

Making and Unmaking

INTELLECTUAL PROPERTY

Creative Production in Legal and Cultural Perspective

Edited by

**MARIO BIAGIOLI, PETER JASZI, and
MARTHA WOODMANSEE**

*The University of Chicago Press
Chicago and London*

The Property Police

There is an increasingly evident gulf in our understanding of the issues raised by modern intellectual property systems. On the one hand, we now know a good deal about the legal doctrines to do with patenting, copyrights, and trademarks. We know both how they arose in relation to other branches of the law and how they drew upon, and in turn affected, ideas about authorship, property, and the common good. On the other hand, large literatures also now exist on the impact such legal doctrines have had on, for example, music and filmmaking. And the issues involved in extending legal doctrines from the developed world to the developing have also received a vast amount of attention. But all this work, impressive as it is, nevertheless leaves something important aside. What it has neglected is neither the formation nor the effect of intellectual property law, but the practice of implementation—of detection and enforcement—that links the two. That is, we lack a coherent history of the social and technological intermediation between law and culture. That lack is all the more regrettable at a time when the law itself seems to be relatively static, but an industry of detection and enforcement is changing rapidly and growing apace.

Self-evidently, laws do not apply themselves. They take effect, color perceptions, tinge conduct and change behavior to the extent that they are known, responded to, and appropriated. At the extreme, all legal systems have laws that are effectively dormant—laws that are on the books but never applied. Some statutes are actually passed with the conscious intention that they should be of this kind (the antievolution law of Tennessee that led to the Scopes Trial was one example), and in principle any law could fall into the category or emerge from it. The point is that it is not only the fact of a law's being passed or remaining on the statute book (or in the universe of precedents) that gives it its meaning and efficacy but also its continuous application—often outside legal institutions—by communities of knowledge, training, enforcement, and prosecution. To say this is to voice a commonplace, of course. But in the case of intellectual property it is a commonplace the import of which we have been slow to appreciate. For far longer than we tend to assume, communities of skill and expertise have devoted themselves to detecting pirates, deterring piracy, and embedding intellectual property laws into the very artifacts of creativity. The history of intellectual property, I submit, is substantially the history of these communities.

I want to sketch here a brief history of the mediation of intellectual property by cultures of detection and enforcement. My contention is that the principal issues we face today emerge from those cultures. In particular, they arise from the coalescence of two industries, the history of which is long but the alliance recent. The first is the industry devoted to the surveillance, interdiction, and policing of "pirates" themselves. This industry has become a powerful hybrid entity, combining private and public institutions and with worldwide reach. Its actions often determine the application, and hence the meaning, of laws. The second is an enterprise on which that first industry has come to depend. It is devoted to what may be called tracking technologies. These technologies depend on embedding and detecting "traces"—flags, watermarks, digital rights data, genetic markers, and the like—in creative products. Historically, the print industries pioneered the use of such traces in the Renaissance. Like the enforcement industry, this too has grown and diversified. Together the two endeavors have aspired to become global in scale and universal in scope.

Early Modern Europe: Participant Policing

The distant origins of today's intellectual property systems lie in early modern Europe. The earliest patents are usually said to date from the fifteenth-century Italian city-states. Prior to the development of statutory copyright, these privileges existed in an uneasy tension with various guild registration systems. The

distinction between them was essentially political. Patents were manifestations of royal or state prerogative, each one being a bespoke utterance on the part of the ruler. By contrast, guild systems drew their legitimacy from the continuity of a craft, and their authority extended no further than the membership of the guild concerned. The two protocols were in tension and often clashed. For present purposes, however, what matters is what they had in common. In both cases the patentee or craftsman had to act to defend him- or herself against violators and therefore to sustain literary or creative property as property at all. Much of the history of IP mediation derives, directly or indirectly, from that fact.

