

Chapter 10. The Bad, the Good, and the Ugly

In a famous 1958 study on the economics of the patent system, the distinguished economist Fritz Machlup, paraphrasing an earlier statement by his long-time co-author Edith Penrose, concluded that

If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.¹

Almost fifty years later, the first half of this illustrious sentence is more valid than it has ever been. Sadly, the recommendation has not been followed: far from maintaining the status quo, the patent system has been enormously extended, and there is no sign of the end of the expansion of intellectual monopoly to every corner of our economic system. Moreover, the fifty years since have turned up no evidence that patents serve to increase innovation. It is time to reconsider the second recommendation.

Defenders of intellectual monopoly like to portray intellectual property as a powerful and beneficial medicine. If a medicine has serious side effects and scientific studies have found at best weak evidence of temporary benefits, would you employ such a drug on an otherwise healthy patient? Probably not, unless the illness was life threatening. Yet we have documented that innovation thrives in the absence of intellectual monopoly (the patient is healthy), that the latter has serious side effects (the evils of intellectual monopoly) and that a series of scientific studies have found weak or no evidence that it increases innovation (the proposed beneficial effect is probably absent). The case against intellectual monopoly is decisive, and we must conclude that the second half of Machlup's policy advice is now obsolete.

"On the basis of the present knowledge" progressively but effectively abolishing intellectual property protection is the only socially responsible thing to do. Evidence has accumulated during the last fifty years leaving little doubt about the damaging effects of current intellectual property laws. At the same time, legal, economic, and business know-how has also accumulated about how markets for innovation operates without intellectual monopoly. To rule out abolition *a priori* would be no more

sensible now than it would have been to rule out the abolition of tariffs and trade barriers fifty years ago, when the trade liberalization process that has given us prosperity and globalization began. For a long time, the individuals and firms that profited from trade barriers argued that these increased the wealth of the nation, defended homeland companies and jobs, and that abolishing them would lead to a disaster for many sectors of our economy. It took a while to realize this was not true, and that trade barriers were nothing more than rent-seeking devices, favoring a minority and dramatically hurting the overall economy and everyone else, beginning with low income consumers. The same is now true of patents and copyright.

A realistic view of intellectual monopoly is that it is a disease rather than a cure. It arises not from a principled effort to increase innovation, but from a noxious combination of medieval institutions – guilds, royal licenses, trade restrictions, religious and political censorship – and the rent-seeking behavior of would be monopolists seeking to fatten their purse at the expense of public prosperity. We may debate if, say, Social Security is worth keeping given the current demographic and financial markets evolution, but no one would doubt that it was designed to provide old-age insurance that financial markets were not always capable of providing. Patents and copyright, by way of contrast, were never designed to efficiently foster innovation.

Scientific studies of the current system agree that it is badly broken. Getting rid of it may therefore be a good idea. Still, one should pause. Realizing that intellectual monopoly may be akin to cancer, we recognize that simply cutting it all out at once poses problems. Since intellectual property laws have been around for a long while, we have learned to live with them. A myriad of other legal and informal institutions, business practices and professional skills have grown up around them and in symbiosis with them. Consequently, a sudden elimination of intellectual property laws may bring about collateral damages of an intolerable magnitude.

Take for example the case of pharmaceuticals. Drugs are not only patented, they are also regulated by the government in a myriad of ways. Under the current system, to achieve FDA approval in the United States requires costly clinical trials – and the results of those trials must be made freely available to competitors. Certainly, abolishing patents and simultaneously requiring firms that conduct expensive clinical trials to make their results freely available to competitors, cannot be a good reform. Here patents can only be sensibly eliminated by simultaneously

changing also the process by which the results of clinical trials are obtained, first, and, then, made available to the public and to competitors in particular. We will come back to the specifics of the pharmaceutical industry later, when listing some of the desirable policies one can reasonably consider “doable” even in the short run.

What this example suggests is that abolition must be approached by smaller steps, and that the sequencing of steps matters. Gradual reform is necessary both because of the need for other institutions, such as the FDA, to reform in parallel, and also because it is a political necessity. The number of people prospering thanks to intellectual monopoly is large and growing. While some of them, such as movie stars, have accrued much wealth, for many others this is not the case. For many ordinary people intellectual monopoly has become another way of earning a living and, while most of them would be able to earn an equally good or even better living without it, many others need time to adjust. Further, and again in analogy with trade barriers, while the number of people who would benefit from the elimination of intellectual monopoly is large and growing, the gain each one of them perceives as likely is small. In spite of the brouhaha surrounding the “pirating” of popular music and movies, the direct personal saving from copyright reduction or even abolition would not be substantial as music, movies and books are a tiny share of household consumption. In the case of medicines and software, consumers’ potential saving may be more substantial but harder to perceive. Finally, and most importantly, if in the 1950s or 1960s the average citizen of the world could hardly forecast the tremendous improvement in her standard of living that free trade would have brought about within thirty years, even harder it is now to perceive the incremental technological advances that a progressive elimination of intellectual monopoly could bring about in a couple of decades.

In summary, dismantling our intellectual property system poses a set of circumstances that the literature on collective action has identified as major barriers to reform. A few, well-organized and coordinated monopolists on the one side are bound to lose a lot if the protective barriers are lifted. A very large number of uncoordinated consumers on the other side, would receive very small personal gains from the adoption of freer competition. For a long time then, the battleground is going to be one of competing ideas and theories aimed at convincing public opinion that substantial gains are possible from the elimination of intellectual

monopoly. In the mean time, there is a vast array of ideas both for greatly expanding intellectual property and, in the opposite direction, for useful reform. In this, our concluding, chapter, we try to sort these proposals into the bad, the good, and the just plain ugly.

The Bad

Despite the fact that our system of intellectual property is badly broken, there are those who seek to break it even further. The first priority must be to stem the tide of rent-seekers demanding ever greater privilege. Within the United States and Europe, there is a continued effort to expand the scope of innovations subject to patent, to extend the length of copyright, and to impose ever more draconian penalties for intellectual property violation. Internationally, the United States – as a net exporter of ideas – has been negotiating dramatic increases in protection of U.S. intellectual monopolists as part of free trade agreements; the recent Central American Free Trade Agreement (CAFTA) is an outstanding example of this bad practice.

