§3.3 Intellectual Property: Patents, Copyrights, Trademarks, Trade Secrets, and Privacy

As the preceding section illustrated, the economist experiences no sense of discontinuity in moving from physical to intellectual property. In particular, the dynamic rationale for property rights is readily applied to the useful ideas that we call inventions. Suppose that it costs $10 million to invent a new type of food blender, the marginal cost of producing and selling the blender once it is invented is $50 (why is the $10 million not a marginal cost?), and the estimated demand is for 1 million of the blenders (we can for present purposes ignore the fact that demand will vary with the blender’s price). Unless the manufacturer can charge $60 per blender, he will not recoup his costs of invention. But if other manufacturers face the same marginal cost as he, competition will (in the absence of patents) bid the price down to $50, the effort at recoupmnt will fail, and anticipating this the manufacturer will not make the invention in the first place; he won’t sow if he won’t be able to reap. Moreover, in a world without patents, inventive activity would be biased toward inventions that could be kept secret, in just the same way that an absence of property rights in physical goods would bias production toward things that involve minimum preparatory investment, as we saw in §3.1 supra.

It is not that inventive activity would disappear without patents, even when an invention could not be kept secret. Some inventions are not so costly to make that the costs have to be recouped over a long period of time. Or the cost of the invention may be low relative to the cost of producing the goods that embody the invention, so that an imitator’s cost advantage will not be great. And sometimes the inventor’s lead time, before competitors duplicate the product embodying the invention, even if short, is enough to give him a “learning curve” advantage over competitors. (The learning curve relates production cost to experience; the more experience in producing a product, the lower the cost; so latecomers are at a disadvantage in competing with the earlier-arriving producers.) The particular economic problems presented by patents are that they encourage wasteful rent-seeking (patent races); bias investment toward types of inventive activity that yield patents (is that the same as the rent-seeking point, or different?); impede competing inventive activity; and by driving a wedge between price and cost (how so?) deflect some potential customers for the patented product to less efficient substitutes. Once an invention is made, its costs are sunk; in economic terms, they are zero. Hence a price that includes a royalty to the inventor will exceed the opportunity cost of the product in which the invention is embodied. This wedge, however, is analytically the same as the cost of a fence to demarcate a property right in land; it is an indispensable cost of using the property rights system to allocate resources.
The law uses several devices to try to minimize these problems:

1. A patent expires after 20 years, rather than being perpetual. This reduces the value of the patent to the owner (though not by much — why not?) and hence the amount of resources devoted to obtaining patents. In addition, patents often are obtained before commercial development is complete (to delay in seeking the patent is to risk being preempted by another inventor), in which case the commercially valuable patent period will be shorter than 20 years. And the patentee must make public disclosure of the invention. Although competitors cannot copy the invention, they may learn from the disclosure how to invent around the patent, or in other words how to create a close substitute; thus disclosure reduces the cost to competitors, which in turn exerts competitive pressure on the patentee.

2. The fact that patents are granted before an invention has been carried to the point of commercial feasibility heads off costly duplication of expensive development work. But if granted too early — before the inventor actually knows how to make the product or process embodying the invention — a patent may actually retard innovation, by discouraging other firms from developing the technology necessary to make the new invention commercially practicable.

3. Inventions are not patentable if they are “obvious.” The functional meaning of obviousness is discoverable at low cost. The lower the cost of discovery, the less necessary patent protection is to induce the discovery to be made and the greater the danger of overinvestment if patent protection is allowed. If an idea worth $1 million costs $1,000 rather than $250,000 to discover, the amount of wasteful duplication to get a patent will be greater, perhaps $249,000 greater.

4. The patent applicant must show not only that his invention is nonobvious (as well as novel — why this requirement?) but also that it is “useful.” This requirement might be thought superfluous. Unless the invention is useful, it will not generate significant monopoly rents. But screening out useless inventions reduces the cost of patent searches to subsequent inventors. Yet it would be a mistake to think that setting a high standard of usefulness would limit the monopoly rents from patents; the more useful the product, the higher, not the lower, those rents will be.

