't breathlessly declare how this or that new technology represents a sea change, an inflection point, or the end of history. In fact, while the Internet's growth rates have been quite high, other technologies such as radio and gas cooking have actually been adopted faster. It may be, though, that all of the

hype surrounding the digital duplication and peer-to-peer distribution of content actually underestimates the impact on the authors and publishers of music, movies, and written works.

Put simply, in a world where there are essentially no costs to replicate content and it is effectively impossible to stop anyone from doing so at will, the current economic model underpinning content creation will be dead. Despite the protestations of lawyers, (certain) rock bands, and legislatures (all on the same losing side, oddly enough), we are entering that brave new world.

If, as this hard technology determinist viewpoint suggests, content is destined to be free - i.e., the content creators and publishers will not be directly compensated the way they are today when you make a purchase from your local CD store - then the real question is what system could replace the content compensation system that has worked quite well for the last 300 years. However, implementing revenue models for infinitely redistributable goods is not an entirely novel question, and there are several economic models that can support the creation of content. What there may not be is enough revenue to support the publishers of that content in addition to the authors, which helps explain why the RIAA is so eager to thwart digital distribution. When an ecosystem undergoes severe environmental changes, certain organisms that were previously essential - like the cyanobacteria that originally converted carbon dioxide to oxygen, or the record companies' A&R men - may recede to minor ecological niches.

Economists have a term for what digital goods have become. Items are "nonrival" when we can all make use of them without anyone having to give them up. If I copy your CD, you're none the worse for it (nonrival), but if I steal your car, you will probably be upset (rival). Goods are "nonexcludable" when it becomes impractical to stop everyone from making use of the item, once one person can. It is infeasible, for instance, to stop additional viewers of broadcast television (nonexcludable), while it is very feasible to stop additional moviegoers from entering a theater (excludable). Economists call nonrival, nonexcludable items "pure public goods," although the name does not imply that public goods can be provided only by the government.

Lighthouses are a classic pure public good. They are nonrival because each additional ship does not reduce the light available to the others. They are nonexcludable because any ship sailing by can see them. There are cases in New England two centuries ago of shipping guilds building privately managed lighthouses, even though the services couldn't be withheld from non-members. Most medical research and nearly all basic scientific research today is a pure public good, although for exactly this reason it is often financed (at least indirectly) by the government. Other textbook public goods are national defense, mosquito control, and public radio. In each case, the cost of providing the item to one consumer is the same as providing it to any number of consumers (nonrival), and it is impractical to stop anyone from making use of the good (nonexcludable). The table below provides some examples.

| | EXCLUDABLE | NONEXCLUDABLE |
|-------|--------------|--------------------------|
| RIVAL | car, Walkman | unmanaged fishing rights |

| | | |
|----------|---|--|
| NONRIVAL | movie in a movie theater, concert in a large hall | lighthouses, national defense, mosquito control |
|----------|---|--|

If content is becoming a pure public good, it will necessitate a radical rethinking of the recording industry's claim that copying content is stealing. We as a society react very differently toward the unpaid use of rival versus nonrival goods. Think of the punishment inflicted, for example, on those who steal cars versus those who listen to public radio without contributing to the fund drives. Of course, whether a good is rival or not is beside the point if you can successfully exclude people who don't pay. (Ask Microsoft, whose cost for selling one copy of Office is approximately the same as selling 100 million copies (nonrival), but which has used informant tactics and large legal penalties to make their software very excludable, at least for businesses.)

The lawyers representing the recording and movie industry are well aware of the threat to their business models of digital content, and they believe they have already developed the answer: encryption. Encryption represents the music industry's last, best hope of maintaining their product as excludable. Why they are wrong, and content protection is doomed to failure, will have to wait for the next essay.

2)

"Doveriai no proveriai." (Trust but verify.) - Russian proverb, as quoted by Ronald Reagan

Even as content becomes a public good, content creators (or at least the publishing and recording industries that claim to represent them) have been led to believe that encryption can protect their revenue streams. As I noted in the first of these essays, they are lambs being led to the slaughter.

<http://db.tidbits.com/getbits.cgi?tbart=06604>

Why is all content becoming a public good? It has realistically been nonrival for some time now, meaning that I can copy your CD of music or software for a few pennies or less, and you are in no way disadvantaged. (Of course, the author of that content may feel quite disadvantaged by this "theft," but as long as I don't scratch your CDs, there's no reason for you to care that I borrowed them for a few minutes.) In fact, the central concept of digitization - converting all content to streams of zeros and ones - entails making it infinitely copyable without any loss of quality, the very essence of nonrival goods.

