

# Pseudo-Intellectual Property

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"We are all just prisoners here, of our own device."<sup>2</sup>

## abstract

Information conforms to the economic definition of 'public good'. Any particular sample of information is, effectively, a number, and 'ownership' of information is tantamount to 'ownership' of a number. For this reason, legal traditions based on property are ill-suited to the regulation of information usage rights. We conclude that the contemporary 'intellectual property' rights regime is undergoing a restructuring and that a new regime based on the legal traditions of contract is emerging more or less spontaneously.

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## introduction

"In the capitalist system of society's economic organization the entrepreneurs determine the course of production. In the performance of this function they are unconditionally and totally subject to the sovereignty of the buying public, the consumers. If they fail to produce in the cheapest and best possible way the commodities which the consumers are asking for most urgently, they suffer losses and are finally eliminated from their entrepreneurial position." (Mises, 1980: 108)

Consumer sovereignty is the foundation of market society. Consumers consume based on each individual's subjective valuation of available options. When suppliers offer goods on terms that consumers do not accept, consumers seek alternatives, leaving suppliers with unsold goods. Say's Law notwithstanding – i.e., the idea that supply necessarily precedes demand – it is ultimately consumers who decide what is sold and what collects dust on sellers' shelves. Say's Law is correct that production is a necessary condition for consumption; before transactions can take place suppliers implement production plans based on their expectations of future consumer demands. However, production is not a sufficient condition for consumption, even if producers spend great effort bringing goods to market. Given the unknowability of the future, it is a rare coincidence when markets clear, and suppliers' expectations correspond precisely with consumer demands.

In a the extreme case of a centrally-administered economy, consumption patterns are subject to the sovereignty of regulators, who can allocate consumption goods through command, rather than voluntary transaction. However, the more democratic the regime,

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1 To comment on this paper, please subscribe to the [Free Curricula Centre's](mailto:discuss-subscribe@freecurricula.org) Discuss List by sending email to [discuss-subscribe@freecurricula.org](mailto:discuss-subscribe@freecurricula.org).

2 Eagles, (1977), "Hotel California," *Hotel California*, Los Angeles: Elektra/Asylum Records.

the greater the sovereignty of the consumer and the more efficiently sellers are eliminated from their entrepreneurial positions when they do not conform to consumers' demands.

In spite of this, "software piracy in China has triggered a much sterner reaction from the United States than has widespread human-rights violations." (Fisher 1999). The tacit assumption is that consumers should conform to supplier sovereignty; i.e., that 'pirating' is evidence of consumer malfeasance rather than supplier recalcitrance. This results, in part, from the notion that information is a sub-category of property and that unauthorized copying of information is a sub-category of theft.

Rarely, do journalists question the premises upon which such assumptions are based and the worldview implied by this terminology goes largely unchallenged. Here, we analyze market structure, the nature of information, the tensions that exist when business models are inconsistent with the markets that managers choose to operate in, and solutions based on contract for the failure of the property metaphor for information.

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### **market structure**

In general, the spectrum of market structures runs from Centrally Administered at one extreme to Public Goods at the other. In between are: Monopoly, Cartel, Oligopoly, Competitive, and Commodity markets. (Eucken, 1992, 1948)

**Centrally Administered** markets are command economies, wherein resources are allocated through rationing, edict, and other non-price means. This is the market structure that prevails within most firms, households, and military organizations.

**Monopoly** markets have one supplier of a good or service, who can set either price or quantity supplied, though generally not both<sup>3</sup>. Unlike the case in centrally administered markets, consumers of the monopolist's output do so through voluntary transactions and have the option of not consuming. The distinguishing characteristic of a monopoly market is price discrimination. In any other market structure buyers, who are charged a price higher than what other buyers pay, can seek out alternative suppliers. Auctioning and targeted discounts, are *prima facie* evidence of monopoly.

Monopoly can be *artificial*, as in the case of patent, copyright, or franchise, all of which are created through government action; *institutional*, as in the case of trademark, which has evolved as the product of commercial custom; or *natural*, as in the case of specialized knowledge, talents, and trade secrets.

**Oligopoly** markets have a small number of suppliers of a good or service, each of whom is large relative to the overall market. Oligopolies exist in soft drinks, petroleum, and

3 There are special cases, as when a monopolist does not seek to maximize profit, but these are unrepresentative of the norm and beyond the scope of this paper.

airlines, among others. The distinguishing characteristic of an oligopoly market is interdependence, meaning that the suppliers watch each other very closely, since a sale for one is a lost sale for the others. Price wars are *prima facie* evidence of oligopoly.

**Cartel** markets are a special case of oligopoly, wherein the oligopolists cooperate as a collective monopoly. This collusion can be explicit, as in the case of trade associations, labor unions, and organized crime networks, or it can be implicit or tacit, as in the case of car dealerships, shops in tourist destinations, and many suppliers of professional services, where a game theoretic of 'don't rock the boat' prevails. Complaints among suppliers about 'unfair competition' are *prima facie* evidence of cartel.

Rivalry within a cartel or oligopoly can be fierce, and even violent. However, we reserve the term 'competitive' to describe a very different phenomenon, as we see below.

**Competitive** markets are characterized by large numbers of buyers and sellers, none of whom represents a significant fraction of the overall market, along with relatively low barriers to entry and exit. A market can be globally competitive, but locally monopolistic or oligopolistic, as in the case of many retail outlets. For example, a shop owner might be able to sell his total output without affecting world prices of the goods that he or she supplies, yet be either the only or one of a very few shopkeepers in town.

When analyzing markets, it is important to bear such limits in mind. The case of Microsoft is illustrative here. Microsoft has a global monopoly on the authorized production of copies of MS Office and MS Windows, in the forms of copyright, patent, and trademark. Microsoft also has a natural monopoly in the form of brand recognition. Even though globally there are technologically superior substitutes for Microsoft products that are available for free, including [OpenOffice](#) and [NeoOffice](#), *inter alia*, in office suite software and [Linux](#) and [FreeBSD](#), *inter alia*, in operating systems, Microsoft is the local monopoly provider of such software within many organizations.

**Commodity** markets are like competitive markets with the distinction that their output is homogeneous. In other words, one farmer's wheat is fungible with all others'. Likewise, beef, metal ores, etc. Commodity markets are similar, though not identical to, what some economists call 'perfect competition', which is a theoretical construct that does not exist in the real world. The distinguishing characteristic of commodity markets is that suppliers can sell their entire output without affecting world prices.