5. Fundamental ideas (the laws of physics, for example) are not patentable, despite their often great value. Until the advent of costly atomic-particle accelerators, basic research rarely entailed a substantial expenditure, and patent protection might therefore have led to an excess of basic research. The nonpatentability of basic discoveries, like the limited term of patents, reflects more than just a concern with costs of acquiring patents, however; there are also serious identification problems, as in the case of wild animals. An idea does not have a stable physical locus like a piece of land. With the passage of time it becomes increasingly difficult to identify the products in which a particular idea is embodied; and it is also difficult to identify the products in which a basic idea, having many and varied applications, is embodied. This is another example of how the costs of property rights limit their optimal scope. Moreover, by definition of “basic research,” commercial


opportunities are likely to lie far in the future. The present value, in strictly financial terms, of a patent on basic research would therefore usually be too slight to motivate a firm. But universities and other basic-research facilities would seek patents in order to extract royalties from other researchers.

Intellectual property furnishes many other interesting examples of the economics of property law. Let us begin with trade secrecy, because it is a common alternative to patenting. A manufacturer who is confident that he can keep his manufacturing process secret for longer than he could protect it by a patent may decide to rely on secrecy and forgo seeking a patent. There is no time limit on a trade secret, which may seem anomalous since the holder of the secret need not prove that it meets patent law's criteria of novelty, nonobviousness, and the rest. But trade secrecy law prevents only the wrongful appropriation (e.g., by tort or breach of contract) of a secret; competitors are free to duplicate it by independent discovery or even by reverse engineering of the secret holder's product, as well as to take advantage of any accidental disclosure of the secret by its holder. In effect, competition is substituted for patent law's proof requirements (proof of novelty, of utility, etc.) and durational limitation as a check on excessive investment in maintaining or unmasking trade secrets. If the secret is readily discoverable by independent inventive efforts, its holder will have little to gain from expending resources on keeping it a secret, while if it is so original and ingenious that it could not be discovered by independent effort within the period of patent protection, the longer protection that trade secrecy will confer will provide an appropriately enhanced reward for extraordinary creativity. If the secret can be unmasked only by a substantial investment, but the expense would be worthwhile given the expected benefits, the secret holder will have to worry that if he does not patent his secret product or process a competitor will. For after the expiration of the one-year grace period for applying for a patent on an invention that the inventor has already begun to use, the inventor can neither patent the invention himself nor (if he has kept it secret) prevent an independent discoverer from patenting it. So we can expect a secret holder to expend substantial resources on keeping his secret only in those rare cases where a competitor is unlikely, even at great expense, to be able to discover it independently—and if the futility of the endeavor is obvious, the competitor will not incur the expense and there will be no waste of resources.

Secrecy figures in privacy law, which is conventionally treated as a branch of tort law but which in part is functionally a branch of property law. A typical issue of privacy law is whether a person should have a right to conceal discretable facts about himself, for example that he is an ex-convict. There is no longer significant judicial support for such a right. The economist sees a parallel to the efforts of sellers to conceal defects in their products. A person "sells" himself by trying to persuade potential transacting partners—an employer, a fiancée, even a casual acquaintance—that he is honest, loyal, trustworthy, and, in short, virtuous. Should he be encouraged to deceive these people by being given a right to sue anyone who reveals his lack of virtue? It would be different if what was revealed was not a discretable fact but a recipe for some superb dish. This would be a case for protection as a trade secret in order to encourage investing in the creation of a worthwhile bit of

intellectual property. In between these cases is the disclosure of a fact that is embarrassing but not discreditable, such as a sexual proclivity unrelated to any potential transaction with the persons to whom the fact is revealed. How should the law treat that case (see §23.2 infra)?

Copyright law resembles patent law in granting time-limited rights but resembles trade secret law in allowing independent discovery. The reason for the latter feature may be that patents protect only inventions, which can be and are indexed in the Patent Office, while copyrights protect an infinitude of sentences, musical phrases, details of architectural blueprints, and other minutiae of expression, making it prohibitively costly to search the entire body of pertinent copyrighted materials in order to make sure that one is not infringing; some amount of inadvertent copying is thus unavoidable.