There seems to be no end to the list of bad proposals for strengthening intellectual monopoly. To give a partial list starting with the least significant

- ❑ Extend the scope of patent to include sports moves and plays.²
- ❑ Extend the scope of copyright to include news clips, press releases and so forth.³
- ❑ Allow for patenting of story lines – something the U.S. Patent Office just did by awarding a patent to Andrew Knight for his “The Zombie Stare” invention.⁴
- ❑ Extend the level of protection copyright offers to databases, along the lines of the 1996 E.U. Database Directive, and of the subsequent WIPO’s Treaty proposal.⁵
- ❑ Extend the scope of copyright and patents to the results of scientific research, including that financed by public funds; something already partially achieved with the Bayh-Dole Act.⁶
- ❑ Extend the length of copyright in Europe to match that in the U.S. – which is most ironic, as the sponsors of the CTEA and the DMCA in the USA claimed they were necessary to match ... new and longer European copyright terms.⁷
- ❑ Extend the set of circumstances in which “refusal to license” is allowed and enforced by anti-trust authorities. More generally, turn around the 1970’s Antitrust Division wisdom that lead to the so called “Nine No-No’s” to licensing practices. Previous

wisdom correctly saw such practices as anticompetitive restraints of trade in the licensing business. Persistent and successful, lobbying from the beneficiaries of intellectual monopoly has managed to turn the table around, portraying such monopolistic practices as “necessary” or even “vital” ingredients for a well functioning patents’ licensing market.⁸

- ❑ Establish, as a relatively recent U.S. Supreme Court ruling in the case of *Verizon vs Trinko* did, that legally acquired monopoly power and its use to charge higher prices is not only admissible, it “is an important element of the free-market system” because “it induces innovation and economic growth.”⁹
- ❑ Impose legal restrictions on the design of computers forcing them to “protect” intellectual property.¹⁰
- ❑ Make producers of software used in P2P exchanges directly liable for any copyright violation carried out with the use of their software, something that may well be in the making after the Supreme Court ruling in the *Grokster* case.¹¹
- ❑ Allow the patenting of computer software in Europe – this we escaped, momentarily, due to a sudden spark of rationality by the European Parliament.¹²
- ❑ Allow the patenting of any kind of plant variety outside of the United States, where it is already allowed.¹³
- ❑ Allow for generalized patenting of genomic products outside of the United States, where it is already allowed.¹⁴
- ❑ Force other countries, especially developing countries, to impose the same draconian intellectual property laws as the U.S., the E.U. and Japan.¹⁵

Why these are bad ideas should be self-evident by now – and all should be rejected.

Developing countries in particular should be wary of negotiating away their intellectual freedom in exchange for greater access to U.S. and E.U. markets. Developing countries are, slowly but surely, giving in to the U.S. and E.U. pressure and modifying their national legislation in accordance with the requirements imposed by TRIPS and the WIPO. This is partly the effect of sheer lobbying and political pressure by Western governments and large multinationals. Partly, this is also due to the lack of a workable and coherent alternative to the over-reaching redesign of world intellectual property rights underlying TRIPS and its ideology. This trend makes an open and critical debate on such themes in

developing countries even more urgent and valuable than it would be in any case.

The Good

There are a great many things that can be done to make modest improvements in the current system of both patents and copyrights. In the case of patents there are a variety of proposals for making the patent system less vulnerable to “submarine” patenting, and generally tightening up the system so that a patent has some real connection to innovation, and is not merely a claim to someone else’s invention. In the case of copyright, a major priority is to make sure that all the abandoned and orphaned works do not forever remain unusable because they are under copyright, and the copyright holder is dead, has disappeared or is in any case untraceable.

For both patents and copyright, a fundamental priority is to prevent the public domain from shrinking further, and, when possible, push back the fences that are progressively enclosing it. This means, on the one hand, opposing new proposals for the extension of copyright term and coverage beyond those established by the 1998 Digital Millennium Copyright Act (DMCA) and Copyright Term Extension Act (CTEA). On the other hand, it also means to take proactive actions to defend from rapacious hands what is growing in the public domain and needs to be nurtured. Private economic initiative can be extremely useful along this dimension and the recent Open Innovation Network initiative, led by IBM, is a wonderful case in point.¹⁶

Briefly described, the Open Innovation Network has been formed by IBM, Philips, Sony and two large Linux resellers, Red Hat – a Linux distributor we discussed in an early chapter – and Novell – another successful Linux distributor. The Open Innovation Network (OIN) has been set up as a foundation that aims at buying Linux-related patents from holders and create a pool of intellectual property it can then license for free. Probably more important, though, is the commitment which is part of the Open Innovation Network’s charter, to sue anyone who tries to either attack Linux, claiming some parts of it violate an outstanding patent, or dismember it by attempting to patent pieces of it. Patents controlled by OIN will be freely available to anyone agreeing not to assert her own patents against other users who have signed a license with OIN, when using software related to Linux. Let a hundred OINs blossom!

Let us continue looking into other short-run improvements to the burden of intellectual monopoly. Jaffe and Lerner document in great detail how the patent system, as it is currently implemented in the U.S., is broken.¹⁷ They make numerous proposals to make frivolous patents more difficult to get and enforce. We support these proposals in principle – and while we might disagree over some of the details, we expect that were we to debate the matter, they would convince us on some points, and we would convince them on others.

One proposal in particular, is to allow patents to be challenged before they are granted. This would allow real evidence to be brought to bear on the issue of prior art – something the U.S. Patent Office seems to know little about, as the thousands of “how to swing a swing” and “peanut-butter and jelly sandwiches” patents suggest.¹⁸ Realistically, however, few individuals or firms would be likely to monitor the patent system carefully enough to identify bad patents, or to incur the expense of providing the public good of challenging bad patents. Quillen et al¹⁹ examine the rigor with which the U.S. Patent Office carries out its examining activities and compare it to those of the European and Japanese Patent Offices. They take the opposite approach from Lerner and Jaffe, suggesting that the patent office is not the appropriate place to reach decisions concerning patentability. They conclude by asking

*...why should we not go to a registration system and avoid the expenses of operating an examination system ... shouldn't we abolish continuing applications so that the USPTO will be able to obtain final decisions as to the patentability of subject matter presented in patent applications and avoid having rework imposed upon it. Finally, so long as the USPTO grants a patent for virtually every application filed, are the courts justified in adhering to the clear and convincing evidence standard for overcoming the statutory presumption of validity?*²⁰

It is striking but true that either of these proposals, although they go in opposite directions, would be an improvement over the current system. That speaks volumes about how bad the current system is: mathematicians call it a “global minimum” a position such that any movement away from it, in any direction, improves things. This is another such case.

Also of great significance is the proposal of Gallini and Scotchmer to allow the “independent invention” defense to patent claims²¹. That is, they would allow proof that an invention was independently derived, and not obtained directly or indirectly as a consequence of the similar invention that was patented first, as a defense against patent infringement. For example, if you patented the “one-click” with the mouse to past text into a word processor, and sued me because my word processor also pasted text with just one click, I could defend myself by showing that I had written my word processor in my spare time and had never read your patent, or seen a copy of your word processor. This would not only relieve the innovator from concern that in his ignorance he would run afoul of some existing patent, it would also make it substantially more difficult to engage in submarine warfare, as the inventor who is torpedoed by the submarine could argue, and prove, that his invention was independent. This reform, alone, would be of great social value and would enormously reduce the burden of intellectual monopoly. As we have illustrated repeatedly, simultaneous or independent inventions are almost the rule in the creative process, rather than the exception. For many great inventions of the last century – the radio, the TV, the airplane, the telephone – allowing the two or more independent and simultaneous inventors to both exploit their invention commercially would have greatly benefited consumers and economic progress in general. This is even more true and more relevant today, as the number of judicial disputes over practically identical and simultaneous innovations skyrockets, especially in the fields of software, biomedical products and telecommunications, and for business practices in general.