**Public goods** markets are distinguished by output that is *non-rivalrous*, i.e., one's consumption does not adversely affect another's, and *non-excludable*, i.e., one cannot prevent others from consuming it. Global examples include breathable air, language, and information. Local public goods are known as **club goods**, which are available to all members of some group, but not to non-members. Examples include green areas at a country club, streets in a private community, etc. On a national scale, military defense, police protection, and similar services are considered public goods by residents of those

jurisdictions, but non-residents are generally excluded<sup>4</sup>. The critical factor here is that the marginal cost of producing one more unit of consumption is effectively zero, and thus the market price is effectively zero.

There are few pure public goods in the world – like air, seawater, etc. – but there are many near-public goods, like national parks, beaches, etc. In all these cases, the price of use is zero, unless they are organized as a club with restricted access. If one tried to charge a price for air, then potential buyers would simply go to where they can acquire it for free. Attempts to charge prices for public goods are generally dismissed by the public.

Innovation and invention inexorably dilute monopoly power, pushing markets away from central administration and monopoly toward competition and public goods. Where there are monopoly profits to be earned, potential competitors have an incentive to bring substitutes to market that undercut the monopolist's price, but not enough to eliminate profit margins completely. For example, a monopoly electricity utility invites competition in the form of solar panels, fuel cells, windmills, etc., some of which have become efficient enough in terms of kilowatts-per-dollar to be economically viable in some remote areas. Thus, competition tends to transform markets from monopoly to oligopoly, oligopoly to competition, competition to commodity, and commodity to public goods. (Fuller, 1982)

Mutual funds and private money schemes compete against central banks in the production of media of exchange. Independent filmmakers and Bollywood compete against Hollywood in the production of entertainment. Open source software initiatives compete against commercial software developers in the production of operating systems and applications.

Marketing, trade associations, and co-opting of the regulatory process are used to concentrate monopoly power, pushing markets away from commodity toward oligopoly and monopoly. For example, farmers can differentiate their crops by promoting them as branded specialty products – e.g., Uncle Bob's Organic Rice, rather than mere commodity rice – and local merchants can band together to petition for stricter barriers to entry.

In the realm of computer operating systems, we see both forces at work. On the one hand, unpriced Linux variants have broken Microsoft's monopoly in many sectors, pushing away from monopoly and toward public goods, while [RedHat](#), [YellowDog](#), et.al., sell branded versions of Linux that command a premium, pushing away from public goods and commodity toward competition and natural oligopoly.

Successful entrepreneurs find opportunities in the tensions created by these two forces.

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4 We ignore here very interesting cases, like imperialism, international treaty, and other extra-national expansion of public goods.

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### **a note on advertising**

Central administrators have very little incentive to advertise, since they allocate output through non-market means, and do not need to influence consumer behavior through persuasion. One rarely sees advertisements promoting police departments, fire & rescue stations, or public schools.<sup>5</sup>

Monopolists also have very little incentive to advertise, since the consumer has no choice among suppliers; only the choice of whether or not to buy. When erstwhile monopolists begin to advertise, this strongly suggests that some substitute has come to market that threatens the monopolist's position.

Oligopolists have very strong incentives to invest in advertising, since a sale for one is a lost sale for the others. When oligopolists form cartels, this incentive is attenuated somewhat, as they function as a collective monopoly. Very high quality advertising suggests that the oligopolists are approximately evenly matched, particularly when its purpose is to draw consumer attention away from rivals' products.

Competitive suppliers advertise, in order to draw attention to themselves, but this advertising will tend to be restricted to the market area where they feel the greatest rivalry from other local oligopolists. For example, a sandwich shop in an office building generally will not advertise, unless local sandwich shops distribute their menus within that building. If they do advertise, this will usually take the form of low-cost fliers distributed within the building, rather than television and radio spots.

Commodity suppliers have very little incentive to advertise. Since they can sell their total output at the market price without affecting the market price, there is no need to incur the additional cost of promotion. When erstwhile commodity suppliers begin to advertise, this strongly suggests that they are implementing a plan to differentiate their output from others'.

Similarly, public goods suppliers have very little incentive to advertise, since their output is available to all consumers at a trivially low price.

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5 This contrast is exploited in the movie *Brazil* (Gilliam 1985), which features advertisements for ducts from the single bureaucratic supplier, Central Services. The juxtaposition of market medium and command message creates a tension for comedic purposes.

## property

In linguistics, the Whorf-Sapir Hypothesis (Sapir, 1929; Whorff, 1956) holds that the languages that we speak and our worldviews are interdependent, and that this affects both how individuals understand the world, form expectations, and implement plans (Sapir, 1929; Whorf, 1956). This idea underlies popular novels, such as *We* (Zamyatin, 1999), *Anthem* (Rand, 1996), and *1984* (Orwell, 1990), in which language is used as a tool of control. Gadamer's (1989) analysis of culture, which expands on this idea and is widely cited in the post-modernist literature, concludes that the meaning of a text will be different from reader to reader, due to differences in knowledge, experience, and context. Gadamer's work has been highly influential among some economists who have embraced this method, known as 'hermeneutics' (Ebeling, 1986; Lachmann, 1990; Lavoie, 1986 & 1990). In the realm of science, Kuhn (1996) and Popper (1977) observe that the formulation of questions that are considered relevant by the status quo has a strong influence on which phenomena are studied, the methodologies employed, and the incorporation of the knowledge discovered into subsequent analysis.

Although one's worldview is influenced by one's terminology, ideology, and affiliation, reasonable persons are able to analyze critically the institutions in which they participate, the languages that they speak, and the social networks within which they are embedded. That the contemporary 'intellectual property' regime *does* exist by that name implies neither that it *must* or *should*, nor that more efficient alternatives do not exist. Likewise, the fact that great wealth has accumulated in jurisdictions with strong 'intellectual property' regulations does not imply that 'intellectual property' is a necessary antecedent or that even greater wealth would have accumulated under alternative regimes. Given the rather recent institutionalization of 'intellectual property', it remains to be tested whether this correlation is not *in spite of*, rather than *because of* this institutionalization.

Legal scholars including Cohen (1935), Fisher (1999), Hunter (2002), Lemley (2004b), and many others, point out that legislation and judicial precedent are often based on metaphor, ideology, and circular reasoning, especially when the expansion of a category of rights to cover new technology, shifts in the relative economic importance of industries, or market process innovation is involved. Although it is not their intention and they do not state it explicitly, these, and numerous authors whom they cite, provide evidence confirming the Whorff-Sapir Hypothesis throughout the legislative and judicial processes in their critiques of legal decisions based on the ideas of, e.g., cyberspace as a place, information as a private good, and frustrated expectations as theft.