The durational limitation on copyrights is now so generous (the author's life plus 70 years) that one may wonder why the law doesn't go the whole hog and grant perpetual copyrights. The danger of attracting excessive resources into the production of copyrighted works cannot be the explanation; as a result of discounting to present value (see §6.11 infra), the knowledge that you may be entitled to a royalty on your book a century after you publish it is unlikely to affect your behavior today. Yet property rights in land are perpetual; why not in books? One reason is that it is more inefficient to have unowned land lying around (say, as the result of the expiration of a time-limited property right) than to have unowned intellectual property. Ideally, all land should be owned by someone, to prevent the congestion externalities that we discussed in connection with the natural pasture from arising. In contrast, A's use of some piece of information won't often make it more costly for B to use the same information. Information, broadly defined to include symbolic and expressive goods, is an example of what economists call a "public good," meaning a good that can be consumed without reducing any other person's consumption of it. Physical property is much more likely to be a private good than intellectual property is. One person's reading a book does not prevent another person from reading the same book in a different copy; but one person's eating a sandwich prevents anyone else from eating that sandwich.

This point suggests a need to qualify the claim of owners of intellectual property that infringements of intellectual property rights are a form of "theft." Suppose someone copies copyrighted software unlawfully, but the copy is only for his personal use and not for resale and he could not have afforded to buy the software; then the copyright owner does not lose even a single sale as a result of the "piracy." A certain amount of piracy may actually benefit the copyright owner. It may create a demand on the part of the pirates for complementary products made by him; discourage the formation of a market in lawful or unlawful copies (because piracy is an alternative to purchasing copies as well as originals and so reduces copiers' markets); and by accelerating the spread of the software may help its creator obtain a network monopoly (see §10.11 infra).

A related point is that while it is conventionally supposed that the scope (including duration) of intellectual property rights reflects an effort to strike a balance between the interests of the creators and of the users of intellectual property, the creators themselves may as a whole benefit from the limiting of their rights. Most poems, novels, plays, musical compositions, movies, and other creative works build heavily on earlier creative works—borrowing plot details, stock characters, metaphors, chord progressions, camera angles, and so forth from the earlier works. The greater the scope of copyright protection of the earlier works, the higher
the cost of creating the subsequent works. So while an increase in the scope of copyright protection will enhance an author's expected revenues from the sale or licensing of his own copyrights, it will also increase his cost of creating the works that he copyrights. The tradeoff favors a durational limitation because, while the increment in present value from an increase in revenues in the distant future is apt to be negligible, the increase in an author's cost could be great if, because of perpetual copyright, no earlier works were in the public domain and thus available to be used in the creation of new works without need to incur copyright costs.

These costs would be of three types. The first two types are transaction costs. Tracing costs are the costs of identifying the copyright holder, who might be the remote heir of the original author. Negotiation costs are the costs of negotiating a license from the copyright holder. The third is allocative costs. To the extent that a copyrighted work is a pure public good, any positive price for its use may induce substitution of something that costs society more to produce or is of lower quality. This assumes, though realistically as we shall see in later chapters, that the copyright holder cannot perfectly price discriminate—that is, that he cannot charge different prices to different purchasers such that no purchaser is turned away who is willing to pay a price above opportunity cost (which, in the case of a public good that can be copied at zero cost, would be zero).

Identification of the copyright holder would be easy, and tracing costs therefore low, if the law required copyright owners to reregister their copyrights periodically in some central registry under the name of the copyright holder that appeared in the copyrighted work. Then a search under the name of that holder would reveal the current copyright holder from whom a license would have to be sought. As for negotiation costs, in most cases the new work that infringes (in a regime of perpetual copyright) very old work will infringe a single such work (for example, Ulysses and the Odyssey, West Side Story and Romeo and Juliet, Ragtime and Michael Kohlhaas), so that only a two-party negotiation will be necessary. But this assumes that the copyright owner can be readily identified, which is difficult under the current system, in which copyright is asserted rather than registered. (The United States used to use a registration system, but was forced to abandon it as a condition of becoming a party to the Berne Convention, which creates international protection of copyright.)