As is well known, there were no professional police forces in early modern society. Each city had its own arrangements for keeping order and enforcing laws. In England, to cite the example I know best, what made lay enforcement practicable was a presumption of social circulation—the kind of thing given political articulation in the republican schemes of a James Harrington. Once his short term of office (typically a year) expired, a constable or guild official would return to live among the people he had just been responsible for policing. In practice, therefore, the boundary between acting on behalf of the public and acting on behalf of interest was never hard and fast. And perhaps it had to be so, because the knowledge on which officers relied came from personal acquaintances. Their effectiveness derived from the very fact that they were categorically indistinct from the people they oversaw!

The pursuit of "pirates" (a name first given to thieves of literary rights in late-seventeenth-century London) partook of this culture of policing. Tracking them down was a matter initially for the printer or bookseller concerned. In the case of a property gained by registration, and if the piracy were being produced locally, then it was relatively straightforward. Guild officers had the right to search members' premises and did so regularly. An alleged pirate would be summoned to appear at a company court. The grandees of the trade would there decide upon some appropriate outcome, typically the destruction of stock. Very rarely did printers pursue conflicts into the broader courts system, and in fact they were enjoined not to do so. The practice of sustaining titles was thus invisible to authors and readers. What kept it honest, in theory at least, was an awareness that an officer who searched a given home was quite likely to be investigated by the target himself during that person's turn in office. The system rested order and a kind of property on the golden rule of "do as you would be done by."

Another option, however, was to treat a usurpation of authorship as a potential danger to church and state. This could be done by virtue of the licensing systems that all early modern polities upheld. While licensing was designed

to restrain dangerous works, in practice an unlicensed book was unlikely to cause trouble for its producer unless some interested party decided to pursue it. In such a case an offended author or bookseller would encourage a state or church official—or, in Restoration London, the "Surveyor of the Press"—to prosecute the perpetrator before a court of law. But trade rivalries were still often the motors of such processes, and trade and politics remained hard to distinguish.²

Participant enforcement remained normal across Europe through the end of the seventeenth century, and it bore certain consequences. For example, literary property was assumed to be a matter of privy knowledge. It was a field notorious for informers and turncoats and attended with something of the disrepute that such antisocial types endured. And despite a lot of rhetoric about sedition, states were quite willing to recruit pirates as policemen.

Parents on machines, medicines, and the like involved similar issues. Here too enforcement rested on the initiative of the individual—in this case, the patentee, who might be the inventor or a gentleman rather than the tradesman—and on the use of inside knowledge, often gained from informers. In all cases it required money, expertise, patience, and constant attendance. Yet it was an essential activity, because a patent might not be regarded as conferring a right at all until it had been tested by a judicial process. Determining the identity of the thing patented and setting criteria for distinguishing that thing from other things were among the trickiest problems here. A very refined art developed of designing specifications, drawings, and models to reveal and conceal in just the right ways. As a result, calls for specialist tribunals to try patent cases arose in the late seventeenth century. They would persist until at least the late twentieth.

Nation, Space, and Enlightenment

In the eighteenth century the principle of participant enforcement fell into doubt and then into disrepute. Moral dexterity grew with the establishment of political theories of interest and reason of state, in the wake of Machiavellian and neoclassical republicanism. By the mid-eighteenth century the Fielding brothers were undertaking their famous initiative in establishing a paid force of Bow Street Runners to replace traditional constables. It is conventional to see in this initiative the first move toward a professional police force. In the same generations the practice of policing literary property and patents changed too, but in a rather different direction. Its proponents tried to extend participant policing to a national scale.

In 1710 Britain passed what is usually called the world's first statute of copyright. Yet that term, copyright, was not used in the act itself. It came into use as a result of controversies about practical policing. These controversies had to do with liberty and nation as much as with literary property per se. As is well known, the statute provided a limited-term protection for works. In the 1730s this protection expired for some very profitable titles, and Scottish booksellers began to reprint them. Faced with enforcing a literary property regime that had no statutory warrant, the London trade responded by extending the practices it was familiar with. The leading booksellers had long formed alliances to share risks on publications. It was these combines that secured the status of titles as properties—perpetual ones.³ The Londoners tried to fix this practice in law by amassing injunctions against so-called pirates. But when a case finally went to trial, the attempt collapsed. Edinburgh's judges ruled against the Londoners, leaving Scottish publishers free to reprint anything outside the protection of the 1710 law. This drove the Londoners to enter into a "conspiracy" to eradicate piracy. It proved catastrophically counterproductive.