Here, economists have much to learn from sociologists. Mainstream neoclassical economics and New Institutional Economics assume that whatever institutions we observe are, by definition, the most efficient. Economic Sociology and Austrian School Economics, on the other hand, recognize that much of what we observe in the realm of human action

consists of fossilized accidents of history and that there are significant costs involved with replacing institutions. Ours might not be the best of all possible worlds, but it is the one that we are in. (Granovetter, 1985; Granovetter & Swedberg, 2001; Lachmann, 1971; Swedberg, 2003; Weber, 1978)

Revolutions occur, when a significant minority become sufficiently disenfranchised to break with the old regime.

Political revolutions aim to change political institutions in ways that those institutions themselves prohibit. Their success therefore necessitates the partial relinquishment of one set of institutions in favor of another, and in the interim, society is not fully governed by institutions at all... In increasing numbers individuals become increasingly estranged from political life and behave more and more eccentrically within it. Then, as the crisis deepens, many of these individuals commit themselves to some concrete proposal for the reconstruction of society in a new institutional framework. At that point the society is divided into competing camps or parties, one seeking to defend the old institutional constellation, the others seeking to institute some new one. And, once that polarization has occurred, political recourse fails. Because they differ about the institutional matrix within which political change is to be achieved and evaluated, because they acknowledge no supra-institutional framework for the adjudication of revolutionary difference, the parties to a revolutionary conflict must finally resort to the techniques of mass persuasion... (Kuhn, 1996)

How the current 'intellectual property' regime came about was not an objective process that reflected some noumenal reality. It was a social process, in which interested parties petitioned judges and legislators, who made decisions based on arguments made by and on precedents cited by the disputants in specific cases and the ideology, rent seeking, and understanding of economic value theory of the individuals involved (Cohen, 1935; Fisher, 1999). As these decisions became precedents for future legal action and lobbying efforts, path dependencies were created that resulted in today's 'intellectual property' regime.<sup>6</sup>

A crude analogy here would be mandating that  $\pi=3$ . Granted, a legislature *could* do this, but that would not make it so. The existence of a statute, regulation, or precedent decreeing information to be a form of property does not necessarily conform to the underlying reality. There are fundamental differences between apples and haiku. Apples are excludable and rivalrous private goods; haiku is a public good. Using the legislature to create a monopoly in the production of a public good is bound to fail, as well as undermine the public's respect for legislation, regulation, and judicial process in general, as we discuss in detail below.

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<sup>6</sup> We leave it to students of Public Choice and Law & Economics to analyze the details of linguistic and rhetorical effects on political action.

Language is socially useful apart from law, as air is socially useful, but neither language nor air is a source of economic wealth unless some people are prevented from using these resources in ways that are permitted to other people. That is to say, property is a function of inequality. If courts, for instance, should prevent a man from breathing any air which had been breathed by another (within, say, a reasonable statute of limitations), those individuals who breathed most vigorously and were quickest and wisest in selecting desirable locations in which to breathe (or made the most advantageous contracts with such individuals) would, by virtue of their property right in certain volumes of air, come to exercise and enjoy a peculiar economic advantage, which might, through various modes of economic exchange, be turned into other forms of economic advantage, e.g. the ownership of newspapers or fine clothing. So, if courts prevent a man from exploiting certain forms of language which another has already begun to exploit, the second user will be at the economic disadvantage of having to pay the first user for the privilege of using similar language or else of having to use less appealing language (generally) in presenting his commodities to the public. (Cohen, 1935)

With 'intellectual property', we have gone well beyond mere metaphor and now have an expansion of the definition of 'property' to include the opposite of the original concept upon which legal traditions of property are founded.

The institution of property evolved as a solution to the problem of overuse of scarce resources. With property, there is a residual claimant who has an incentive, in the form of monopoly rents, to preserve, maintain, and improve a resource. In the absence of these rents, each has an incentive to deplete the resource, in order to avoid being closed out altogether. (Landsburg, 2002: 490-499) However, with information the opposite is often true. It is a truism that information is more widely available the more it is exploited, unlike crude oil, capital equipment, or virgin forest.

For example, if one duplicated a CD, DVD, book, or other physical embodiment of information and returned the original to the owner, this would neither reduce the owner's ability to enjoy his or her copy, nor would it reduce the original creator's ability to make future copies.

It is often asserted, though never proven, that unauthorized copying represents net loss of sales. However, such assertions rarely contain falsifiable – thus, testable – claims. (Popper, 1977) First, given the unknowability of the future, it is impossible to know if a *particular* consumer of an unauthorized copy of some information would have bought an authorized copy at the monopoly price if unauthorized copies had not been available. If the consumer would have bought an authorized copy, then the 'pirating' would represent a lost sale; otherwise, it would not. If a *particular* consumer of an unauthorized copy of some information would *not* have purchased an authorized copy at the monopoly price,

then the consumption of the unauthorized copy *would not* represent a lost sale, and thus no damage would have occurred.<sup>7</sup> In this regard, possession of unauthorized copies of information is categorically unlike theft and more like listening to a song playing over the radio or streamed over the Internet.

Second, to claim that the publisher is a victim, based on the observation that actual sales are less than projected sales fails several economic tests, not least of which is the unknowability of the future. No one knows how many of those unauthorized copies represent lost sales, how many of those unauthorized copies served as advertisement that inspired some to buy authorized copies who otherwise would not have, how the sales of related goods and service supplied by the publishers were affected, or how inflated the sales projections were in the first place.

The copying of information does not hinder the publisher's ability to make copies in the same way that stealing cans of peas from a grocer's shelves hinders the grocer's ability to sell peas. Information and physical goods are categorically different. To regulate information within legal institutions that emerged to attenuate the depletion of physical resources is to regulate the use of that which *cannot* be depleted through use according to the rules of that which *must be* depleted through use.

In many cases the value of information increases as a function of distribution, as when, e.g., news spreads that a deep suntan is not healthy, but increases the probability of developing skin cancer later in life. To prevent people from *not* tanning, unless they paid the discoverer of this information a license fee would be viewed as ludicrous by reasonable persons; however, with business process and software patents, this is precisely the kind of prohibition against learning that discoverers are trying to enforce.

