True Property: A free market solution for information licenses

Jordan Pollack www.jordanpollack.com is a professor of computer science and complex systems at Brandeis University, directs the Dynamical and Evolutionary Machine Organization (DEMO) www.demo.cs.brandeis.edu, and is founder of www.thinmail.com. This essay is a personal opinion and does not reflect the official position of any of these institutions or their investors, partners, trustees, alumni, sponsors, benefactors.

To run OFFICE 2004, you must upgrade to Windows 2004.

The social contract establishing copyrights as a limited time monopoly was built in the era of the printing press and has not adapted well to the information age. There are major problems which arise in software licensing, and which extend beyond software to electronic versions of books, music, and other forms of art and cultural expression. I propose a new idea for information property that solves all the problems, provides perfect anti-piracy protection and maintains opportunity for wealth and innovation for the content industries while protecting both purchasers and content creators from the theft of *their* property.

Background: ROLS, TOLS, and PURLS

Although a book is just a book, there are really 3 components to a copyrighted product: The License, the Content, and the Medium. These three components have been historically fused into a single "for sale" manufactured object. The *media* token both held the information *content* and (weakly) enforced the legal *license* – a social contract prohibiting the sale of copies of the content.

The software industry, which sells its copyrighted products in "little boxes" in stores along with books, records, game cartridges, and videotapes, has long recognized the separation of the three components, and has exploited it, taking unfair advantage of a public long used to BUYING books and records to essentially RENT them software.

There are 3 basic ways to peddle information:

Read Once Licenses (ROL's) - pay $8 to watch a movie, or $70 for a Broadway ticket. You were ROL'ed. Broadcast radio and TV, before the recording age, were really just advertiser sponsored ROL's.

Time Out Licenses (TOL's) – Rent a videotape for a few days; use this software until the end of the year. You pay the TOL and understand the time limit.

Permanent Use and Resell Licenses (PURL's)- Buy the book. Own the Video. You feel pride in ownership.

Owning a PURL does not entitle you to make and sell further copies yourself. But you do in some sense own it forever, can pass it on to your children, loan it, or sell it, and under the "first sale" doctrine can even rent it (legally enabling libraries and video stores). You may not enable it to be used in two places at once. In some cases, if the media token is damaged, you can get it replaced for a small fee. In other cases, owning it forever is meaningless because the information has become worthless.

What is property?

> *I bought a very expensive vintage car from the classified, and a few weeks later, I was parked at a restaurant and there was the exact same car parked next to mine! I was very confused and angry and waited for the owner. It turned out to be the same guy I bought it from! "I just kept a copy," he said.*

We must begin to understand the nature of property and how it has been impacted by the information age. It turns out that property has never been about mere possession, but about the bundle of rights surrounding that possession, including the **right to transfer**. Property has evolved from land and gold protected by the sword, to information about your assets held by bank, deed authorities, and brokerage computer systems, protected by cryptography and redundancy. The only viable definition of property is **"That which can be transferred without duplication or loss."**

Once information is unbound from its media token, it transfers in a very duplicative way. But the **rights** about using that information – the license – can be made into property. After all, I can transfer copyrights, trademarks, patents, and domain names. Unfortunately software licensing has evolved into a very lossy and duplicative transfer, and is not property at all. Companies are printing notes, declaring them worthless, moving assets, and printing more – acts reminiscent of wildcat banks of the nineteenth century.

Can anything be done -- short of new and stifling government regulation -- to stabilize and rationalize information property licensing?

The solution is to turn licenses into "true property." This turns out to only require two little changes in custom. First, the number of licenses in potential circulation needs to be limited, like Currency, Taxi Medallions and Stock Shares. Second, rights in ownership must not be arbitrarily revocable, e.g. by an upgrade or media change. Our solution to the digital copyright problem is thus given:

> Permanent Use and Resell Licenses to information properties, when issued in **limited known quantities**, with **free upgrades**, will be treated as **registered securities** which establish value through supply and demand on **brokered secondary markets.**

It perhaps seems odd suggesting electronic publishers **must decide in advance how many licenses to issue**, and then they cannot dilute or dispossess those who purchased the licenses. Imagine telling a government it cannot print money at will! "Why can't I print money?" says the dictator, "and give it to my relatives and friends?" The answer is that printing money is a duplicative transfer. It invariably leads to a currency collapse.

