

The Case against Intellectual Property

Author(s): Michele Boldrin and David Levine

Source: *The American Economic Review*, Vol. 92, No. 2, Papers and Proceedings of the One Hundred Fourteenth Annual Meeting of the American Economic Association (May, 2002), pp. 209-212

Published by: American Economic Association

Stable URL: <https://www.jstor.org/stable/3083403>

Accessed: 02-05-2019 12:09 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

American Economic Association is collaborating with JSTOR to digitize, preserve and extend access to *The American Economic Review*

The Case Against Intellectual Property

By MICHELE BOLDRIN AND DAVID LEVINE*

According to a common argument, the presence of strong intellectual property rights spurs innovation leading to higher economic growth and increasing benefits for all. The argument seems coherent. No economic agent exercises productive effort without the certainty of controlling its fruits. What is true for physical effort must be true for the intellectual one: if strong property rights provide good incentives for the production of potatoes, they must also provide good incentives for the production of ideas.

Why then do we argue a “case against intellectual property?” Are we arguing that, while stealing potatoes is bad, stealing ideas is good? We are not. Economic efficiency and common sense argue that ideas should be protected and available for sale, just like any other commodity. But “intellectual property” has come to mean not only the right to own and sell ideas, but also the right to regulate their use. This creates a socially inefficient monopoly, and what is commonly called intellectual property might be better called “intellectual monopoly.” When you buy a potato you can eat it, throw it away, plant it, or make it into a sculpture. Current law allows producers of CDs and books to take this freedom away from you. When you buy a potato you can use the “idea” of a potato embodied in it to make better potatoes or to invent french fries. Current law allows producers of computer software or medical drugs to take this freedom away from you. It is against this distorted extension of intellectual property rights that we argue.

It is a long jump from the assertion that inventors deserve the fruits of their efforts to the conclusion that current patent and copyright protection are the best way of providing such reward. Statements such as “A patent is *the* way of rewarding somebody for coming up with a

worthy commercial idea ...”¹ abound in the business, legal, and economic press. In arguing the case against “intellectual monopoly” we will examine this argument with care.

I. Downstream Licensing

Intellectual property has two components. One is the right to own and sell ideas. The other is the right to control the use of those ideas after sale. The first, sometimes called the right of first sale, we view as essential. The second, which we refer to as downstream licensing, we view as economically dangerous. All producers would impose downstream-licensing agreements if they could: producers prefer not to compete against their customers. But the absence of competition leads to monopoly. That the downstream-licensing provisions of patent, copyright, and other private contracts lead to monopoly is well understood. Among economists, the argument has been that it is only through monopoly that it is possible to reward inventive activity. There is a seemingly compelling logic: the cost of innovation is a fixed cost, and ideas are distributed at zero, or at least constant, marginal cost. Since perfect competition prices at marginal cost, the fixed cost cannot be recouped. Consequently, if producers of intellectual property are forced to compete with their customers, they will not be able to recoup the cost of creation. This point is forcefully made, for example, in Paul Romer (1990).

In other work (Boldrin and Levine, 2001) we have pointed out that creation is not a fixed, but a sunk, cost. Since only ideas embodied in people or products matter, the cost of creation is the cost of producing the first unit. Such a “sunk cost” is very ordinary in economics and poses no particular threat to perfect competition. As far as we know there is no organized movement to provide producers of potatoes, or any other commodity involving sunk costs, with a

* Department of Economics, University of Minnesota, Minneapolis, MN 55455, and Department of Economics, University of California, Los Angeles, CA 90024. Our thanks to the NSF and the University of Minnesota Grants in Aid program for financial support.

¹ *The Economist*, 23 June 2001, p. 42; italics added.

government monopoly. What is different about creative activity is the indivisibility involved in producing the first unit: two half-baked ideas do not equal one fully baked idea.

The theory of competition with indivisibilities is not yet fully worked out. In Boldrin and Levine (2001) we show that competition often yields the first best: that diminishing costs of replication can increase, rather than decrease, the incentive for creative activity; and that downstream licensing may hurt, rather than help, innovation. We illustrate these ideas below by means of a simple example.

Nevertheless, there is an expectation, which we share, that there are cases where ordinary competitive rents will be insufficient reward to induce socially desirable creative activity. In the rest of this essay, we also argue that the monopoly power in downstream licensing has costs that vastly exceed the usual "welfare triangle," and that creative competitive mechanisms can provide the right reward for inventive activity, even where monopoly fails.