The idea of a tragedy of the information commons is fundamentally flawed because it misunderstands the nature of information. A tragedy of the commons occurs when a finite natural resource is depleted by overuse. Information cannot be depleted, however. Information is a "public good," which means both that its consumption is nonrivalrous – my use of an idea does not impose any direct cost on you – and that it is not something from which others can easily be excluded. Precisely because its consumption is nonrivalrous, information does not present any risk of the tragedy of the commons. It simply cannot be "used up." (Lemley, 2004b, 25)

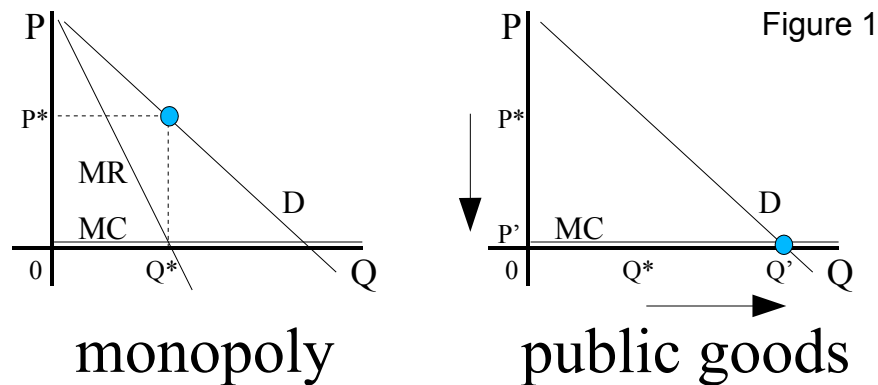
When information is construed as 'intellectual property' protected by patent and copyright, their supply is organized as a monopoly market. Under this regime, Sony/BMG is the sole supplier of Britney Spears CDs; Microsoft is the sole supplier of the Windows operating system; Bloomsbury is the sole supplier of Harry Potter books in the UK.

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<sup>7</sup> Granted, there are historical precedents for punishing individuals because of their similarity to those who have caused damage, but such precedents are seldom cited in the 'intellectual property' rights literature, and such precedents are generally seen as negative examples.

Monopolists can set either the price or the quantity of their output – but not both, otherwise they could set both infinitely high – and form expectations about the other. Generally, monopoly suppliers of information set the price and sell as many copies as consumers demand at that price (the alternative would be a fixed-quantity run that were auctioned). Setting price and expanding output to meet demand is the preferred option for information suppliers, precisely because the marginal cost of production for copies of information is trivial.

According to microeconomic price theory, if the supply schedule of a good increases, due to improvements in reproduction and distribution technology, then the quantity demanded increases and the price decreases. Unlike competitive markets, monopoly markets do not have supply schedules, since the monopolist is the entire supply side of the market. The supply schedule of public goods is a horizontal line where price equals zero.



Here, in Figure 1, we have supply and demand graphs representing these two scenarios. The graph on the left represents a monopoly market. The graph on the right represents a public goods market.

A monopolist is assumed to set its price at the level that corresponds to the quantity demanded at which the marginal cost (MC) of reproduction is equal to the marginal revenue (MR) of the next unit sold. In reality, the demand schedule (D) is unobservable – and thus unknowable – *ex ante*. The monopolist must form expectations based on experience and refine these estimates as new information becomes available. The only observables are a)  $P^*$ , the price that the monopolist sets (i.e., the price tag), and b)  $Q^*$ , the quantity sold (i.e., the sales records), which may or *may not* correspond to the intersection of MC and MR.

In the public goods scenario, market demand is assumed to remain unchanged, but the price (P) is determined by the intersection of supply and demand, rather than monopolist fiat. However, when the [black] market supplies a good at a price of zero – the definition

of public good – then the supply schedule is the same as as the marginal cost curve, which is a horizontal line where price equals zero.

In the monopoly scenario the quantity demanded ( $Q^*$ ) at the monopolist price ( $P^*$ ) is lower than the quantity demanded ( $Q'$ ) when price equals zero ( $P'$ ) in the public goods scenario. To call  $Q'-Q^*$  "lost sales" is incorrect;  $Q'-Q^*$  is the number of sales that were priced out of the market at the monopoly price, but were concluded at the public goods price of zero. If copies become available for free, more individuals will want them.

Granted, some consumers at the margin would have bought at the monopoly price, if zero-price copies were not available, but it is impossible to identify which individuals these are. Tort and criminal law focus on individual human action and not classes; a system used to prosecute individuals because they resemble those who have caused damage, is highly problematic and generally associated with non-democratic regimes.

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### **information**

As indicated above, information is categorically different from physical goods in several critical ways. The first, and most obvious, is that information is comprised of bits and not atoms (Negroponte, 1995), and it can be distributed at the speed of light. The second is that the value of information can increase with use, whereas physical goods wear out and get used up. The third is that the marginal cost of reproduction of information is effectively zero, whereas the reproduction costs of physical goods are non-trivial. There are other differences, but these are sufficient for our purposes here.

Invoking our first point, above, we note that as bits, information can be encoded as a string of 1s and 0s. A photograph of my daughter on my computer is stored as a string of 1s and 0s, which my computer interprets according to some set of rules built into the computer and programmed into the operating system (itself, a long string of 1s and 0s). Likewise, the draft of this article and all other files and programs on my computer are unique strings of 1s and 0s.

A string of 1s and 0s is identical to a binary number. Without exception, every string of 1s and 0s maps 1:1 to a binary number. For example, 1 in binary is equal to 1 in base-ten (the numbering system that most humans use).  $10 = 2$ ;  $11 = 3$ ;  $100 = 4$ ; and so on. By the time we have a string that represents a program as large as NeoOffice/J, the program used to write this article, we have a string of 1s and 0s that is about 2.5 billion digits long, or a number that is approximately equal to  $2^{2,500,000,000}$ . Granted, this is a very large number, but it takes up only about 0.4% of the total capacity of my current hard drive.

We can make these calculations for any information, whether it is a text, audio file, design schematic, movie, etc. Each individual sample of information exists as a binary number. Forbidding one to possess a copy of information is exactly the same as forbidding one to

store a specific number on one's computer. If we call this 'intellectual property', then we are claiming that it is possible to own a number.

Imagine a machine that is of unknown with a knob bearing the numbers 1-9. With a bit of experimentation, one could set the knob to 1 – i.e., input "1" – and observe the machine's behavior, and then 2, 3, 4, ..., 9, and note the behaviors.

Now, imagine a machine with enough capacity to enter numbers on the order of, e.g.,  $2^{2,500,000,000}$ , or more. One could then try 1, 2, 3, 4, ...,  $2^{2,500,000,000}$ , etc., and observe the machine's behaviors.

In the first case, very few would call the setting of the knob 'programming'. However, the experiments with the two machines differ only in terms of scale. Few would try to own the number 5 in relation to its effect on the first machine, even though claiming title to numbers in relation to their effects on machines of the second kind is routine.

Granted, discovering which numbers result in useful behavior entails considerably more work than implied above.  $2^{2,500,000,000}$  is a very large number, and it would take a very long time to discover it through the simple iterative process described.<sup>8</sup> It takes a considerable amount of work to arrive at the number that corresponds to the behavior that an information producer seeks. Whether one is editing a movie, writing software, drafting a text, or whatever, there is considerably more effort involved than merely guessing the right number.