An alternative reform would be to require mandatory licensing at fees based on estimates of R&D costs. The principle is the following: if it costs \$100 to invent a gadget, 10% is a reasonable rate of return on this type of investment, and expected demand for licensing is in the order of 100 units, then a net present value fee of \$1.10 would be right. If the cost of uncertainty is an additional five cents we should set mandatory licensing fee at \$1.15 for this particular patent. William Kingston takes a more serious look at how this might work in practice, particularly figuring a multiplier to account for the many failed innovations needed to produce a successful one. Kingston points out that cost estimates are already widely used in patent litigation and are not so difficult to produce and document. He estimates that, for most of the cases he studied, the total revenue from licensing products that

are successfully patented and licensed should be about eight times their R&D cost, if the license is taken immediately; for licenses issued as the products actually go to market, a multiplier of four would be more appropriate. In the case of pharmaceuticals, he suggests a multiple of two would be sufficient – noting that

If three such licenses were taken, the payments would [already] put the product into the most profitable decile (the home of the blockbuster drugs).²²

A backdoor to reducing the term of patent, and making it less easy to accidentally run afoul of long-standing but meaningless patents, would be to reintroduce patent renewal – for example, keeping the term of patent fixed, while splitting the twenty year term into smaller increments, with a renewal required at each stage. This is discussed by Cornelli and Schankerman and by Scotchmer.²³

In copyright, the most immediate problem is that of a Congress and Supreme Court that are “bought and paid for.” After reading both the Congressional hearings on the DMCA and the Supreme Court decision in *Eldred*²⁴, we are fully convinced of this. The triple whammy of giving automatic copyright to every work, whether or not it is registered, eliminating the need for renewal, and extending the term of copyright to be essentially infinite means that, over time, virtually everything written will become inaccessible. Lessig²⁵, among others, documents in great detail the problems caused by these “ugly reforms.” He proposes that some of the ill-effect could be undone by a modest renewal fee. Landes and Posner²⁶ suggest that the legal principle of abandonment could be applied to copyright holders who do not actively make it clear that they are maintaining their copyright. Either or both of these proposals – however politically naïve they might be – would be a great improvement over the current situation.

The debacle we currently face in copyright is that as more and more draconian laws concerning copyright are introduced, less and less real copyright protection is possible, as it has proven impossible to police the P2P networks in any realistic sense. Many have suggested that the way out of this dilemma is through mandatory licensing. Radio broadcasters currently pay a fixed fee, but do not require special permission to broadcast a song. In the same way, downloads could be made legal and payments to copyright holders based on the number of times a song is downloaded. This is not a perfect proposal – the possibility of

manipulating the “download ratings” comes to mind, and the mandatory licensing fee for internet radio was set untenably high – but on balance, would probably serve to improve the current situation.

The recent, and widely advertised if limited, decisions by Apple and EMI to renounce policing P2P file sharing via technological means (that is, by giving up on DRM) is also a positive step. It signals that at least a few among the big players are realizing that the “technological police” approach is a losing business proposition, and that plenty of money can be made by selling downloadable music that consumers can then share and redistribute more or less freely.²⁷

Deregulation

An intermediate position between abolition and the current system would be to get the government out of the copyright and patent business all together, but allow the use of private contracts to enforce intellectual property. What this means, basically, is that copyright and patents will be no longer regulated by laws, and that the government would no longer act as a costless third party enforcer of such laws. Violations of private arrangements about patents and copyright by one of the subscribing parties, will be brought to a court of law by the offended party, and treated as any other breach-of-contract case.

This is a delicate point and deserves some clarification. Beyond copyright and patent, there are also downstream licensing agreements through private contract. That is, before I sell you my book, or show you my idea, I can require you to sign a contract agreeing not to resell it. Or these contracts can be included as “shrink-wrap” agreements implicitly agreed to when the package is opened, as is the case with much computer software. Strict abolition of intellectual property would require that the government commit to not enforcing these types of agreements. An intermediate step to abolition would allow the enforcement of these types of contracts while abolishing legislated copyright terms altogether. Relative to alternatives, this proposal has pluses and minuses.

In the case of copyright, deregulation would have some negative effects, since fair use and time limits could be eliminated altogether by abusive private contracts. But since the time limit has been effectively eliminated, and the courts are moving in the direction of allowing contracts limiting fair use to supersede copyright law, the negative effect would not be so great. On the

positive side, third parties would be out of the picture. Once a copyrighted item was leaked onto the Internet, there would be no obligation on my part to figure out if someone else had violated his contract by putting it there. In effect, while the leaker could be sued, the work would never the less enter the public domain as a matter of fact. An additional drawback, though, is that this may increase the litigation rate dramatically, with the obvious social costs this implies. Intellectual property lawyers would shift their byzantine skills from the current aim of copyrighting everything to writing more and more complicated copyright contracts and then suing either side for violation of said contracts.

In the case of patents, deregulation would solve a great many problems with a few minuses. It would put an end to submarines – since the submarine pirate would not be so able to get me to sign a contract agreeing to pay him for his useless piece of patent paper. And of course independent invention would be protected – the independent inventor would simply avoid signing any licensing contracts. The risk of soaring litigation costs would remain, though, especially when it comes to independent inventions. If you are sitting on a valuable monopoly and someone enters the market who has invented the same thing independently, even a miniscule chance that he may not be able to prove it convincingly before of a court provides a big incentive for hiring some lawyers and going to court.

Lack of public disclosure would not be much of a problem either. The amount of effective disclosure that current patents allow is miniscule, if positive at all, as amply documented and easily verifiable by visiting the USPTO site and going through a few patents.

Increasing secrecy would probably be the worst drawback of privately contractable patents/licenses, especially under the independent invention provision: how can tell if I just reverse-engineered your idea from a copy you licensed someone else, or I discovered by myself? This may entail a non-negligible waste of resources relative to current conditions, especially for inventions that are now patented but would be hard to keep secret once access to the product embodying the invention is allowed.

Abolition

Beyond deregulation is outright abolition. In other words, in addition to eliminating patents and copyrights, we would not have the government enforce collusive contracts such as downstream licensing agreements. Since economists generally

argue in favor of the enforcement of private contracts, it may be a surprise that we argue against some of them in the name of free markets and competition. However, there are two key elements of the usual argument in favor of private contracts that are missing in the case of downstream licensing.