A related point is that limiting a copyright owner's rights can actually increase the value of the copyright (another example of the economic function of denying a property right). The fair use doctrine of copyright law allows a book reviewer to quote passages from the book without getting the copyright holder's permission. This reduces the cost of book reviews and hence increases the number of reviews. Authors as a group benefit, since book reviews are free advertising. Even unfavorable reviews stimulate sales, at least when the alternative would be no review at all. But most reviews are favorable, because most people are more interested in being told what they should read than what they should not read. Book reviews are particularly credible advertising, moreover, because they are not controlled by the advertiser (i.e., the publisher of the book). If authors could censor the reviews of their books by denying permission to quote from them, book reviews would be no more credible than paid advertising. Authors as a group thus would be harmed by a rejection of a defense of fair use for book reviews, even if an occasional author gained.

When a book review does reduce the sales of a book, moreover, it does so not because, like a routine copyright infringement, it supplies the demand for the book—rarely is a book review a close substitute for the book being
reviewed—but because it points out flaws in the book and thus provides valuable information without undermining the rewards for creating worthwhile intellectual property. The harm to an author that comes from drawing attention to the lack of value of the intellectual property he has created is not the kind of harm that a law intended to encourage the production of intellectual property seeks to prevent.

The Supreme Court held in the Sony case that the fair use doctrine allows the sale of video recorders for use in recording television programs, even though no royalty was paid to the copyright owners for the privilege of recording. Many people use their video recorders to record programs that are being shown at an inconvenient time or that they want to watch more than once. Such uses benefit the copyright owner even though no royalty is paid. Most programs are bought by advertisers, who pay more the more viewers they reach; by enlarging the effective audience for a program, a video recorder enables the copyright owner to charge more to the advertisers. Since there were substantial noninfringing uses of the video recorder, the Court held that Sony was not liable as a contributory infringer (for example by contributing to the infringement of copyrights by people who used their recorders to delete the advertisements in the programs they recorded).

But the Court reached a different result in the Grokster case. Grokster distributed free of charge software that enabled computer owners to form “peer-to-peer” networks, whereby a copy of a file in one computer can be transmitted to another computer. Grokster was sued by owners of music and film copyrights. They pointed out that an owner of Grokster software could search the network composed of other owners of the software for a computer file containing the copyrighted music or film and if he found it copy the file. This would be infringement, and the Supreme Court ruled that there was enough evidence of “contributory infringement” by Grokster to warrant a trial.

A contributory infringer is someone who facilitates infringement. By making him liable the law reduces the cost of enforcing copyright; it would be very costly for copyright owners to sue every person engaged in file sharing. The general approach is not limited to copyright law. Someone who sells burglar tools to a burglar is guilty of aiding and abetting if the burglar uses the tools to commit a burglary. And someone who induces a breach of contract is liable to the victim of the breach, even though the victim could just have sued the other party to the contract for breach of contract. But difficulties arise when a product has both lawful and unlawful uses. It would be ridiculous to hold sellers of butcher knives liable civilly or criminally if a purchaser used the knife to commit a murder, unless the seller knew that that was the intended use.

There are potential lawful uses of file-sharing software too. Not all musical recordings or films are copyrighted (the copyrights might have expired); and in addition some producers of copyrighted works, especially if the producers are new and trying to establish a reputation (a new rock and roll band, for example), may want their works distributed as rapidly and as far as possible even at the sacrifice of royalties. In effect, these producers are willing to grant royalty-free licenses to the users of Grokster software. As in the case of book reviews, moreover, some “infringements” in the form of file sharing may actually benefit a copyright holder, yet he may refuse to grant a royalty-free license because he thinks he can extract a royalty and thus have his cake and eat it too. People will pay more for a CD if they think they can share

it with others over a peer-to-peer network, because then the CD becomes a form of currency for arranging advantageous swaps and even "buying" new friends. Then, too, if you travel a lot and bring your computer with you, with file sharing you don't have to drag your favorite CDs along; file sharing in such a situation merely gives you better access to a product that you paid for — and you will pay more for the product if you have that better access, just as you would pay more for a cellphone that you could use in any country in the world. In addition, through file sharing you might develop a taste for a particular band or composer whose recordings you wouldn't have bought without the free exposure to them; this is file sharing as advertising of copyrighted recordings that is free to the copyright owner.