We know now that a thing does not gain economic value based on the amount of work required for its creation, as is often asserted in the 'intellectual property' literature. Otherwise, individuals who employed less efficient production processes would be rewarded with greater returns than those who employed more efficient means.

Prior to the late 19<sup>th</sup> Century, economists – including John Locke, Adam Smith, and Karl Marx – believed that value was created by mixing one's labor with the land, and that the more labor mixed with raw materials, the greater the value of the final output. John Locke's thought was instrumental in the drafting of the Constitution of the United States of America<sup>9</sup> – most relevant here is Section 8, Clause 8 – and this Labor Theory of Value still underlies a great deal of legislation in the USA and elsewhere. (Fisher, 1999)

In the 1870s William Stanley Jevons in Manchester, Carl Menger in Vienna, and Léon Walras in Lausanne independently discovered what Friedrich von Wieser later christened the Marginal Theory of Value, which underlies modern economic thinking. According to

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8 If one could devise a way to carry out such a program, perhaps by employing genetic algorithms, then one potentially could undermine the 'intellectual property' rights regime through such an exercise of invoking a number, testing its behavior on a variety of operating systems, iterating the number, and then testing its behavior, *ad infinitum*, claiming copyright – and possibly patent – rights along the way.

9 John Locke's "life, liberty, and property" was the inspiration for Thomas Jefferson's "life, liberty, and the pursuit of happiness" in the Declaration of Independence.

this theory, a thing gets its value from the interplay of supply and demand in the marketplace. Regardless of how much work has gone into the production of a thing, it will have economic value (i.e., a price greater than zero) only if a) someone wants it and b) there is not enough of it for everyone who wants it to become satiated.

At any given moment in any given place, there is only so much land, so many cans of peas, and so many cars, and this is almost never enough to fully satiate demand for them. With information, on the other hand, one can produce enough copies, *at approximately zero cost*, for everyone who wants them to become satiated.

A common publisher's gambit is to claim that the high fixed costs of production for information requires strong 'intellectual property' rights legislation; otherwise – it is asserted though never proven – the production of movies, books, and medicines would slow significantly. If weaker 'intellectual property' rights legislation would hinder creativity, then strengthened 'intellectual property' rights legislation in the form of perpetual terms for copyright and patent, along with harsh punishment for 'intellectual property' rights violators, should lead to an explosion of creativity, even though subsequent creators would be precluded from recombining existing information without first incurring the cost of title searches license fees.

Similar arguments have been used with regard to software by erstwhile monopolists and proven by the market to be inaccurate. Linux, FreeBSD, and other free operating systems are made available to anyone who wants a copy and are actively maintained by all-volunteer open source software communities. OpenOffice, NeoOffice, Apache, PostgreSQL, PHP, X11, and a host of other mission-critical applications are all freely available and widely used worldwide.

Initiatives like [FreeCurricula.org](http://FreeCurricula.org) are challenging the monopoly pricing of academic textbooks. And, although it is beyond the scope of this paper to analyze the degree to which film making and music are following a similar development path, there is mounting evidence that there are increasing incentives for this. (Love, 2000)

Arguments based on the Labor Theory of Value – i.e., creators of information should have protections based on property rights, because of the upfront costs involved – are based on an understanding of value that was abandoned by economists nearly 150 years ago, and do not correspond with observable human action.

This point bears repeating: from the standpoint of modern economic understanding, fixed costs of production are irrelevant with regard to the market price for a good. If they were relevant, then markets would reward inefficient producers with higher prices for their output, since that output would contain the additional labor needed to overcome the inefficiency. The only relevant effects production costs have are on producers' profits. For example, two producers, who are exactly alike in every other way, but have different costs of production, will realize different levels of profit when they sell their output to the market. If the producer with higher production costs tried to recover those costs through

higher prices, then buyers would buy from the lower-price supplier, leaving the higher-price supplier with no sales.

With information, publishers incur production costs for the originals of the movies, audio recordings, texts, etc. that they produce, which 'pirates' reproduce and distribute at low cost in competition with the publishers' monopoly-priced copies. This leaves publishers with the choice of changing business models or seeking alternative employment, as consumers assert their sovereignty.

Publishers' current business model is to collect monopoly rents from public goods. It is based on medieval landholding, rather than modern commercial activity. (Swedberg, 1998b; Weber, 1978) When a publisher has completed a movie, audio recording, text, other information, that information is treated as a 'property', as if it were a tract of land, rather than as a productive process. Once complete, the information remains unchanged over long periods of time, until the 'director's cut', remix or live version, second edition, or other modification is released. The publisher then hires printers, binders, distributors, etc., to work this property, until the rents no longer cover the production costs. When the property is depleted, the publisher abandons it for a more fertile property.

In other words, 'intellectual property' is treated as static wealth, rather than as a tool that is used in the production, distribution, and promotion of consumer goods. This model worked well, when reproduction technology was primitive. However, now that such technology is standard equipment on computers that cost less than \$500, the costs of enforcing 'intellectual property' rights are growing exponentially as the costs of reproduction fall asymptotically toward zero.

Adding more tension to the use of 'intellectual property' as a metaphor for information is the fact that copyright and patent represent a very unusual kind of 'property right' that is of limited duration. Their possession is less like ownership, and more like lease or loan.

Ownership of durable physical goods is quasi-immortal, in the sense that an owner can sell his property to buyers, give it away as voluntary gifts, or bequeath it to heirs, who enjoy full ownership rights in perpetuity (ignoring abandonment, eminent domain, and other issues that are ancillary to this discussion). This is not the case with copyright and patent, which are limited in duration by the statutes that create them.

The possessor of a copyright or patent does so at the pleasure of the legislators in power, and only for as long as current legislation decrees. Since legislators determine the terms and conditions of copyright and patent, the state is the ultimate owner of 'intellectual property'. Physical property is confiscated by agents of the state as a punitive measure; 'intellectual property' rights expire as a matter of course, like leases and loans.

When we combine legal traditions based on property with obsolete economic reasoning about the nature of value to the regulation of public goods, this results in a situation where market forces are in opposition to legislation. The history of this kind of dinosaur

industry protection suggests that if publishers continue to engage the services of government to shore up their moribund business models, rather than reorganize along more market-compliant lines, they place themselves in opposition to consumers' demands and risk being replaced by entrepreneurs who conform to consumer sovereignty.