II. Collateral Costs

Like all property, intellectual property is expensive to protect. However, downstream-licensing agreements are especially costly to enforce because they require either the producer or the government to tightly supervise the use of ideas. Of course, there are the direct costs of writing laws, catching lawbreakers, and bringing legal action against them. However, there are many other forms of "collateral damage" to economic welfare. Here we focus on ideas that can be embodied in digital form, such as computer programs, music, books, and movies. To supervise usage of these products requires copy-protection technology. Copy protection mandated by law is especially pernicious because the potential economic damage (think of abolishing all computers because they can be used to pirate music) bears no relationship to the underlying value that is being protected.

Unless mandated by law, few people will choose to install software that enforces copy protection instead of software that does not. This was recognized, for example, in the case of digital audiotape, where copy protection was legally mandated. Unfortunately, copy-protection technology often does not work very well. Dig-

ital audiotape recorders that do not work very well do not pose much of an economic threat. However, the same computers that play music, also hold financial records, creative work, e-mail records, and much of economic value. A malfunctioning copy-protection system that destroys files, causes computers to crash, or causes other forms of collateral damage can easily have an economic cost far exceeding the value of all recorded music.

The inability to reverse-engineer software that enforces copy protection has other collateral costs. If copy-protection software is secretly phoning home to provide its issuers with private information about users, this flagrant violation of privacy is difficult or even illegal to prevent. There is also an important commitment problem with copy-protected ideas: if the producer goes out of business, the copy-protected products may lose their value. Unfortunately there does not seem to be a credible mechanism by which producers can commit to putting their software into the public domain if they go bankrupt.

Suppression of ideas through the legal system creates other collateral problems through the impact on research and development. Although laws are designed in an effort to minimize this impact, it is a fact that research and development under the watchful eye of a regulatory agent is going to be greatly inhibited. Similar conflicting goals arise in the protection of the freedom of speech and of political discourse. The same technology used to track "music free-loaders" can be used to track individuals who express unpopular opinions, for example.

On the patent front, more time and energy seems to be spent on nuisance and defensive patenting of the obvious than on innovation. Individuals exploit the ignorance of patent examiners by patenting ideas already in widespread use in hopes of collecting licensing fees from a few large companies; large corporations patent and cross-license everything imaginable, both to protect themselves against greenmail and to suppress entry into their industry. That cross-licensing and "protection of intellectual property" can be instrumental in promoting collusion within an industry seems transparent. On the empirical side, Joshua S. Gans et al. (2000 p. 29) provide evidence from a 1999 survey of high-tech start-ups that "stronger [intellectual]

property protection is associated with higher, rather than lower levels of cooperation between incumbents and start-up innovator entrant.”

Ultimately, the case against monopoly rests less upon the welfare triangle from monopoly pricing than upon the rent-seeking activity used to get and keep a monopoly. In the brief example of Section IV we show how, with government enforced monopoly, the incentives for rent-seeking lead to large welfare costs in the production of ideas.

III. Competition Without Downstream Licensing

We provide an example to illustrate the idea in Boldrin and Levine (2001) that innovation can thrive in a competitive economy even in the face of indivisibility. In this economy, individuals live forever. There are many consumers, indexed by $c < 0$. In each period, consumers either consume one unit of the good, or not. The benefit to consumer c of consuming a unit of the good is $c^{-\psi}$ with $\psi > 0$. Consumers also prefer to consume early rather than later: a unit of good consumed today is worth $\delta < 1$ of a unit of the same good consumed next period.

Initially, there is a single prototype of a durable commodity that generates the flow of consumption service. The inventor or producer owns this prototype. Once sold, no downstream licensing is possible. At each moment of time the prototype can either be used to generate a flow of consumption or be reproduced. To make things less abstract, let us imagine that the new good is a recording of a new musical piece that is embodied in an MP3 file. Copying takes one period, and each MP3 that is copied produces $\beta > 1$ additional MP3's. A technology such as Napster increases β .

Under competitive conditions, in the t th period each MP3 sells for a market price p_t , or may be rented for one period at a rental rate r_t . Notice that consumers for whom $c^{-\psi} > r_t$ value the song more highly than the rental cost and will choose to listen to an MP3 that period; consumers for whom $c^{-\psi} < r_t$ will choose not to listen to the MP3: if they have a copy, they prefer renting out their copy to someone else. In a competitive environment, everyone is potentially a buyer and a seller.

We are interested in two questions. Is the price of the very first copy enough to compensate the producer for its sunk cost? Does the price of the first copy increase or decrease when new technologies increase β ?

According to standard competitive theory the sale price of an MP3 is just the present value of the rental rates. A simple calculation² shows that

$$p_0 = \frac{\beta \left(\frac{1 + \beta}{\beta} - \delta^{1/\psi} \beta^{(1-\psi)/\psi} \right)^{-\psi}}{\beta - 1}.$$

For finite values of β , p_0 is a positive and finite number. Since p_0 is what the producer can earn from the first sale when he has no downstream protection at all (in practice he should be able to do better than this), there is money to be made for producers of intellectual products.