But the Court cited evidence indicating that most of the file sharing enabled by Grokster's software was, as Grokster well knew, infringing; just as most sales of burglar tools are to burglars, though some are to people who want to be able to break into their own home if they lock themselves out and others are to the police, or to the curious, or to would-be burglars who get cold feet before they commit their first burglary with the new tools. Contributory infringement would be an empty box if any lawful uses, however slight in relation to the unlawful, enabled the contributory infringer to get off the hook on all uses of his product even though he knew the vast majority were infringing. Yet as an alternative to requiring the judicial system to make a case-by-case assessment of whether to impose liability for contributory infringement on Grokster-like enterprises, copyright owners who wanted to be able to sue for contributory infringement might be required to place a nonremovable electronic tag on their CDs that a computer would read, identifying the CD or a file downloaded from it as containing copyrighted material. Software producers would be excused from liability for contributory infringement if they designed their software to prevent the copying of a tagged file. Can you think of a problem with this proposal?

Still another example of how a copyright holder may benefit from a limitation of copyright protection is public performances of a copyrighted work. It may seem obvious that the copyright on a recorded song should extend to any performance of the song, for example, by a singer at a wedding. But if the guests at the wedding haven't heard the song before, the performance may lead them to go out and buy the recording. Of course, the copyright holder would be better off if they did this and in addition the host at the wedding paid a royalty for the performance right. But because plenty of wedding music is in the public domain, the host might not pay any royalty, yet also might be deterred from playing the song because he knows there are heavy penalties for copyright violations. Then the copyright holder would be better off if copyright protection did not extend to such performances.

We can generalize from these examples with the aid of the economist's distinction between complements and substitutes. A product is a complement of another product if a fall in its price will cause the quantity demanded of the other product to rise, and is a substitute if a fall in its price will cause the quantity demanded of the other product to fall. A screwdriver and a screw are complements; a screwdriver and a hammer are substitutes. A favorable book review is a complement of the book reviewed (and we have seen that there is no way to confine the fair use privilege to favorable reviews); the video recorder and the public performance are both complements and substitutes. Which effect is dominant will determine whether

copyright holders will gain or lose from the invocation of the fair use privilege to curtail the scope of copyright protection.  

Question: Given the limitations on the scope of copyright protection, does copyright law create any rent-seeking problem, analogous to that created by patent law?  

Another question: How can a copyright holder benefit from a limitation on the scope of the copyright, since he could always, if his right were unlimited, waive a portion of the right, for example by announcing that the copyrighted work could be performed in public without a fee or that book reviewers could quote from the work without having to obtain permission to do so?  

Returning to the right of privacy, we shall see that, viewed from the standpoint of economics, it abuts trade secret law on one side and trademark law on the other. The earliest judicial recognition of an explicit right of privacy came in a case in which the defendant had used the plaintiff’s name and picture in an advertisement without the plaintiff’s consent. Paradoxically, this branch of the right of privacy is most often invoked by celebrities avid for publicity (and therefore it is sometimes called the “right of publicity”); they just want to make sure they get the highest possible price for the use of their name and picture. It might seem that creating a property right in such use would not lead to any socially worthwhile investment but would simply enrich already wealthy celebrities. However, whatever information value a celebrity’s endorsement has to consumers would be lost if every advertiser could use the celebrity’s name and picture. Just as in the grazing case, the aggregate social value of associating the celebrity’s name with a particular product may be diminished if others are permitted to use the name in association with their products.  