That publishers continue to try to reestablish their old monopoly positions through state intervention is to be expected. A person will undertake a course of action, in general, if the expected benefit is greater than the expected costs, include the alternatives given up in undertaking that course of action. Publishers will lobby for more draconian 'intellectual property' rights enforcement, as long as they expect that the net benefits of trying to maintain the status quo are greater than the net benefits of reorganizing.

This does not change the underlying economic reality; it merely explains why threatened monopolists and oligopolists spend so much time and money influencing legislation and public opinion. As noted above, indefensible monopoly positions invite competition from innovative entrepreneurs. Given the very large rents accruing to publishers (Love, 2000) and the very low barriers to entry caused by advances in information technology, it is inevitable that information monopolists and oligopolists will face increasingly competitive market conditions. The current trend in the economically developed countries is to fight change rather than embrace it. This strategy could have exactly the opposite effect in the long run that what is intended. When the legal environment in one jurisdiction dissuades innovation, in favor of entrenched interests, industries migrate.

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### **alternatives**

The protestations of publishers' representatives notwithstanding, the situation is not as dire as some popular media and court testimonies imply. As every schoolboy knows, Appeals to Tradition are not valid arguments; just because one has conducted business one way in the past does not mean that one must continue to do so, especially when changes in technology and consumer demands render conventional business models internally inconsistent. There are viable alternatives.

For example, instead of investing in one or two blockbuster films per year, Hollywood movie studios could spread their money across a larger number of smaller-budget films. This is the model embraced by India's Bollywood film makers, who turn out almost 1,000 films per year. At this pace, it is very difficult for the makers of unauthorized copies to keep up, and consumers enjoy much greater variety.

Another possibility is the use of product placement to underwrite production costs. As a character or actor became popular, the sellers of clothing, soft drinks, cars, and other physical goods would be willing to pay promotional fees to have that character consume their products as part of the storyline. The film maker would get paid upfront, and the

advertisers would have an incentive to distribute the film as widely as possible, in order to maximize the exposure of their products. Possibly, copying would be encouraged.

Publishers could include rivalrous prizes – e.g., lottery tickets, autographed postcards, onetime-use access codes, etc. – in the package along with the CD, DVD, book, or other physical embodiment of the information. Alternatively, they could include the consumers in the production process, as is the business model of [ArtistShare](#), one of whose participants won a Grammy for fan-financed, web-only jazz album. (Zeidler, 2005)

With movies, publishers could reverse the currently common practice of providing superior versions of their products on media that are easy to duplicate. Instead of selling 'director's cut' versions and including additional material on the DVD, the publishers could reserve the superior versions for cinema display, which is easier to police, and distribute abridged versions on DVD. In this way, the full-price box-office version would be more desirable than the bowdlerized home version.

With music, CDs could be used as promotional material for live performances, rather than the primary means by which the performers share their craft and earn their incomes. As with the Bollywood example above, publishers could spread their investments across a larger portfolio of regional performers, rather than concentrate on a handful of international megastars. This way, consumers would have more access to live performances than with the current system of an annual visit from this season's pop idol.

The news media provide a positive example for education and entertainment publishers to follow. [Caribbean Net News](#), [CNN Online](#), [Space.com](#), and a host of other advertiser-supported outlets provide current news at no cost to the user, along with utilities that make it very easy to copy and print their stories. Rather than depend on the proceeds from selling physical embodiments of information that are easily copied, music and movie publishers could offer access to the information for free via media that carry advertising. The popularity of advertiser- and listener-supported television and radio throughout the world suggests that this is a viable model. Apple Computer's [iTunes](#) service is evidence that this model works well online, as well as in broadcast form.

The point of such brainstorming is that, as the market structures of the entertainment, education, and news industries evolve, it is incumbent upon publishers to adapt, in order to comply with consumers' demands and not be replaced by more market-compliant competitors. Publishers, business students, and readers of this article are encouraged to explore these and even more innovative ideas involved not so much the melting of a monopoly regime, as with a sublimation which bypasses the middle phase altogether and goes straight from monopoly pricing to ubiquitous cost-free access to the end user.

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## contract

The suggestions above can work well for many purposes, but there are instances in which information creators would like to continue to collect monopoly rents. It is possible to do so, but without the underlying inconsistencies of 'intellectual property'.

We have described in detail several shortcomings of artificial information monopoly, but we have said nothing about natural monopoly, until now. Natural monopoly exists when a single supplier has control of a resource that has high barriers to entry, including large-scale industry, celebrity, and social ties. With regard to information, this includes trade secrets, unannounced scientific discoveries, specialized knowledge, etc. While one is the only individual with access to this information, one has a natural monopoly.

Fisher (1999) points out that modern 'intellectual property' legislation and rhetoric perpetuates the myth of the heroic creator; that lone composer, inventor, or poet toiling away in obscurity, driven by some persistent muse. The reality is that economically significant information is much more commonly the result of division of labor with many specialists coordinating their efforts through the market process. The production of a book employs not only the author, but editors, proofreaders, lawyers, fact checkers, sales managers, cover designers, etc. Likewise, audio recordings are produced through the efforts of composers, lyricists, sound engineers, producers, set musicians, etc., and one need only read the credits scrolling up the screen at the end of a movie to get a sense of the small army of talent involved with its production.

Normally, each of the highly specialized individuals<sup>10</sup> involved in the production of economically significant information has an agreement with the publisher that stipulates compensation terms. One does not see these individuals engaged in internal markets, in which, e.g., the author 'owns' the storyline, the proofreader 'owns' the typographical and grammatical correctness, the typesetter 'owns' the layout, and so forth. Instead, each function is treated as a step in a complex production process that entails the engagement of services, and not the transfer of title. The extension of this process to include the end user is implied by the existence of end-user license agreements, wherein the opening of the shrinkwrap is taken as acceptance of a contractual arrangement covering the use of the information involved.

Whether the replacement of 'intellectual property' with a purely contractarian alternative were efficient in a specific situation would depend on factors beyond the scope of this general discussion. For a given information sample – e.g., a movie, a song, or an academic article – it is quite possible that one of the solutions discussed in the previous section would be more efficient than the solution discussed in this section in achieving the publishers' short- and long-term goals. The costs and benefits of each approach must be weighed for each application.

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<sup>10</sup> The irony that this article is the result of the efforts of a single individual, working in relative isolation does not escape this author. That this irony is attenuated by the fact that this article is released into the public domain is beyond the scope of this footnote to discuss in detail.

Nonetheless, there are situations where the creator or discoverer of some information wants to share it, but on monopolistic terms. For example, one might have devised a trading algorithm that would enable market speculators to realize greater profits than the trading systems currently employed. In this situation, the creator could bind the potential client to a non-disclosure agreement (NDA) that stipulated remedy in the event of breach.