Is this competitive value of intellectual products enough to motivate the producers to spend the effort and time required? We do not know. To answer this question one needs to know the particular opportunity cost of time of the particular creator, which clearly varies from case to case. It seems to us, though, that there is no hard empirical evidence supporting the view that this value would not be enough.

We also want to understand the social impact of a technology that facilitates the reproduction of “idea-goods.” Does it increase or decrease the value of intellectual products in a competitive market? Basically, received wisdom argues that cheap copying makes it impossible for innovators to earn back their production costs. If, in a competitive setting, increasing β lowered p_0 , received wisdom would be correct: without downstream protection, fewer “idea-goods” would be created as a result of the advent of the new technology.

What does happen to p_0 as β grows larger? The answer depends on ψ . If $\psi < 1$, demand is elastic. This is the empirically interesting case. As β grows larger, it is easy to check from the equation above that the price of the initial copy

² Details on this and other calculations in this paper can be found online at <http://levine.sscnet.ucla.edu> or <http://www.econ.umn.edu/~mboldrin>.

goes to infinity as more of it is allocated to reproduction. In fact, this happens as β approaches a finite value, but this is a special implication of the analytic forms we are using. Notice that, in all cases, the rate at which the price falls over time is proportional to β . Nevertheless, with elastic demand and large β , the increase in the rate with which price falls over time is associated with a higher initial price and greater rent for the innovator.

In summary, under competition and in the empirically interesting case where demand is elastic, improving the technology for reproduction increases the first sale price without bound. The improved technology makes it much easier for a producer to recover sunk costs in a competitive market. This does not mean that the producer will argue against downstream licensing and in favor of increased competition. She will still be able to earn more revenues with a monopoly than under competition. However, it is a good argument for not giving in to the producers and granting them the monopoly: the social benefit of the monopoly (the ability to cover sunk costs and produce a socially desirable good) is reduced by the new technology.

This establishes competitive markets as a viable institutional setting for fostering innovative activity.³ We move now to consider the viability of alternative institutional settings.

IV. The Hidden Costs of Imperfect Monopoly

What happens when competitive rent is insufficient to cover the cost of producing the first unit? Let us consider the stark case traditionally considered in economic theory in which there is a fixed cost that must be recovered, and in which the marginal cost of production is zero. With demand that is perfectly elastic up to an upper bound, there is no cost of monopoly, so this would seem the ideal environment to impose downstream-licensing restrictions.

This is correct only if it is not possible to produce similar items. In the case of textbooks, for example, it is easy to produce books that are sufficiently different to be entitled to a separate copyright, but sufficiently similar as to make no

difference to consumers. When there are many firms competing for monopoly rents, and market conditions are such that rents can be obtained even with some degree of competition, the rent-seeking behavior of competing monopolists dissipates the social surplus by overproduction of too many similar items. When we allow for creativity in the use of markets by having consumers submit contingent bids, then no copyright is unambiguously better than copyright.

Suppose in particular that firms are identical, face a fixed cost, and produce at zero marginal cost. Suppose also that there are H identical risk-neutral customers with fixed reservation price who may reproduce the good at marginal cost $\xi \geq 0$. When intellectual monopoly is legally enforced through copyright, we assume that the post-entry price lies between the price needed to recover costs (for each firm) and the monopoly price in a way that depends on the number of firms and consumers. This particular form of market arrangement (call it "copyright-induced competition for niches") results in what we describe as the *Pareto worst outcome*.

Without copyright there will be no output and no social surplus only if $\xi H < FN$; otherwise, social surplus will be higher than under copyright. This, however, does not do justice to the competitive instinct: we have excluded the important possibility that consumers may submit contingent bids prior to production. In a symmetric equilibrium of a contingent-bidding model, with copyright, the Pareto worst outcome is still an equilibrium, while without copyright, the first best is obtained.

REFERENCES

- Boldrin, Michele and Levine, David K.** "Perfectly Competitive Innovation." Mimeo, University of Minnesota, 2001.
- Gans, Joshua S.; Hsu, David H. and Stern, Scott.** "When Does Start-up Innovation Spur the Gale of Creative Destruction?" National Bureau of Economic Research (Cambridge, MA) Working Paper No. W851, 2000.
- Romer, Paul.** "Are Nonconvexities Important for Understanding Growth?" *American Economic Review*, May 1990 (*Papers and Proceedings*), 80(2), pp. 97–103.

³ In Boldrin and Levine (2001) we develop a more general version of this argument.