The existence of a congestion externality provides an argument that rights of publicity should be perpetual and thus inheritable, which is the trend in the law. We don’t want this form of information or expression to be in the public domain if it will be less valuable there, whether the celebrity is dead or alive. But this point invites reconsideration of the earlier discussion of the efficiency of duration limitations on copyrights. Take the copyrighted character of Mickey Mouse. If because the copyright had expired anyone was free to incorporate Mickey Mouse into a book, movie, song, etc., the commercial value of the character would plummet. Not only would the public rapidly tire of Mickey Mouse if he were ubiquitous, but his image would be blurred because different writers, advertisers, etc., would endow him with different personality characteristics. To the extent that such appropriations of the Mickey Mouse character were classified as parodies, they would be sheltered by the fair use doctrine even if copyright were perpetual (why?). But not all would be so classified, and so the fair use doctrine would not insulate them from liability under a regime of perpetual (or, to minimize tracing costs, indefinitely renewable) copyright.  

Notice, too, that an exclusive focus on incentives for the initial creation of an expressive work may be too narrow. Imagine a novel, published many years ago, in which copyright has expired. The novelist is rediscovered and there is a surge in demand for his novels. Since no publisher could establish a property right in the

novels, the incentives of publishers to publish and promote these novels might be inadequate from a social standpoint. In addition, a publisher would have an incentive to make changes in the novel, since he could copyright the changes; but changes made merely to stake a claim would not be efficient from a social standpoint. Conversely, if the novel were obscure on account of its age and in need of an elaborate scholarly apparatus, re-editing, or other costly additions to make it readily accessible to a modern readership, publishers might be reluctant to undertake the needed measures, fearing that the cost could not be recouped in the face of competition from cheap, barebones editions of the novel.

The economic function of trademarks is different from that of patents and copyrights. It is to economize on consumer search costs by providing an assurance of uniform quality. A trademark identifies the source of a particular product or service; for example, the General Electric trademark identifies General Electric as the producer of the goods to which the trademark is affixed. Because this tells the consumer whom to blame if his light bulb doesn't work, it gives the producer an incentive to maintain quality, which in turn reduces the need for the consumer to shop as carefully as he would otherwise have to do. Even if the nominal price of a trademarked item is higher because of the producer's investment in advertising and enforcing his mark, the total cost (sometimes economists call this the "full price," to distinguish it from the nominal price, that is, the price charged by the seller) to the consumer may be lower because the trademark conveys information about quality that the consumer might find costly to obtain otherwise.

The aim is to enable each producer to identify his own brand but without increasing the costs to other producers of identifying and marketing their brands. The best trademark from this standpoint is the fanciful mark, such as Kodak—an invented word, as distinct from one taken from the language. The number of possible combinations of letters to form new words is practically infinite, so there is no danger that a fanciful mark will increase the cost to another producer of finding words to identify and market his product. Much trickier is a "descriptive" mark; allowing someone to use "word processor" as his trademark would make it costly for competing producers of word processors to market their brands, because they could not use a compact description. So the law protects descriptive marks only if the mark has acquired "secondary meaning"—that is, only if the consumer has come to identify the term with a particular brand, rather than with the product as a whole. An example is "Holiday Inn."

Often when a trademarked good begins life as a patent or other monopoly, the trademark comes to denote the good itself, rather than the source, and when that happens the trademark is termed "generic" and loses legal protection. Examples are "aspirin," "cellophane," and "yo-yo." If a trademark owner were allowed to prevent competitors from using the generic term to describe their brands, he would be imposing costs on them. (For similar reasons, a producer is not allowed to trademark a "functional" feature of his product: the inventor of the wheel could not make the wheel his trademark and thereby preclude competition in the manufacture of wheels.) But a trademark is not time limited, nor should it be. Were there a time limit and it expired before the producer had ceased making the trademarked item, he would have to rename the product, and consumers would be confused. Because, as we shall see (in §3.12 infra), a trademark cannot be sold or otherwise transferred apart from the product that it designates, a trademark automatically expires when the product is discontinued.