How can big software companies thrive without their "upgrade" fees, without making their customers pay over and over again for new versions of the same old thing? Here is how: Companies issuing licenses simply withhold large quantities for sale later. A single developer might offer only 10,000 shares, and a small company might only issue 100,000 shares. The size of the IPO will have to balance expected market demand with supply. A large well-respected company might start with 100 million licenses and only sell 10 million at first, keeping 90 million in reserve, which at a going rate of $100/copy is a significant war chest. The problem with accounting for value of a software company's assets move to a perfect estimate i.e. the reserved shares multiplied by today's price. Such assets can be used to secure loans, raise capital for further development, pay workers, and even trigger mergers. Other revenues can come from service and technical support.

I will now walk through a set of well-recognized problems in the content publishing industries, and show how turning licenses into true property would solve every problem, including piracy.

Software Quality

Book publishers cannot force customers to "throw away and repurchase" the same information. Software publishers can, and do, through the "upgrade scam," originally a quaint practice to collect service fees while distributing patches on floppy disks. Charges for upgrades - which are much higher than the cost to "OEM" dealers of new licenses - creates the incentive AGAINST too much quality in products - for fear that consumers will be too happy with their "old" product. If the licenses were true property, the value of their reserved shares on the market will reflect the quality and interoperability of their product, so quality becomes a goal consistent with, rather than opposed to further wealth.

Public Contribution crisis

Although much digital content is for leisure and entertainment, for which monopoly cannot easily arise, some software enjoys natural monopolies driven by the public's need to inter-operate and standardize. The public invests heavily in establishing a standard, but then is denied the benefit of that investment. So the problem with Windows 98/NT5 is not that bundling harmed Netscape: It is that our huge national investment in Windows95/NT4 will be rendered as worthless as our earlier national investments in Windows 3.1, 3.0, and Windows 386, not to mention DOS 6, 5, 4, 3 and 2.

If software were true property, when the price of PURL’s in circulation rises too high, "splitting" both lowers the cost, and enables early adopters to share in the wealth they helped create through choosing to standardize, since they will have extra PURL’s to sell at today’s price. This solves the **public contribution** problem.

Authorship Issues

We pay the inflated price of a book or musical recording knowing that popularity can make an artist rich quickly. The formation of the original Copyright law in England started the custom equity for authors, yet the Hollywood system spawned a creative class which did not receive equity. Like Hollywood, software publishers generally pay no royalties to creators under stringent "work-for-hire" contracts, even when developers are contractors rather than salaried employees. **(Joint Tenancy problem**).

PURL’s may also be used to provide royalty to creatives, solving **the joint tenancy** problem. Right now, if you offered to pay a developer in copies of software, or an actor with copies of DVD’s which rapidly devalue to $0, they would laugh. But if such goods traded and appreciated on a secondary market, it would be a form of equity which could be sold for cash. This would enable competition for **high-tech employees** to be talent and equity based, rather than based on overpriced salaries driving work-for-hire overseas.

Software Piracy

Software publishers face loss of potential income from rampant private sharing and from other nations, including allies like Israel and China, who do not respect our copyrights. (**Software Piracy Problem**). Music publishers have found the same problem especially with file-sharing systems, and Movie and Television Publishers are on the chopping block.

There is little incentive for people to stop piracy, or for the nation to invade other countries to stop sharing in order to make publishers richer.

How would True Property solve the **Piracy** problem? The public will have an interest in keeping up the value of their own resalable property! Most people who “share” software and music tapes do not get away with Xeroxing dollar bills and IBM stock certificates! Slashdotters who cheer for the cracking of a secure format would cry if their Paypal accounts were cracked and emptied.

People know what a currency crash really means.

And because governments have an interest in keeping the value of stored wealth up (to collect capital gains taxes), enemies cannot flood their markets, or ours, with faux shares of IBM or fake PURL's without facing military response. Given a broad base of public ownership, any underground "Robin Hood" movement to strip the licensing mechanisms out of true property would be as difficult to sustain as, say, an anarchist call to end real estate deeds.

Predatory Pricing

Software companies devalue their own products to establish market share or destroy competitors (**Predatory Pricing problem**). Because of the elastic value, one software company can undersell its competitors by wrapping things together and selling them cheaper (bundling), giving stuff away until their competitors are bankrupt (dumping), changing elements which break competitor's programs (monkey-wrenching), and offering buybacks of competitors licenses (slamming).