Granted, as Benjamin Franklin is supposed to have said, "One person can keep a secret. Two people may be able to keep a secret. Three people can keep a secret, but only if two of them are dead." The enforcement of 'intellectual property' rights is very difficult, as well; administrative convenience and ease of enforcement are not distinguishing characteristics here. Our point here is to base the regulation of human action on traditions that are compliant with the nature of information and on consumer sovereignty.

Although there is nothing in the nature of information that prevents unauthorized copying, there is a long and highly developed tradition of limiting individuals' behavior through contract. We see this sort of thing in our daily lives. Although there is nothing in the nature of office work that prevents one from viewing work-unrelated websites during working hours, human action can be limited by employment contract and company policy.

Even though this is not the goal here, one could generalize this position and plausibly argue for dispensing with the concept of property altogether, by construing title to property as a contract between titleholder and government, wherein government agents agree to protect one's title to specified goods and parcels of land, in exchange for tax dollars and obedience. All of the elements of a valid contract are here, including offer, acceptance, consideration, date, duration, jurisdiction, remedy, etc. To protest that this is not a contract, because one does not enter into arrangements with government voluntarily, is to ignore the option to emigrate. If one chooses to live in a jurisdiction, then one tacitly agrees to the terms thereof, or risk the penalties of breach. Generalizing even further, one could construe transactions as contracts of very short duration, but we digress.

The point here is not to argue for the general contractarian case, but to point out that one *could* do so and that it is possible to regulate the disposal of private goods, which fit well within property traditions, through contract. This is more extreme than the mundane observation that end users of information enter into license agreements, which suffice to limit human action, and easily obviate the need for misapplied property traditions.

Rather than invoking copyright as a kind of property right, in order to protect one's intellectual output, one could bind recipients by contract to keep information confidential, not copy it, or whatever else the terms stipulated. Thus, if a publisher, creator, or distributor discovered unauthorized copies, it would have grounds for a complaint of breach. The existence of unauthorized copies of 'intellectual property' would suggest the possibility of abandonment, if the publisher did not take due care to assert its property rights. For example, when a studio employee releases an unauthorized copy of a new movie – which is the case, much more often than a viewer with a camcorder – a

reasonable person would assume that the damage was perpetrated by the studio employee, and not the member of the public who downloaded a copy from a public network.

If, as described above, one discovered a large, useful number and one agreed to share its identity with another, on the contractual understanding that the latter would keep the identity confidential, then terms of remedy in the event of breach could be negotiated, and invoking increasingly self-contradictory 'intellectual property' rights would be obviated.

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## discussion

The will to monopolize is ubiquitous<sup>11</sup>. Monogamy and the first two Old Testament Commandments are very well established examples. The practice of marketing is based on differentiating oneself from the masses and establishing oneself as the sole supplier of some good or service. This position enables the supplier to charge a premium for its output, as witnessed by differences in prices between branded and generic goods.

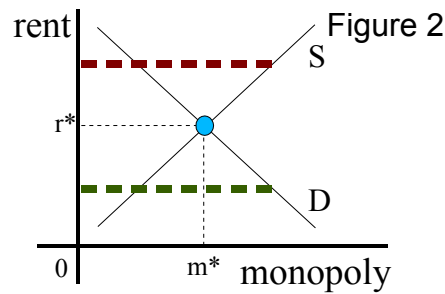
Consumers benefit from monopoly relationships through reduced search costs, as when one deals with the same customer or supplier over time. (Geertz, 1978; Uzzi, 1997) For example, one often tends to go to the same hair dresser, dentist, or local restaurant, because this is easier than seeking out and building trust with new service providers. However, for every benefit there is a concomitant cost. With monopoly, the cost – known as 'rent' – is the premium paid for the convenience. As long as the expected benefit is greater than the rent paid, an individual will continue to frequent a supplier exclusively.

Once a monopoly is established, monopolists are often jealous of their rents, and fight to retain them. History is full of examples of guilds, unions, and other monopoly organizations engaging in acts of violence in an attempt to maintain their positions. At a less pugnacious level, a small-town shopkeeper will lament a customer's frequenting a competitor, an employer will prohibit 'moonlighting', or a landlord will forbid subletting.

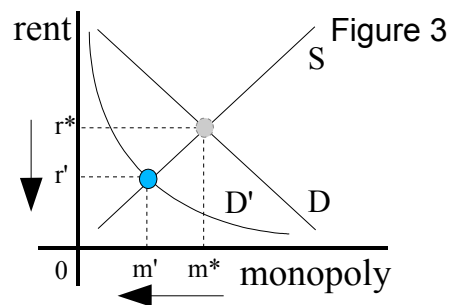
For each good and set of local circumstances, there is a market-optimal level of monopoly that is determined by consumers' desire for search-cost reduction and suppliers' desire for monopoly rents. This is illustrated in the graph below, where **S** represents suppliers' willingness to incur the costs of establishing and maintaining monopoly power, and **D** represents consumers' willingness to tolerate monopoly.

When rents are very high, the amount of monopoly power that consumers are willing to tolerate is low (i.e., they will seek out substitutes), and the monopoly power that suppliers seek is high (the **red** line); when rents are very low, the amount of monopoly power that consumers are willing to tolerate is high, and the amount of monopoly power that suppliers are willing to incur the cost of maintaining is low (the **green** line).

<sup>11</sup> Here, we include mopsomy – an exclusive buyer in a market – within the term 'monopoly', as the distinction is not salient to this discussion.



The point corresponding to  $(m^*, r^*)$  represents the level of rents accruing to the supplier that just offsets the consumer's search costs. If the rents were higher than  $r^*$ , then the consumer would begin seeking alternatives, and the supplier would begin marketing more heavily, lobbying for stricter zoning requirements, etc. If the rents were lower than  $r^*$ , then the consumer will spontaneously seek out monopoly relationships by frequenting the same merchants (Geertz, 1978) and the supplier will behave like a commodity seller and, in the extreme case, simply lay its goods out for sale.



Today, we are witnessing a change in the demand for information that can be illustrated with the graph above. Because of the introduction of low-cost, high-quality substitutes, consumers are less willing to pay monopoly rents for information ( $D'$ ) than they were before ( $D$ ). Where once a publisher's brand served as a signal for quality, this is no longer uniquely the case. Technology has improved to the point that tools for making unauthorized copies are standard equipment – or even integral design features – of even low-end computers.

As illustrated in the graph above, even though suppliers' tastes have not changed – as evidenced by the actions of the MPAA, RIAA, inter alia – consumers' tastes have changed dramatically. Consumers have become less tolerant of monopoly rent, as low-cost, high-quality substitutes have become available. Suppliers' attempts to maintain the status quo at  $r^*$  are directly responsible for the tension that now exists with unauthorized copying.