First, downstream licensing restrictions negatively impact people who are not party to the agreement. That is, if I purchase a book by signing a private agreement not to resell copies, this agreement impinges on the right of other people to buy the book from me. These kinds of agreements, in which a group of people (the seller and the first buyer) agree to limit their provision of some good or service, are usually called cartels and are generally illegal under anti-trust law. If you and I, as owners of bakeries, sign a contract agreeing to limit the number of loaves of bread we will sell, not only will the courts not enforce that contract, but we will be subject to criminal prosecution. The same is true if the same contract is entered upon by a bakery and, say, a client restaurant, or even a private citizen.

Second, economists recognize the important element of transaction costs in determining which contracts should be enforced. "Possession is 9/10ths of the law" is a truth in economics as well as in common parlance. Take the case of slavery. Why should people not be allowed to sign private contracts binding them to slavery? In fact economists have consistently argued against slavery – during the 19th century David Ricardo and John Stuart Mill engaged in a heated public debate with literary luminaries such as Charles Dickens, with the economists opposing slavery, and the literary giants arguing in favor.²⁸ The fact is that our labor cannot be separated from ourselves. For someone else to own our labor requires them to engage in intrusive and costly supervision of our personal behavior. Selling our labor is not tantamount to selling our house, which is why even renting it – that is, becoming an employee – is quite complicated and subject to a variety of regulations and transaction costs. The transaction costs implied by slavery are socially damaging as they imply violation of privacy and of essential civil liberties. Hence they are commonly rejected on economic, not just moral, grounds. Moreover, there is no economic reason to allow slavery. With well functioning markets, renting labor is a good substitute for owning it. And so we allow the rental of labor, but not the permanent sale.

For intellectual property the reverse is the socially beneficial arrangement: allow the permanent sale, but ban the rental. Again, this is efficient because it minimizes transaction

costs. For, with intellectual property, possession belongs to the buyer and not to the seller. If you sell me a copy of an idea, I now have that idea embodied either in me or in an object I own. For you to control the idea requires intrusive and costly supervision of my private sphere. The same holds true if you sell me a book, a CD or a computer file. In each case, I have physical control of the item, and you can control its use only through intrusive measures. Moreover, in the case of well-functioning markets, owning is a good substitute for renting. Our basic argument against intellectual monopoly is that markets will function well in its absence, and so there is no need for a rental market as the latter only effectuates intellectual monopoly.

We emphasize that it is not rental versus sale that is the crucial distinction, but the presence of restrictions on the use made of an idea. Rental agreements over intellectual property that implied no restrictions on the use of the idea during the period for which rental was agreed, would be consistent with our proposal, but would offer little advantages over sale. In the case of an idea, such as an invention or mathematical formula, once you have passed the idea to me, rental has little meaning, since I can neither return my copy of the idea to you, nor credibly promise to forget it after a fixed period of time. In the case of an object embodying an idea, such as a book or CD, you may well rent the object to me for a fixed period of time. However, in the absence of intellectual monopoly effectuated by downstream licensing, I am free to make a copy of the book or CD, and that copy would remain my property even after the rental period expires. There is no economic objection to rental without downstream licensing; on the other hand, while we would not prohibit such rentals, we would not expect such rental markets to be widespread in the absence of intellectual monopoly.

More extreme forms of abolition are possible, even if it is not obvious how desirable they are, or what their practical relevance might be. Still, as economists we must contemplate these possibilities. Without government grants of monopoly or enforcement of monopolistic contracts, innovators by virtue of their first mover advantage will generally have some monopoly power. There are government policies that can be used to combat even this ephemeral monopoly. For example, at the lesser end, trade-secrecy, digital rights management, and encryption could be eliminated by a law requiring the publication of detailed information about an innovation as a condition of doing business. Of course the transaction costs are probably large, as the definition

of “innovation” would suddenly become blurred, and legal challenges could be mounted with relative easiness.

Nevertheless, the idea is certainly practical. For example, to sell computer software, the seller would be required to make available the source code; to sell a drug, the manufacturer would have to publish the chemical formula. This latter example may convince you that, along certain dimensions, such a proposal is scarcely radical – to sell a drug now, the chemical formula must be published – pharmaceutical companies are not allowed trade-secrecy over their products. Along other dimensions, though, the proposal is more radical. Consider the case in which a new production process or a new business method is adopted, and think about the complexity involved with full disclosure of its details. The very same facts that, in earlier chapters, allowed us to claim that, in the real world, imitation is costly and innovations do not become public information just because they are implemented or because a technical paper is published describing them imply, in this case, that full disclosure may be nearly impossible and most certainly manipulated, leading to excessive legal and transaction costs. Rather uncharacteristically of us then, we would drop the radical position in this particular case and vote for a system in which, if you are lucky enough to become a monopolist because you really got there first, and if others have a hard time catching up with you, so be it.

There is also the intermediate possibility of allowing the elimination of secrecy through private contract only – that is abolishing all copyright except the GNU public license, which serves to enhance, rather than limit competition. This, in particular, is a form of copyright we would like to see preserved, and extended to patents. Indeed, and limited to the Linux software area, this is essentially what the Open Network Initiative mentioned earlier on strives to achieve.

On the opposite side of the coin, economists often argue that in the absence of government enforcement of contracts, a contracting “black market” may arise. An example is the prohibition of “usurious” lending contracts that limit the charging of high interest rates, and limit also the penalties that can be contracted for in the case of failure to repay. Naturally an illegal market has sprung up – and organized criminals are happy to lend you money without security at very high interest rates, then come and break your knees if you fail to repay. From a social point of view, the contracts have not been eliminated – but simply pushed out of the civilized world and made an object of persecution by the

law-and-order system. Would something similar not happen if the government were to stop enforcing shrink-wrap agreements? The answer is “probably not.” Anti-trust law has not created much of a market for breaking the knees of competitors who fail to collude – and however much the RIAA and MPAA might like to take revenge on those leaking copyright material onto the net, they have not had much success in finding them.

Overall, we do not favor the extreme approach of the government actively trying to enforce competition – we favor abolition, including the government refusing to enforce collusive downstream licensing contracts. We would not oppose the private enforcement of licensing contracts, as long as violent revenge is not allowed to become the channel of enforcement. For example, in the television and movie industry, authorship and profit share is established not according to copyright law, but according to a private contract between the studios and writers union. Without intellectual property such a contract could not be enforced in court – but it could be enforced, for example, by the writers going on strike, or the studios locking out the writers’ union. This is not necessarily a good thing from an economic perspective. However, it is very costly for the government to become involved in preventing private contract enforcement, hence private non-disruptive enforcement may be the lesser of the two evils. Moreover, this type of enforcement, unlike government enforcement, is self-limiting. That is, the studios can always accept the strike and find replacement authors, and the authors can always start studios of their own. Since some downstream monopoly may serve a good social purpose, it seems a poor idea to try to control this type of self-limiting enforcement.