All 4 of these predatory tactics fail for true property. Instead of giving away free copies, you'd be giving away permanent objects of real value. And selling multiple individual products will be more valuable than bundles. Buying up opponent's licenses couldn't destroy them, only create scarcity, increasing the price, because they continue to exist and be registered. Since users wouldn't have to pay an upgrade fee for a patch, a monkey-wrenched incompatibility, e.g. of WordPerfect's mouse driver which broke in Windows 3.1, would only cause a temporary depression of value, rather than customer flight.

Under true property, not only would the predatory practices fail, but the **conflicting standards** issues would be resolved as well. The market dynamics will favor an oligarchy such that converged file formats (document, spreadsheet, web page) would be accepted by competitive systems offering a variety of user interfaces. We would be able to use Lotus 123 and Wordperfect to edit Excel and Word documents, rather than having two dead companies.

Software Donations

Software companies can look good by making "Million Dollar Software Donations" which cost them nothing to make and are tax deductible despite the Singer sewing machine case. (**Software Donation problem**). True Property solves this problem as well because a donation would be accountable and transferable.

Taxation

State governments are quaking because while books and records and videotapes are sold as tangibles which generate sales taxes supporting the common good, the imminent move to electronic distribution of software (ESD) – pay per download from the tax-free internet– generates no taxes**. (Intangible Taxation problem**). Most states tax goods but not services. Perhaps Bill Gates' biggest threat to states that joined the antitrust case against Microsoft was the ASP (service) model instead of the little box of disks (goods).

If software were true property, capital gains can be measured and taxed, solving the **intangible taxation** problem. A system of deeds and registrars, brokers and transfers maintains ownership information for a limited number of properties. Accountants have trouble estimating the value of companies which produce software, and this leads to bubbles because of the idea of infinite sales with zero inventory. By recognizing finite unsold shares at today's market price, we can account for corporate value of visible IP.

Public Libraries

Despite the fact that software is sold like a book, it is not made available through public libraries (**Public Library Problem),** and thus accentuates the "digital divide." When libraries loan software, the industry argues, it is merely a cover for piracy, already rampant for loans of music.

A system for controlling public floating PURL's will enable serially loaning by **public libraries -** overdue fines can accrue if the de-installation is delayed.

The Interface Based Monopoly Problem

Classic monopoly dynamics have been newly described by economists as "lock in" or "increasing returns" and analogized to the same "strike it rich" incentive we give to aspiring authors and musicians. However, software "lock in" results in private ownership of a public interface standard.

This interface - the specification of how to plug appliances into services - has (until now) not been covered by either patent or copyright, since it is just a way of doing business. Furthermore, interface specifications are broadly published to encourage developers. Where is the competition in alternative operating systems that can run standard "Wintel" appliances? Investment in competitive services through the interface is a total loss because an Interface-Based Monopoly (IBM) protects itself from competition through rapid and unnecessary tweaks.

Think of Microsoft Windows as the new electric outlet: They can change the shape and voltage specifications without any public scrutiny, and their appliance division will stop making appliances to fit your house. Additionally, appliances made by other companies, such as WordPerfect, Novell, and

Netscape are unable to take advantage of secret utilities provided by the interface, and if they do, their work can be destroyed in the next release (**Interface Based Monopoly Problem**).

Microsoft is not the problem, just the largest symptom of the game gone awry. Other companies also compete in the game, and even if Microsoft is blown apart into companies each with a single product by the federal government, another monopoly such as Oracle, Sun, or Adobe will move to the fore. Only by changing the rules of the game would these profit-maximizing organizations change strategies.

Software Pricing and the Secondary Market

The central problem addressed by turning software into true property is really the lack of a market. Americans should be up in arms that there is no secondary market in electronic goods, there is no way to sell stuff you are no longer using.

How would a market establish the value of a software license? Consider that a public auction is the most efficient way discover supply and demand. But if you put up **infinite** software licenses in an auction the software price will remain at 0 no matter how many bidders. Therefore, without the industrial machinery and the marginal cost of printing a book, software value is a myth, enforced by artificial scarcity of fashion, monopoly, or -- in the case of pornography -- prohibition.