Attempts to maintain the level of monopoly rents at  $r^*$  are attempts to create price floors. Artificially high price floors invariably lead to oversupply, i.e., suppliers flood the market with goods that go unsold. This could explain some of the publishers' frustration, as

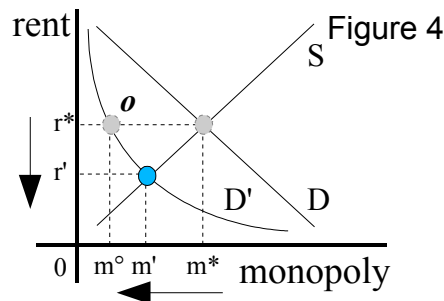
consumers eschew largely homogeneous storylines, soundtracks, and curricula, and embrace information innovation from unexpected sources.

Increasingly, innovation today comes from hitherto unknown suppliers, who forego the normal protections of copyright and patent. This is most pronounced in the open source movement in software, but one sees this idea spreading to other fields, including open source hardware and free curricula. It would be unsurprising to see entertainment embrace this model, as well.

While one class of suppliers of substitutes specializes in the unauthorized copying of information, another class is emerging that produces specifically for the public goods market. In this way, consumers have significantly more choices and are more empowered to assert their sovereignty.

Erstwhile monopolists can embrace these changes and co-opt some of the emerging market, as Apple and Sun have done by releasing key parts of their operating systems, and some musical groups have done by releasing samples of their music. Hollywood, Bollywood, and independent film makers could follow suit easily, by employing strategies like those discussed above.

The position of suppliers that do not embrace change and assume an adversarial stance vis-à-vis consumers are depicted by the point  $o$  in Figure 4, below. Here, suppliers are trying to maintain the *ex ante* level of rent, in spite of consumer pressure to conform to new market conditions, which has the inevitable consequence expressed in the cliché, "The tighter you squeeze, the more slips between your fingers," as consumers seek a level of monopolization corresponding to  $m^o$ , rather than the level that corresponds to  $m'$ .



In conventional terms, this means that consumers in the  $(r^*, m^o)$  scenario will have more of an incentive to experiment with unfamiliar alternatives – as when business managers begin looking more closely at Linux and OpenOffice – even though this carries relatively higher search costs, than consumers in the  $(m', r')$  scenario – as when a publisher releases a free, unsupported version of its output, as well as a support-fee-based, 'Pro' version – in which some consumers are more likely to consider the 'Pro' version than to turn their backs on the publisher, altogether.

The ( $r^*$ ,  $m^o$ ) scenario in Figure 4 is often justified on 'intellectual property' rights grounds. The idea is that rights are created by the law, and violation of those rights is like any other property violation. (Roberts. 2002)

This, however, begs several questions, not least of which are a) What is 'the law'?, b) Whose law?, c) What limits the law?, d) What are rights?, and a host of others. It is not our purpose here to settle debates that have raged for millennia, but we do address some of the more common positions taken in 'intellectual property' debates.

By 'law' does one mean legislation, laws of nature, or principles that apply everywhere and always (whether man-made or natural)? The first is a very weak source, as it is notorious for internal inconsistencies and special-interest exceptions; the second is open to wide debate. The third can be abused, as well, as we illustrate below.

If the law is the same thing as legislation, then are all legislatures considered equal?

If yes, then the laws of the USA are equally relevant to the laws of Cuba, Saddam Hussein's Iraq, and 1994 Rwanda. This, clearly is useless as a guiding principle. This is tantamount to saying that anything goes.

If no, then what extra-legal principles apply? Majority rule has its shortcomings as seen in Rwanda in 1994. Religious law generally makes no mention of 'intellectual property'. Natural rights are open to wide interpretation. Even something as seemingly harmless as internal consistency is useless here, as this would rule out virtually all national and local bodies of legislation.

In fact, it is effectively impossible to come to universal agreement about the legitimacy of different regimes in a world of heterogeneous individuals. In the absence of such agreement, there will always be some individuals who feel tyrannized to some degree. This is true at the constitutional level (i.e., determining the rules, including voting and amendment rules), as well as the choice level (i.e., action taken within the rules). Except among homogeneous individuals, there will always be disagreement about the fairness of the rules and about moves within the rules. (Evans, forthcoming)

If we are to avoid sinking into the morass of moral relativism, we must look elsewhere for our guiding principle.

Let us recall that the institution of property evolved in response to overuse of scarce resources. It was a solution for a social problem. With the breakdown of 'intellectual property' as a viable metaphor, we are witnessing the emergence of a new social problem. The solution, like the solution for the problem of resource overuse, is to be found in observable human action, rather than in prescriptive edicts.

A full analysis of this is beyond the scope of this brief article. Such an analysis would include a historical and theoretical analysis of prohibition, democracy, and ethics. It

would include sections in each of these areas on phenomenology versus teleology, descriptive versus prescriptive bases, and atomistic versus embedded choice and action. Here, we have room only for superficial ostensive definitions.

To wit, people are going to do what people are going to do; prohibition creates incentives for the establishment of black markets; if the expected benefit exceeds the expected cost, including opportunity costs, then an individual will undertake a given course of human action.

While it is understandable that individuals will lobby for the creation of legislation that serves their special interests at the expense of the general population, there are limits to what they can achieve. The logic of concentrated benefits with disperse costs enables the institution of unrepresentative statutes, regulation, and prohibitions with little complaint from the voting public, but this does not imply that the legislation will be effective.

As entrepreneurs who "fail to produce in the cheapest and best possible way the commodities which the consumers are asking for most urgently... suffer losses and are finally eliminated from their entrepreneurial position" (Mises, 1980), governments that fail to represent the will of the people are eliminated from their ruling positions.

Democracies tend to be fairly resilient in this regard, as politicians who more closely represent the will of the people replace those who do not over time. Representative governments tend to repeal or amend statutes when the enforcement cost is greater than the benefit to taxpayers, as perceived by voters. Sometimes these changes are very long in coming, but when they do come, the change itself can be very swift. (Granovetter, 1978)

As consumers become increasingly conscious of the concentrated benefits to publishers of taxpayer-funded enforcement, information suppliers will restructure their business models away from the status quo to more market-compliant models that fulfill the new consumer demands. Whether this entails the repeal of 'intellectual property' legislation remains to be seen. However, open source software and hardware have proven their viability, and 'copyleft', like the various [Creative Commons](#) licenses, turns the concept of copyright on its head, within the existing regime. Even in the absence of legislative change, information business models are becoming decreasingly monopolistic.

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