What has only become clear in the last couple years (although the Recording Industry Association of America - the RIAA - still has its head in the sand) is that digital content is also nonexcludable. Of course, tens of millions of dollars have been spent on a variety of means to make digital content uncopyable. Supposedly unremovable watermarks are embedded in images to detect copies (e.g., SDMI and Macrovision), content is encrypted so that it can only be viewed through an

authorized player (e.g., DVD CSS and Microsoft's and Real Network's digital rights management systems being used in the music industry's Napster competitors, PressPlay and MusicNet), or some form of registration is required for activation (e.g., Office and Windows XP).

<http://www.riaa.org/>
<http://www.sdmi.org/>
<http://www.macrovision.com/>
<http://www.dvdcca.org/>
<http://www.pressplay.com/>
<http://www.musicnet.com/>

Encryption Is Ultimately Futile

The problem with the security of these approaches is that, as cryptographer Bruce Schneier points out, there are basically only two types of users: regular ones against whom any form of copy protection will work, and experienced hackers, whom no form of technology can stop. Your technophobe mother represents the first category, and your geeky nephew exemplifies the members of the second category. Why can't the hackers be stopped by encryption? If the challenge were just to transfer a file from one point to another without letting someone get to see its contents, encryption is up to the job. But, consumers don't listen to or watch encrypted versions of content. (I have, and it looks like static). They watch the regular, unencrypted version. So, somewhere close to the user, the content must be decrypted. And that decryption process typically runs on a PC, where experienced hackers can watch it work one instruction at a time, and change those instructions to enable the unencrypted content to be copied.

Phrased differently, as long as the intention is ultimately to deliver the content to the customer (and hopefully even the RIAA is still trying to do that), then it's impossible to stop wily hackers from getting at the content in its unencrypted form and having their way with it. "Trying to secure [digital goods] is like trying to make water not wet," Schneier said recently. "Bits are copyable by definition."

In early 2000, a 16-year-old in Norway named Jon Johansen was upset because he wanted to be able to play DVD movies in his Linux box's DVD drive, but the movie industry had not authorized any players for Linux. So, working with several anonymous contacts on the Internet, he cracked the copy protection scheme used by all DVDs, enabling them to be played on his machine and, incidentally, to be copied endlessly and perfectly. (The Norwegian police actually confiscated his computer at the request of the Motion Picture Association of America several days after he distributed the code on the Internet, providing a classic example of tardy barn door closing.) More to the point, one could ask what chance any copy protection scheme has, when random 16-year-olds with an Internet connection can succeed in breaking it in their spare time.

But the news for authors such as myself, who might want to get paid for our work, gets worse. There are many in the music industry who believe that a 98 percent copy protection rate would be just fine, the same way that department stores calculate a presumed level of spoilage (i.e., stolen goods) in their inventories.

That works for department stores because their goods are rival, so that even if a few shoplifters get their items for free, everyone else still has to pay. The problem for the RIAA is that nonrival content means crack once, run everywhere. That is, all it takes is one smart hacker to defeat the copy protection schemes for everyone. Then, your nephew can either distribute his hacks in an easy to use format that even your mother can install, or, more directly, he can just distribute the unencrypted content.

Advertising Support?

If content can't be made excludable (and thus easily charged for) via encryption, perhaps there are other ways to build business models around content. What about advertising? After all, broadcast television is essentially nonrival and nonexcludable, and it's financed by advertising. Unfortunately, no. First, as they have become ubiquitous, banner ads have dropped dramatically in effectiveness, as measured by click-through rates, which have fallen from 4 percent to 0.1 percent. This is not too surprising, given that most people hate banner ads and do everything to try to ignore them. Ad rates for some large sites have fallen correspondingly from 40 cents per impression to less than 0.1 cents, one of the primary causes of the many new applications of former dot-com employees for Starbucks barista positions.

And for content providers, the news grows still worse. The downturn in the economy has made it harder, particularly for publications without loyal readers, to attract advertisers, even at the lower ad rates. Then there's software such as WebWasher that automatically detects the banner ads on any given Web page and strips them out, which incidentally causes the page to load faster (just as a 30 minute television sitcom can be viewed in 22 minutes without the ads). Ad blocking software replaces the ads that are supposed to be funding the content with blank space, which is what content providers' revenue models are starting to look like. The software is not perfect, but it's getting better and is already effective enough to strike fear into the hearts of content publishers and advertisers.