Pharmaceuticals

Handling properly the pharmaceutical industry constitutes the litmus test for the reform process we are advocating. Simple abolition, or even a progressive scaling down of patent term, would not work in this sector for the reasons outlined earlier. Reforming the system of intellectual property in the pharmaceutical industry is a daunting task that involves multiple dimensions of government intervention and regulation of the medical sector. While we are perfectly aware that knowledgeable readers and practitioners of the pharmaceutical and medical industry will probably find the statements that follow utterly simplistic, when not arrogantly preposterous, we will try nevertheless. In sequential order, here is our list of desiderata.

- Free the pharmaceutical industry of the stage II and III clinical trials' costs, which are the cost-intensive ones. Have them financed by the NIH, on a competitive basis: pharmaceutical companies that have completed stage I trials, submit applications to the NIH for having stages II and III financed. In parallel, medical clinics and university hospitals submit competitive bids to the NIH to have the approved trials assigned to them. Match the winning drugs to the best bids, and use public choice common sense to minimize the most obvious risks of capture. Clinical trial results become public goods and are available, possibly for a fee covering administrative and maintenance costs, to all that request them. This would not prevent drug companies from deciding that, for whatever reason, they carry out their clinical trials privately and pay for them; that is their choice. Nevertheless, allowing the public financing of stages II and III of clinical trials – by far the largest component of the private fixed cost associated with the development of new drugs – would remove the biggest (nay, the only) rationale for allowing drugs' patents longer than a handful of years .
- Begin reducing the term of pharmaceutical patents proportionally. Should we take pharmaceuticals' claims at their face value, our reform eliminates between 70% and 80% of the private fixed cost. Hence, patent length should be lowered to 4 years, instead of the current 20, without extension. Recall that, again according to the industry, effective patent terms are currently around 12 years from the first day the drug is commercialized, hence we are proposing to cut them down by $\frac{2}{3}$, which is less than the proportional cost reduction. To compensate for the fact that NIH-related inefficiencies may slow down the clinical trial process, start patent terms from the first day in which commercialization of the drug is authorized. A ten year transition period would allow enough time to prepare for the new regulatory environment.
- Sizable reduce the number of drugs that cannot be sold without medical prescription. For many drugs this is less a protection of otherwise well informed consumers than a way of enforcing monopolistic control over doctors' prescription patterns, and to artificially increase distribution costs, with rents accruing partly to pharmaceutical

companies and partly to the inefficient local monopolies called pharmacies.

- Allow for simultaneous or independent discovery, along the lines of Gallini and Scotchmer.²⁹ Further, because patent terms should be running from the start of commercialization, applications should be filed (but not disclosed) earlier, and mandatory licensing of “idle” or unused active chemical component and drugs should be introduced. In other words, make certain the following monopolistic tactic becomes unfeasible: file a patent application for entire families of compounds, and then develop them sequentially over a long period of time, postponing clinical trials and production of some compounds until patents on earlier members of the same family have been fully exploited.

This sequence of reform may not be a panacea, but we believe a pharmaceutical industry organized along these lines will produce no fewer valuable drugs than the current one, at a much lower cost for the consumers. Should any congressman or senator be interested in working out the details that are necessary to make this operational, we are hereby volunteering our time and expertise to the enterprise.

Next we examine the poor countries issue, with Africa and the AIDS epidemic at center stage. From a global perspective, this is a more dramatic and urgent problem than the high cost of drugs in the advanced countries. Here positions oscillate between the *dura sed lex* of TRIPS (forcing the introduction of medical patents in India, South Africa, China, etc.) to requests for a temporary but long lasting suspension of patent rights for poor countries.³⁰ Even if our road-map for reform were to be implemented – the transition time of about ten years is long enough to make the current situation in Africa degenerate much further. There is no doubt, therefore, that a ten or fifteen years suspension of drugs’ patents for developing countries would be an improvement over the current situation. Recent unilateral actions along these lines, taken by Brazil in relation to AIDS drugs, suggest that this theoretical possibility is becoming a political possibility and its economic and social implications seriously waged. Because it is especially the fear of parallel import of cheap medicines from those countries to the rich ones that fosters the strong opposition of Big Pharmaceuticals to such a proposal, temporarily suspending free trade in medicines may even be worth considering. In other words,

a parallel temporary suspension of medical patents in poor countries and of medicines' trade from them toward the rest of the world may, at the end, increase social welfare in those areas. This is not an obvious call, though, and we must admit having found very little technical and quantitative analysis of the pros and cons of such policy shifts in the literature advocating it.

Furthermore, we cannot help but noticing the obvious, if cynical, economic point: only when the worldwide gains from price discrimination will be low enough, will large pharmaceutical companies find it attractive to get seriously involved in the development and production of new drugs specifically targeted to the many diseases plaguing the poor countries of Africa, Latin America and Asia. What this means is that reforming the pharmaceutical markets of the US, Europe and Japan in the direction we indicate is, in fact, almost a pre-requisite to make sure we can effectively address the health problems of the less developed countries in a systematic and not purely "charitable" way. Charity is commendable, useful and valuable, but history has taught us, over and again, that charity has never eradicated and never will eradicate either poverty or widespread plague-like diseases. Free competitive markets and the technological innovation they foster are a much more effective and well-tested medicine than any, temporary and charitable, partial reform of the global system of pharmaceutical patents.

Trademarks

We have given little attention to trademarks – which serve to identify rather than to monopolize. Strangely, trademarks have attracted lots of attention in the anti-global and anti-market movement, with a variety of anti-logo, anti-trademark, anti-big corporation rallies, books, movies, and pamphlets being produced. This, we are afraid, is due more to the double desire of the leading figures in that movement to become a recognizable "logo" themselves, and to the frustration of many youngsters of not owning enough "logo-ized" items, than it is to any serious social loss from the crocodiles stitched on colorful cotton t-shirts.

In the eventuality, however, that copyright and patents are significantly weakened, there would be a temptation to substitute trademark for other forms of intellectual property protection. For example, if Disney were to lose the copyright over Mickey Mouse, they would have a strong temptation to trademark Mickey Mouse, and so prevent the use of Mickey Mouse images. Thus any effort towards legal reform of copyright and patent law will necessarily

also have to consider how to limit the use of trademarks for purposes of identification, and prevent their use as a substitute for copyright and patents.

Subsides for Innovation and Creation

It is theoretically possible that the competitive market alone provides insufficient incentive to innovate – although there is no evidence that this is the case. Suppose that we succeed in abolishing intellectual monopoly and discover, after a few years, that there is less innovation than would be socially desirable. Unlikely as this event may be, we as economists must nevertheless consider it. Hence, should we reintroduce intellectual monopoly in this case?