Some sixty metropolitan booksellers signed on to the scheme, subscribing £3,000 to deny the "pirates" a market. Every one of England's provincial booksellers was warned that "agents" would ride out from London to inspect their stocks. Anyone found harboring pirates would be prosecuted mercilessly, they were told, and all should take care "for fear you are informed against." Significantly, the Londoners did pursue legal action at the same time, but the case was a contrivance, and the high court disdained to hear it.⁴ The extralegal campaign was the real heart of the initiative. It provoked enormous resentment. In particular, it galvanized an Edinburgh bookseller, Alexander Donaldson, into assuming the mantle of pirate in chief and mounting a counterattack. Donaldson got hold of a copy of the threat and reprinted it so that "the world may see how unjust their pretensions to an exclusive right are, and how oppressive, in these lands of liberty, their monopolising schemes have been." He contended that a property regime resting on trade combinations, monopolies, extortion, and battalions of agents intruding into private homes across the land was more of a threat than piracy could ever be. It was the so-called pirates who upheld the public sphere.

For the first time, a principled rejection of literary property on Enlightenment grounds found real purchase. Donaldson was not a simple libertine; he wanted, in effect, a patent system for literary inventions. But he triggered the long process that would culminate in the House of Lords as *Donaldson v. Becket*, which overthrew London's aspirations to a legal perpetual property once and for all. In its place came copyright. That epochal decision was a direct

result, not of the letter of the law, but of an attempt to extend an older metropolitan practice of detection and policing across the land.⁵

The disastrous attempt to sustain a perpetual literary property had one other aspect worth noting here. The Scots argued not only that the purported right did not exist but that their own reprinting contributed to the economic and cultural development of the Scottish nation. They made theirs a struggle for industry and nation against a foreign monopoly. Henry Home—later Lord Kames—was the foremost proponent of this cause. Home noted that London's apparent determination to "crush this Manufacture in the Bud" had a specific meaning in the context of eighteenth-century political economy. It amounted to insisting that Scotland was a colony of England. After all, England sought to confine all its colonies to the furnishing of agricultural produce and raw materials. If the Londoners won their case for literary property, Home thought, then Scotland's book trade—and hence its public culture—risked being relegated to an equivalent colonial status. That would not only have disastrous effects for Enlightenment. It would also have disastrous political and economic consequences.⁶ Arguments of this kind, relating literary property to mercantile political economy and to nationhood, began to be made explicitly in the context of enforcement attempts.

This made manifest something that has remained controversial ever since: the extension of literary property across political space. Prior to 1710, literary property regimes had usually been specific to particular cities. Now they became national. But there was of course no official policing agency of this scope, which was why the London trade had to create its own network. And it was also why, when the Londoners sought stronger statutory protection, what they got was a law decreeing all imported editions of works previously published in England to be contraband. The problem exemplified the centrality of cross-border "piracy" to Enlightenment in general. On a broader stage, as Robert Darnton has argued, Enlightenment depended on interregional and cross-border "pirates," and more particularly on their ability to evade countermeasures that were based locally and nationally.⁷ And Martha Woodmansee's portrayal of Trattner's massive Viennese business confirms the point for the German lands (see chapter 10, this volume). Mercantilism, nationalism, and cosmopolitanism mixed in complex ways in such situations.