Rather than being set by supply and demand in a free market, Information goods prices are set by a dictator. And, after the license is sold at a dictated price, the actual value of this infinitely durable good is forced down to 0 by the printing or piracy of infinite licenses, the forced upgrade or the arbitrary and unenforceable contracts written into shrink-wrap - such as that you cannot return the product, or resell it when you are done, or sell the computer without it. This kind of license is patently illegal, but it has certainly inhibited the secondary market, which thrives in books, records and videogames. (**Secondary Market problem**).

This incredible lack of a secondary market in the most valuable and durable property of our age gives Software Publishers an advantage not held by publishers in any other sphere, nor by any manufacturers of tangible products. Imagine if the General Motors sales contract forbid you from reselling your car when you were done with it, or with selling the radio, tires, engine, etc, of a totaled vehicle!

If it wanted to prevent a secondary market, of course, GM simply has to offer much more for a used car than its blue book value, the way that Microsoft offered $110 for rusty disks of Windows 3.1 and 95. ($110 is the difference in price between the upgrade and full version of Windows 98.)

By directly solving the **secondary market** problem, we solve the **pricing problem** – license prices are volatile and driven by quality, confidence, market perception, and number of copies known to be available or in reserve. If you overprint your currency or stock, the price per share drops.

Details and Discussion

No new laws or regulations are needed: Simply a few bold software or shareware companies start to trade their licenses as true property and establish the tradition. Our collective social understanding of stock markets, norms of behavior, fraudulent transfers, mergers (new suites), hyped information (vaporware), insider trading, international participation, government regulatory need, enforcement costs, etc. all transfer easily from a hundred years of dealing with corporate securities. The regulatory, fraud and anti-piracy structures are already in place and only need to be adapted.

Just as a stock share survives the company's changes in employees, locations, products, and value, a PURL will survive changes in media (e.g. from 5.25 to 3.5 to CD-ROM to ESD), and incremental changes - e.g. service releases and name changes - in the information licensed. Under this system, only handling costs will be incurred by conversion of media. If you owned a "vinyl-enforced music license" you should have been able to upgrade to CD by exchanging the vinyl for a small media fee. It is an amazing consumer rip-off that shouldn't happen again in the upgrade from VHS to DVD. You already bought the movie on tape; why should you have to buy it again on disk? For an "extra" interview?

While the raw copying of the information on any token can never be halted, the validity of sales, transfers, and installations of licenses, through software brokers and electronic secondary markets, can be fully policed. In fact, an intermediary will hide my ownership of a license from the publisher. The publisher only needs to know I am not sharing copies, not what Microsoft has often sought, a complete listing of my hard disk contents.

As for the transaction costs of brokered transfers, it is the case that online trading of securities is always getting cheaper. With machines always on the network it is easy to assert that only if you own a license can you install the software. And since the license is not enforced by merely possessing the information, the installation, de-installation, and reinstallation surrounding a sale or transfer can be brokered through cryptographic means over the Internet. Just because someone made you a copy of a CD, doesn't mean you can both install and use it at the same time.

While Napster and Gnutella and Freenet are in the news, displacing the LaMacchia software sharing case with music and video sharing issues, it is the same old thing. Instead of asking how can we use technology to stop it, the right question is this: How can we reverse the broad social acceptance that sharing of information properties is OK?

I submit that *copy-sharing would subside* in a system of true property when:

a) People could "own" their serialized electronic books records or software;
b) The price is not dictated but market driven, based on the number of copies available and the quality or popularity of the artist,
c) People could loan and use their property in different places, and
d) when you stopped using a work, or were broke, or when a nostalgia craze hit, you could transfer the ownership on a public market.

A change in social behavior driven by self-interest doesn't even need enforcement, but there are numerous Digital Rights models for enforcement available. The strongest involves trusted brokers.

One is the Floating License, e.g. by Globetrotter, which flourishes under Unix. Your company buys a finite number of simultaneously usable licenses, which are checked out and in from a server. A second is Super-distribution, where a hardware lock monitors use, but information floats around freely. A third are ESD install mechanisms, for example, by Techwave, Kagi, and others.

Will people accept serialization and brokered transfers in exchange for the ability to resell on a public market? It has worked for stocks, houses, and cars. Transaction costs are minimal compared to the benefit of broadly owned property.

On Creativity, Shareware, and Open Source.

The idea that permanent use and resell licenses to evolving content could be a new kind of stock does not stop alternatives to commercial publishing, but enhances the opportunity for independent creators.