Intellectual property law is about the government enforcing private monopolies. In countries without effective tax collection mechanisms, both historically and currently, government grants of monopolies were and are commonplace; we all have seen some old label for a tea or chocolate brand reporting “By Appointment of Her Majesty.” As nations develop, more effective tax collection infrastructures have been replacing such revenue devices as the salt monopoly, or the grant of exclusive import rights to the brother-in-law of the president. Hence, the sale by government officials of exclusive rights to carry out this or the other commercial activity or to produce and commercialize certain goods and services have progressively disappeared in almost all advanced market economies. Intellectual property is one of the few remaining anachronisms from the pre-history of modern tax collection, worse, indeed: it is a distorted anachronism that is now being exploited for rent-seeking purposes that are opposite to those for which it was originally established. The answer is that – if there is indeed a need for extra incentives – it should be done through subsidization and not through government grants of monopoly.

A first question might be what level of subsidy would replace the profits of the current monopolists?³¹ Schankerman³² makes the calculation that a subsidy to R&D of 15%-35% would be enough to provide an incentive equivalent to that currently provided by patents – ironically subsidies of nearly this level are already available in addition to patents, especially in the pharmaceutical industry, as we documented in the previous chapter. Indeed, the offensive sight of the government using taxpayers’ money to subsidize research and then awarding it a private monopoly reaches absurd heights in academia, where in recent years the mantra of “private-public partnership” has taken

hold. A more egregious form of public subsidy for private monopolies is hard to imagine.

Like monopolies, subsidies can lead to rent-seeking and have distortionary effects, so they should scarcely be a first resort. Some economists, such as Paul Romer, painfully aware of these negative side-effects, have proposed to avoid some of these distortions by narrowly targeted subsidies – for example to graduate students who, the evidence suggests, are key instruments in the process of innovation. Others, such as Andreas Irmen and Martin Hellwig, suggest that broad subsidies to investment in general – interest rate subsidies, for example – are likely to be the least distortionary. Yet others, such as Michael Kremer, suggest that prizes awarded after the fact create greater incentives to innovate. Nancy Gallini and Suzanne Scotchmer go further and compare various subsidization methods in their recent work. Their technical analysis is beyond the scope of this book, but the basic point remains: various intelligent forms of subsidizing basic research and even applied invention exist, and an appropriate mix can be found that would greatly improve upon patents and copyright.³³

Social Norms

Social norms are not a topic in which we are especially expert. Still, it is a relevant topic: property rights are never enforced only by the law-and-order system, or even by costly private monitoring of other people's behavior. Broadly accepted and well functioning property rights systems rest also, one is tempted to write "primarily," on a commonly shared sense of morality. I do not litter my neighbors' yard with small pieces of garbage not just because they may yell at me or prosecute me but, first and foremost, because I would be ashamed of myself for doing so. The same is clearly true for the day-to-day enforcement of the "small" aspects of intellectual monopoly, such as copying books, movies, music, downloading materials from the internet, making copies of movies we own for friends to watch at home, and so forth. Plainly, enforcement of current intellectual monopoly standards is, to a large extent, a matter of which social norms are accepted and will be accepted, and what is considered, by the average citizen, morally acceptable, or not.

Economist Eric Rasmusen has thought quite a bit, and quite originally, about the issue of social norms and intellectual property. Consider one of his not-so-paradoxical paradoxes about it

Video rental stores and libraries, of course, reduce originator profits and hurt innovation, but that is a utilitarian concern. What is of more ethical concern is that whenever, for example, someone borrows a book from the public library instead of buying a book, he has deprived the author of the fruits of his labor and participated in reducing the author's power to control his self-expression. Thus, if it is immoral to violate a book's copyright, so too it would seem to be immoral to use public libraries. Libraries are not illegal, but the law's injustice would be no reason for a moral person to do unjust things. The existence of children's sections would be particularly heinous, as encouraging children to steal.³⁴

By following the same common sense logic he comes to the following sensible conclusion

To entirely deter copying would require a norm inflicting a considerable amount of guilt on copiers, since legal enforcement of copying by individuals is so difficult. To partially deter it would be undesirable for two reasons. First, it would generate a large amount of disutility while failing to deter the target misbehavior. Second, it would reduce the effectiveness of guilt in other situations, by pushing so many people over the threshold of being moral reprobates. At the same time, the benefit from deterring copying by individuals, the increased incentive for creation of new products, is relatively small. I thus conclude that people should not feel guilty about copying.³⁵

That, even at the very personal level of our own daily moral judgement, we agree with such an evaluation – as, apparently, do tens of millions of Americans and other people around the world – should be quite clear, by now. That a much more explicit and transparent public debate about such moral issues is long overdue, seems to us obvious exactly because of the contradiction not just the two of us but everyone we know faces daily. While the “law” and the “official public morality” sternly states that it is “wrong”, people repeatedly “copy” digital and non-digital copyrighted materials for non-commercial uses. And without guilt.

It is somewhat comforting, therefore, that a growing number of European judges appear to be coming to the same

conclusion as laymen. Recent rulings in Denmark and Spain first, and in Italy just recently, asserted that copying for private use and with no intention of extracting commercial profit, does not violate fair use and should not be punished.

The Ugly

Whether the Disney Corporation will get to continue their monopoly of Mickey Mouse does not seem like an issue that should lead either to revolt or non-violent insurrection. But have no doubt – intellectual monopoly threatens both our prosperity and our freedom and to strangle innovation all together.



“Do Nothing”

This might seem an exaggerated statement, made only to stir controversy – and sell a few more copies of our copyrighted book. Yet, despite the fact that by 1433 the great Chinese explorer Cheng Ho’s fleets had explored Africa and the Middle East³⁶, in the subsequent centuries the world was colonized by Europeans and not by the Chinese. The monopolists of the Ming Dynasty saw a threat to their monopoly – which was then a monopoly of intellectual and administrative power – in the innovative explorations of Cheng Ho and forced him to stop. This led to a static, inward looking and regressive regime, where Emperors ruled under mottos such as “stay the course” and “do nothing”, and where innovation and progress not only faltered, but were progressively replaced by obsolescence, regression, and, eventually, poverty. And so it is that in the United States we celebrate Christopher Columbus day, rather than Cheng Ho day.



“Stay the Course”

At a smaller scale, but with a no less real impact on world history, we find that intellectual property has delayed the development of the steam engine, the automobile, the airplane, and innumerable other useful things. This took place at a time before the United States became the sole dominant world power, and before a system nearly as noxious as the current system in the United States and the European Union was in place. It took place during a time when very many countries were still competing for world primacy, and the collusive pact among intellectual monopolists that our modern trade agreements have been built to enforce, was not in the cards. If the Wright brothers preferred litigation to invention, at least the French were free to develop the airplane. If Gottlieb Daimler and Karl Benz were the first to build a practical automobile powered by an internal-combustion engine, their German patent did not prevent John Lambert, only six years later, from developing America's first gasoline-powered automobile. Nor did it prevent the Duryea Brothers, shortly after, from founding America's first company to manufacture and sell gasoline-powered vehicles.³⁷

Where, today, is a software innovator to find safe haven from Microsoft's lawyers? Where, tomorrow, will be the pharmaceutical companies that will challenge the patents of “big pharma” and produce drugs and vaccines for the millions dying in Africa and elsewhere? Where, today, are courageous publishers, committed to the idea that accumulated knowledge should be widely available, defending the Google Book Search initiative? Nowhere, as far as we can tell, and this is a bad omen for the times to come. The legal and political war between the innovators and

the monopolists is a real one, and the innovators may not win as the forces of “Stay the Course” and “Do Nothing” are powerful, and on the rise.