<http://www.webwasher.com/en/products/wwash/functions.htm>

Even the soap companies that have funded so many years of daytime drama may start reconsidering their advertising budgets over the next decade, as digital video recorders such as TiVo become increasingly common. These enable viewers to have their favorite shows easily stored to a hard drive, where they can be conveniently replayed at the time of the viewer's (rather than the programmer's) convenience. Imagine setting your own viewing schedule rather than having it dictated by snotty network executives in LA and New York. Plus, these devices let you skip right past the commercials with a few clicks of the remote, thereby crumbling the foundations of 50 years of a profitable broadcast industry. New PC-based recorders such as SnapStream even support sharing recorded shows across the Internet, enabling video to take its place next to MP3s on the new peer-to-peer networks that are quickly replacing Napster. Why schedule your evening around a broadcast schedule and sit through brain-numbing commercials, when the show is available whenever you want it with the commercials already edited out? A world full of digital video recorders is one in which the couch potato is liberated from the

slings and arrows of network programming (how dare they put that promising new show against Survivor!), and once again is empowered to make real choices about how, when, and what to watch. [For more on TiVo, see Andrew Laurence's two-part article series "TiVo: Freedom Through Time Shifting" and be sure to read the in-depth *TidBITS* Talk discussion on how personal video recorders are changing advertising. -Adam]

<http://www.snapstream.com/>
<http://db.tidbits.com/getbits.cgi?tbser=1204>
<http://db.tidbits.com/getbits.cgi?tlkthrd=1461>

Are there any categories of content from which individuals can be excluded? Only two that I can see. The first is showing movies at movie theaters. With a significant investment in digital distribution, and an even bigger investment into physical security at the theater, studios should be able to distribute movies without them immediately being copied onto the Internet (but watch out for those 16-year-old projectionist/hackers). The other category would appear to be Web services, where software is split into components that are loosely coupled and distributed across the Internet. Since you're interacting with numerous other computers, your identity can be continually reaffirmed (what Microsoft is planning with Hailstorm), making it nearly impossible to avoid paying. But any software that supports a disconnected mode (such as an operating system), can be easily (by hacker standards) modified so that it no longer "calls home" to ensure authenticity. The registration system for Windows XP was cracked so that running a simple program will remove the requirement for online activation, six months before the software was even released.

Content won't truly be a pure public good for another ten years or so until broadband home Internet connections are ubiquitous, making it trivial to transfer large files around. But, since the process is already accelerating (Napster began with college students who already have broadband connectivity, and some new peer-to-peer file sharing services are designed explicitly for downloading very large files in the background), it's worth asking why anyone will create content when the old models for getting paid don't work. The answer will have to wait for another essay.

3)

"If consultants had been hired to evaluate the market for printing a decade or two after its invention, they would have concluded that the new technology was vastly overrated. Scribes were already producing the important books efficiently, and the new printers produced mainly the same old texts, such as the *Bible*, which were readily available to the tiny minority who were literate." - Ithiel de Sola Pool

Who will pay for something "free?" It seems obvious that content creation has to be funded somehow, since the next *Jurassic Park* won't be developed during some teenager's free afternoons. Economist Arnold Kling says that "The central paradox of our times is that information wants to be free but people need to get paid."

Pure public goods have been funded by various means for the last several hundred years, so there should hopefully be some insights by now into how the makers of pure public goods can be compensated for creating their works. For if these options aren't realistic, it is unclear why authors such as this one will continue as ink-stained wretches (well yes, this essay was typed directly into the computer, but you get the idea).

There are four basic ways to fund a public good: the government, micropatronage, funding from non-profit organizations or corporate philanthropy, and the sale of atoms associated with the bits. These are in no way exclusive - it's entirely likely that any given public good may receive funding from more than one of these sources.

Government Support

Although few people like the idea of the government getting to decide which artists and writers "deserve" to be funded, government support has been the traditional manner to fund public goods. Given the political histrionics surrounding the U.S.'s National Endowment of the Arts, it seems unlikely that this model will scale to fund a much larger supply of content. Neither the public at large nor Jesse Helms himself want to live in a world where the Senator decides which situation comedy or hip-hop band is most deserving of funding.

However, there are alternatives that could enable much larger government funding of content creation without involving the government in picking winners and losers. These measures would be based directly on popularity, so that creators of popular content would be compensated for doing so. For instance, a commercial service called MediaMetrix currently calculates the most popular Web sites, just as Nielsen's delivers ratings on the most popular TV shows. A new government program could offer grants to the authors of the top 1,000 most popular Web sites, MP3s, movies, and so on, encouraging innovation not just in the creation of new content but also in its successful promotion.

<http://www.mediametrix.com/>

Micropatronage

Don't confuse micropatronage with micropayments, which make no sense for pure public goods. Specifically, if anyone who pays \$1 for a *New York Times* article can redistribute that article endlessly, why would anyone else pay the dollar? Plus, people are mistrustful of the ways micropayment systems have been proposed thus far, due to the fear of fainting spells when reviewing the bill at the end of the month.