True Property works for shareware companies, who would make more money if consumers could observe how much volatility there was in a market, buy the license, try it, and resell it if they didn't like it. Besides the "try and buy" box, a shareware producer just has to add an "uninstall and resell" box, issue and IPO and hire a transfer agent.

True Property can work for the Open Source movement as well, which suffers from the fact that commercial software pays much better. All the masses who wrote bits of Linux distributions weren't ecstatic when Red Hat's Czar (who didn't write code) became worth $100M. Imagine the next project after Linux, in which talented and hardworking volunteers receive (initially worthless) securities for their efforts. "We are launching an open source project. There will only be 1M licenses issued. Those who contribute and who adopt our code will earn licenses proportional to their contributions." Then, if the project turns into a defacto standard, the licenses have to be split from 1M to 100M and the contributors can sell-out and retire.

Conclusion: Join the Anti-Dispossessionism movement.

As the first cultural species, humanity is facing a serious threat: If secure digital rights management is not reserved for true properties which can be owned, but is enforced for rentals and read-once licenses as written in laws like UCITA and DMCA, we might transition within a generation to a society without books or records as personal possessions. There are strong and powerful capital forces working to make copyright both permanent and unnecessary. Each publisher turns into a Feudal Manor with a dictatorial Lord exercising his rights to charge monopoly rent for popular intellectual property. There are opposing forces at work, behind the "Free Software" movement, but they ask authors to donate their intellectual property to the "common good". These are both forms of dispossessionism.

If a society truly believes in free markets and in property rights, then **the public's right to truly own and transfer information goods must be defended**, or we will become a nation of info serfs. Although DIVX failed to compete with DVD, Netflix and Satellite radio are displacing ownership with monthly subscription fees. Once the Teledesic "Celestial Jukebox" is on-line, and there is no difference between renting 30 minutes of Microsoft Word or a rerun of I Love Lucy, we may all have to sell our houses in order to pay the TOL's.

Summary of the True Property Remedy

Problem	Short Summary	With Remedy
Software Quality	A lot of software is buggy and there is no recourse for consumers. Software that is too good won't create demand for upgrades.	No fee for upgrades helps customers. To keep up value of reserve stock, company would improve product.
Accounting	The value of future sales of software companies is unknown and leads to bubbles and value collapse.	The value of an asset is precisely the number of unsold shares multiplied by today's value on the market.
Public Contribution	The creation of a standard happens when a lot of "early adopters" invest resources. The public standard is privatized and tweaked so the public is denied any ROI.	Early adopters would be rewarded with splits and ability to resell unused licenses. Licenses do not expire or become obsolete with upgrade.
Joint Tenancy	Because an information product, like a movie, involves creative contributions from many people, this has been used as an excuse to pay no royalties for art resold infinite times.	Creators could be paid with options for licenses, and can sell out their "moral rights" later. The Hollywood "studio" system was invented before computers.
High Tech Employee	Good content providers want a piece of the action. That's why salaries and options went through the roof.	Paying content contributors with options for resalable PURL's lets them hold equity like authors and musicians.
Interface Based Monopolies	When a private company gets control of a public communication interface standard, it can tweak it at will, and cause great harm.	Ending upgrade windfalls will reduce incentive for malicious tweaks. The stored value in unsold shares creates accountability as well as positive incentive for quality and interoperability.
Taxation of Intangibles	Software sold in stores generates sales tax. Bits downloaded over the net don't.	Resale of PURL's generate capital gains taxes, taxable revenues for brokers, etc.
Software Piracy	People make copies for friends. There are open black markets worldwide, including allies like Israel and trading partners like China.	It is in human interest to protect value of our own cash and stock. Wider public ownership means piracy harms many rather than a few publishers, and can be defended with militarily force.
Predatory Behavior	Here is a steep discount on our license if you destroy your copy of my competitor's license. We'll even help convert your files!	A company cannot destroy a competitor's PURL's by buying them.
Conflicting Standards	Malicious upgrades to file formats are part of predatory behavior, enabling winner take all monopolies.	Expect an oligarchy with different human interfaces to common formats.
Charitable Donations	Companies can lower their taxes by giving away disks that cost them nothing.	Donations would be fewer, of real value, and resalable.
Public Library problem	Software is not loaned out by public libraries contributing to info-have and info-have-nots.	Floating licenses with internet brokered install/uninstall enables serial loans