Certainly the basic threat to prosperity and liberty can be resolved through sensible reform. But intellectual property is a cancer. The goal must be not merely to make the cancer more benign, but ultimately to get rid of it entirely. So, while we are skeptical of the idea of immediately and permanently eliminating intellectual monopoly – the long-term goal should be no less than a complete elimination. A phased reduction in the length of terms of both patents and copyrights would be the right place to start. By gradually reducing terms, it becomes possible to make the necessary adjustments – for example to FDA regulations, publishing techniques and practices, software development and distribution methods – while at the same time making a commitment to eventual elimination.

Given that it may well be the case that some modest degree of intellectual monopoly is superior to complete abolition – why do we set as a goal complete elimination of intellectual property? Our position on intellectual monopoly is not different from the position most economists take on trade restrictions: although some modest amount of protection might be desirable in special cases, it is more practical and useful to focus on the elimination of restrictions as a general rule. Similarly, while some modest amount of intellectual monopoly might be desirable in very special cases, it is more practical and useful to focus on the elimination of intellectual monopoly as a general rule. In innovation as in trade, a modest degree of monopoly is not sustainable. Once the lobbyist's nose is inside the tent, the entire lobby is sure to follow, and we will once again be faced with a broken patent system and absurdly long copyright terms. To secure our prosperity and freedom we must abolish intellectual monopoly from the tent entirely. To do so we must develop the very same patient determination with which we have been after trade restrictions for more than half a century, and we are not done yet.

This analogy between intellectual property and trade restrictions is not a purely rhetorical tool, nor a random comparison. For centuries, human innovative activity took the form of creating new consumption goods, new machines and new staples of food. But the transmission of ideas from one producer to another and across countries was not nearly as fast, standardized, and routinized as it is today. Creative human activity was focused on the creation and reproduction of physical goods and not on the

creation and reproduction of ideas. Free trade of commodities was therefore key in fostering progress: the more competitors entered the market with shoes like yours, the more you had to improve on your shoes to keep selling them.

This dialectic we used to call economic progress, and, after a few centuries of intellectual debate and numerous wars, Western societies came to understand that restricting international trade was damaging because protectionism prevents economic progress and fosters international tensions leading to conflict. Since at least the late Middle Ages, the battle has been between the forces of progress, individual freedom, competition and free trade, and those of stagnation, regulation of individual actions, monopoly, and trade protection. Now that the intellectual and political battle over free trade of physical goods seems won, and an increasing number of less advanced countries are joining the progressive ranks of free-trading nations, pressure for making intellectual property protection stronger is mounting in those very same countries that advocate free trade. This is not coincidence.

Most physical goods already are and, in the decades to come, will increasingly be, produced in less developed countries. Most innovations and creations are taking place in the advanced world, and the IT and bio-engineering revolutions suggest this will continue for a while at least. It is not surprising then, that a new version of the eternal parasite of economic progress – mercantilism – is emerging in the rich countries of North America, Europe and Asia.

Economic progress springs from having things produced as efficiently as possible, so that they can sell at the lowest price. This wisdom applies to both the things we *buy* and to those we *sell*, and therein lies the trap of mercantilism. Most of us have learned that the surest way to make a profit is to “buy cheap and sell dear.” When there is adequate competition and everyone tries to buy cheap and sell dear, then the *only* way I can buy cheap and sell dear is for me to be more efficient than you. This generates incentives for innovation and progress. The trap and tragedy of mercantilism is when this individually correct philosophy is transformed into a national policy: that we are all better off when our country as a whole buys cheap and sells dear. It was this myopic and distorted view of the way in which markets function that Smith, Ricardo, and the classic economists were fighting against 250 years ago. At that time wheat producers in England wanted to restrict free trade in wheat so English producers could sell it dear. That meant English consumers could not buy it cheap.

Now, before moving to the next paragraph, consider the current debate about preventing “parallel imports” of medicines, CDs, DVDs, and other products covered by intellectual monopoly. Do you see a parallelism? That is our point.

The contemporary variation of this economic pest is one in which our collective interest is, allegedly, best served if we buy goods cheap and sell ideas dear. In the mind of those preaching this new version of the mercantilist credo, the World Trade Organization should enforce as much free trade as possible, so we can buy “their” products at a low price. It should also protect our “intellectual property” as much as possible, so we can sell “our” movies, software, and medicines at a high price. What this folly misses is that, now like three centuries ago, while it is good to buy “their” food cheap, if “they” buy movies and medicines at high prices, so do “we.” In fact, as the case of medicines and DVDs prove, the monopolist sells to “us” at even higher prices than to “them.” This has dramatic consequences on the incentives to progress: when someone can sell at high prices because of legal protection from imitators, they will not expend much effort looking for better and cheaper ways of doing things.

For centuries, the cause of economic progress has been identified with that of free trade. In the decades to come, sustaining economic progress will depend, more and more, upon our ability to progressively reduce and eventually eliminate intellectual monopoly. As in the battle for free trade, the first step must consist in destroying the intellectual foundations of the obscurantist position. Back then the mercantilist fallacy taught that, to become wealthy, a country must regulate trade and strive for trade surpluses. Today, the same fallacy teaches that without intellectual monopoly innovations would be impossible and that our governments should prohibit parallel import and enforce draconian intellectual monopoly rules. We hope that we have made some progress in demolishing that myth.

Notes

¹ Machlup [1958], p. 80. It appears that Machlup was in fact paraphrasing Penrose [1951], which we learned from a talk by Bronwyn Hall, who apparently learned it from Joshua Lerner.

² To the best of our knowledge, the first published statement of this proposal is in Kukkonen [1998], but a quick search on Google shows the idea is receiving lots of attention from interested lawyers and law firms, see Das [2000], <http://www.mofo.com/news/updates/files/update1022.html>.

³ As in the Spanish case of *Gedeprensa*, which we discussed in Chapter 2.

⁴ The recent extension of patents to story lines is discussed in www.emediawire.com/releases/2005/11/emw303435.htm. For a, more than sympathetic but highly revealing in its biasedness, legal “analysis” of the whole idea of patenting plots, visit http://www.plotpatents.com/legal_analysis.htm, which comes directly from the law firm that worked hard to patent fictional plots.

⁵ As we discussed in Chapter 8 and references therein.

⁶ There is no need for references here, still here is one to an old and rather interesting case of University research patenting, Apple [1989].

⁷ Again, material abounds on the web and the regular press about the ongoing debate to extend the EU copyright term to match the current extended US term. To start, see <http://news.bbc.co.uk/1/hi/entertainment/music/3547788.stm>. For a piece by Dennis Karjala on EU-US harmonization see <http://homepages.law.asu.edu/~dkarjala/OpposingCopyrightExtension/legmats/HarmonizationChartDSK.html>.