Micropatronage entails a return to the content creation system of the 15th century, namely art patronage. The downsides are that artists are open to influence from their patrons (though arguably less than they are by their publishers today) and that content creators need to be matched up with patrons. The advantage is that with the near-zero cost of information distribution, finding

patrons becomes simpler, as does having one artist supported by numerous patrons. Thus, rather than the Medicis funding Michelangelo's works, an artist such as Aimee Mann with a small, passionate following could probably find 1,000 individuals willing to donate \$100 a year or more. (The main difference between modern micropatrons and the Medicis is the dramatically smaller likelihood of going from being a patron of the arts to becoming the Pope.)

<http://www.aimeemann.com/>

Is there any model of micropatronage in action today? Yes, public broadcasting. Fund drives for PBS and NPR run into a basic difficulty that they are trying to raise money for a pure public good that is available to everyone. But large numbers of individuals still seem to find the money to donate, even though they could not be excluded from future content for not doing so. (Or phrased differently, their guilt from enjoying PBS or NPR outweighs the economic certainty that no single person's contributions will have any effect on whether they get to continue enjoying this nonexcludable good.)

Mickey Kaus's personal news Web site recently declared profitability (although this is misleading given that he is not charging for his own time), where he is relying on an Amazon-based system to enable readers to become micropatrons. Even *TidBITS* uses micropatronage, with over 700 contributors to date.

<http://www.kausfiles.com/>

<http://www.tidbits.com/about/support/contributors.html>

More generally, almost all charitable giving today falls under this model, in which the charitable services (e.g., the Salvation Army or your school's alumni association) are equally available to you whether you contribute or not, but you still choose to do so. In situations in which there is no downside for any given individual to be a freeloader, it is amazing that so many charitable services continue to survive on donations alone.

Non-profit Foundations and Corporate Philanthropy

Another way that pure public goods such as medical research are funded today is through non-profit organizations such as the American Cancer Society. These raise money for a single larger goal and then distribute it to the uses they believe are worthiest.

<http://www.cancer.org/>

This approach could easily apply to content as well: imagine a National Country & Western Foundation, or an American Society for Horror Flicks. That is, some potential micropatrons (especially companies) may wish to fund a genre as a whole, and have the experts employed by non-profits decide which established and up-and-coming artists are most deserving of their funds.

The Web magazine *Slate's* current financing seems to fall into a similar category, whereby a (very) for-profit corporation, Microsoft, apparently feels that

the respect and gratitude it garners by funding a high-quality magazine is worth the \$20+ million a year that it spends to operate *Slate*.

<http://slate.msn.com/>

In fact, nearly all influential news and opinion magazines are financed by individuals and/or companies that appreciate the respect that seems to rub-off from financing top rate content. Examples include *The New Yorker* (Si Newhouse's Advance Publications), *The Weekly Standard* (Rupert Murdoch's News Corp.), and *The New Republic* (Marty Peretz). They certainly are not run on any generally understood financial principles, since they all lose money.

<http://www.newyorker.com/>
<http://www.weeklystandard.com/>
<http://www.thenewrepublic.com/>

As content becomes less excludable (meaning mainly that people are reading or listening via digital devices rather than through paper and CDs), many new such foundations will likely be needed.

Sell Atoms Associated with Certain Bits

Finally, one system that is beginning to work for funding a public good is to charge for physical items associated with given content. That is, even though bits are becoming impossible to charge for, many people will be willing to pay for the atoms associated with those bits. The most obvious are concert t-shirts, or micropatron plaques with a signed thank you from the content creator. Since (all but open-air) concerts are by definition excludable, fans will continue to pay real money to attend them. In the case of concerts, the atoms that fans are paying to be in proximity to are those of the artist herself.

Are there really enough funds available from these four methods - even combined - to pay for the next Madonna CD or an episode of *The West Wing*? Only time will tell. But, just as technology is nearly eliminating the cost of distributing information, so too is it drastically reducing the cost of creating content. The dinosaurs that took 50 people and dozens of supercomputers to create in the original *Jurassic Park* may soon be reproduced by a 16-year-old working after school on her home PC. The symphony that Mozart had to assemble an orchestra to hear can now be authored (and iterated, and iterated again) with a free music program in an afternoon (presuming the talent), with no musicians to train or pay. Of course, even these teenagers will need to pursue some combination of these funding mechanisms if they want to have their art be more than a hobby.

And those four options are it. Although I (and numerous hungry artists) will continue looking for new funding innovations, I can't currently envision many other ways that pure public good content could be funded. Which leads to the question addressed in the next essay, of whether all of this is fair.

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