⁸ See http://www.usdoj.gov/atr/public/hearings/ip/chapter_1.pdf for a relatively technical discussion of the issues involved in the “unilateral refusal to licensing” practice. For a list of the “Nine No-No’s”, and a not unbiased discussion of the opportunity to dispose of them, clearly favoring the disposal option, see Gilbert and

Shapiro [1997]. For a very different view, cogently applied to the two recent Microsoft antitrust cases, see First [2006].

⁹ Information about the Verizon vs. Trinko case can be found widely on the internet, for example Evans [2004] and Power Market's Week [2004]; the Supreme Court ruling is on line at its website.

¹⁰ Information and news about the Digital Rights Management (DRM) initiative (in its multiple versions) and its very controversial nature are widespread on the web and on other media. The curious reader may want to begin with the relative Wikipedia entry and then continue from there.

¹¹ For detailed information about the Grokster case, Wikipedia is again a good starting point, while additional info can be found at the Electronic Frontier Foundation page on MGM v. Grokser. A middle-of-the-road legal assessment is in Samuelson [2004]. For the sad effect of the Supreme Court ruling on economic innovation, go to www.grokster.com and read the scary message welcoming you.

¹² On July 2, 2005 the European Parliament voted 648 to 14 (18 abstentions) to scrap the so-called "Directive on the Patentability of Computer Implemented Inventions." While this was good news, the battle on software patents in Europe is far from over. The vote is attributable more to a general fight with the EU Commission, tending to ignore whatever the European Parliament suggests, than to a widespread opposition to software patents within the latter body. In the meanwhile, though, grassroots opposition has grown and, especially within the business community, a variety of action groups have sprung up that oppose software patents along pro-business lines and on the basis of pro-free market arguments such as those exposed in this book.

¹³ News and information on this topic are widespread through all kinds of media. The FAO on-line Forum on Biotechnology in Food and Agriculture, at <http://www.fao.org/biotech/forum.asp>, is a particularly informative starting point for the interested reader. A number of reasonable reforms that would improve the developing countries' situation in the agricultural sector can be found at <http://issues.org/17.4/barton.htm>.

¹⁴ Having abundantly clarified why genomic patents are a bad idea, references to people liking them for misguided reasons are Putnam [2004] and Hale et al. [2006].

¹⁵ This being the main, if not the only, reason behind the existence of TRIPS-WTO, as is easily verified from the documents contained on the TRIPS web site at http://www.wto.org/english/tratop_e/trips_e/trips_e.htm.

¹⁶ Information about the IBM and other companies' protective patent pool on Linux is widespread through the web and other media. Visit Wikipedia under OSDL and Free Standards group to learn more, or go directly to the sites of the OIN, <http://www.openinventionnetwork.com> and of the Linux Foundation http://www.linux-foundation.org/en/Main_Page.

¹⁷ A detailed discussion of possible, and all very reasonable, reforms can be found in Jaffe and Lerner [2004].

¹⁸ Obviously, the “how to swing a swing” patent (United States Patent 6368227) is here just a label for a gigantic, and ever growing, class of patents that are so logically unfounded that one may think we fabricated the whole thing. Well, we must admit that we do not have the level of imagination needed to reach the heights achieved by the USPTO in cooperation with some of the most shameless rent-seekers in the world. For entertaining surveys of this modern set of legal monstrosities, out of an almost endless list of sites, the following few: www.freepatentsonline.com/crazy.html, www.crazypatents.com, www.totallyabsurd.com, www.patentlysilly.com should keep you amused if not frightened.

¹⁹ Quillen et al [2002].

²⁰ Quillem et al [2002], pp. 50-51.

²¹ Gallini and Scotchmer [2001].

²² Kingston [2001] p. 32.

²³ Patent renewal schemes are discussed in Cornelli and Schankerman [1999] and Scotchmer [1999].

²⁴ See <http://www.supremecourtus.gov/opinions/02pdf/01-618.pdf>.

²⁵ Lessig [2004]. See especially the chapter “Registration and Renewal” in the public domain version at <http://www.authorama.com>.

²⁶ Landes and Posner [2003].

²⁷ Mildly good legal news seem also to be coming from the European courts, which have started to rule against some of the most preposterous requests to treat any form of music downloading as theft, even when intended only for personal use and with no commercial purposes. For the Spanish and Italian court rulings see, for example, http://www.theregister.co.uk/2006/11/03/spanish_judge_says_downloading_legal/ and <http://www.repubblica.it/2006/10/sezioni/cronaca/cassazione-3/lecito-scaricare-file/lecito-scaricare-file.html>

²⁸ The debate between economists and other over slavery is discussed at some length in Levy and Peart [2001]. In addition to defending slavery, Dickens was a strong proponent of copyright law, and was extremely incensed that his works could be legally distributed in the U.S. without his permission. Ironically, a limited form of indentured servitude is still allowed in the music and sport industries, where long-term contracts binding the artist or the athlete to a particular studio or team are commonplace.

²⁹ Gallini and Scotchmer [2001].

³⁰ Condon and Sinha [2004], among other, have studied criteria for suspension of patents in developing countries.

³¹ Schankerman and Pakes [1986] have studied patent returns in various European countries. Using their data, Kingston [2001] estimates the subsidies that would be required to replace the current patent system (p. 18)

Schankerman and Pakes reported that for patents in Britain, France and Germany, the returns appear to be only a small fraction of the domestic R&D expenditure of the business enterprises. The means of the discounted sum of rewards from patent age 5 were about \$7,000 in Britain and France and \$19,000 in Germany. The value of patents as a proportion of total national R&D expenditure was 0.057 in France, 0.068 in Britain and 0.056 in Germany (1986, pp. 1068, 1074). Schankerman subsequently estimated that a subsidy to R&D of 15%-35% would be enough to provide an equivalent incentive to patents (1988, p. 95).

³² Schankerman [1998]. Notice that this is the same paper referred to by Kingston in the quotation reported in the previous note; 1988 is clearly a typo in Kingston's working paper.

³³ See, respectively, Romer [1996], Hellwig and Irmen [2001], Kremer [2001a,b] and Glennerster, Kremer and Williams [2006], Gallini and Scotchmer [2001].

³⁴ Rasmusen [2005], p. 6.

³⁵ Rasmusen [2005], p. 21.

³⁶ To start learning about him, see, for example, <http://famousmuslims.muslimonline.org/zheng-he-cheng-ho.html>.

³⁷ Apart for two small entries on Wikipedia and a few other small sites, there is little on the web about either John Lambert or the Duryea Brothers. Still, by searching and reading carefully, their stories and their achievements do emerge slowly but surely. Neither of them took out a patent, but their innovative actions started the American automobile industry nevertheless. See Scharchburg [1993].