This applied not only, or even especially, to texts. It had long been accepted practice for regimes to give patents to individuals introducing new trades from other countries. Rival cities and states vied for the tacit knowledge possessed by skilled engineers and artisans, forbidding the expatriation of artisans or the export of machines (and designs of machines), while seeking to attract skilled personnel from other countries. The policing of patents now merged with that

of copyrights, and both with the practice of great-power espionage. Associations of manufacturers sprouted up across Britain's heartland, determined to restrict strangers' access to plants, to encourage informers, and to promote the use of customs searches to weed out expropriators. They frankly confessed that their measures struck directly at ideals of the free exchange of knowledge.⁸

This is as much as to say that the relation between practices of intellectual property and political space was transformed in the Industrial Revolution. Early modern participant policing had been local to precinct and ward. Now, with the cosmopolitan ideologies of Enlightenment set against the incipient development of colonial empires and steam-powered industries (of transport as well as manufacturing), that had to change. The call went up for first regional, then national, then international regimes of oversight and policing. As they began to take shape, what had previously been broadly consensual practices arising from within increasingly came to be resented as impositions from without. Private agents, heavy-handed searching of houses, appeals for informers, the invocation of high principle (on all sides), and the resort to economic nationalism: these clashes fomented many of the passions that would continue to prevail around intellectual property policing in the modern era.

Spaces and Forces

Despite the convulsions in legal principle and industrial technology of the late eighteenth century, well into the nineteenth it remained conceivable that moral conventions within industries themselves might serve to limit the kind, extent, and scope of intellectual property conflicts. This was again clearest in the book trade. When Philadelphia publishers decided what to reprint, they and their rivals appealed to what they called "courtesies of the trade." These courtesies comprised a series of norms, generally uncodified, that together defined a kind of literary property regime independent of the law and enforced by moral peer pressure. For example, a newspaper advertisement that a publisher had an edition in hand of a British novel gave that publisher a claim to exclusivity—not only to the novel itself, but to subsequent productions by the same author. This principle had absolutely no basis in law but was nonetheless broadly honored in practice. Almost as significant, when it was *not* honored, the transgression was seen as such—as a scandal and a crisis.⁹

Courtesies had roots extending back to the early modern crafts. Indeed, in the early United States there were attempts to institutionalize them in the form of an American Booksellers' Company designed on professedly old-world lines.¹⁰ But as the book trade became a publishing industry, with large-scale manufacturing and markets spread across the continent, so courtesies became

more and more an anachronism. The shift of the publishing industry to strong support for international copyright tracked this agglomeration. By the end of the century, the Berne and Paris conventions were the basis of an internationalization process that has continued ever since, alongside similarly treaty-based universalizing trends: the internationalization of science, metrological standards, public health measures, arms agreements, and trade policies.

In terms of the history at issue here, however, an equally important innovation is exemplified by one of the last branches of publishing to retain older customs. Music publishers remained small operations into the 1900s, selling sheet music to be played on household pianos. In the first years of the twentieth century, piracy of these songs became rampant. One Frederick Willetts's People's Music Publishing Company distributed pirated music across Britain. It provoked the creation of one of the first private anti-piracy police forces.

Legally, Willetts had no case; he was clearly infringing copyright. But at this time prosecution still fell to the victims, who found that taking offenders to court was time-consuming, expensive, and unrewarding. In the end, the publishers banded together and formed an alliance dedicated to fighting the pirates. They recruited a professional, dedicated anti-piracy squad. Mainly comprising ex-police officers, its so-called commandoes traversed the country, tracking down street sellers, following them to their suppliers, and trying to gain entry to the houses where piracies were made and stored. Their activities were not merely distinct from those of the regular police but skirted illegality in their own right. One homeowner was confronted in his doorway by half a dozen men, for example, who barged into the house threatening to "drop" him if he resisted. The publishers' policy was one of "organized hooliganism," declared the magistrate at the resulting case, ruling the men guilty of assault. Another judge lamented that "the liberty of the subject is becoming of no regard at all." Assault and forced entry seemed an altogether more serious matter than piracy.¹¹ The attempt to employ an army of agents to stamp out music piracy thus raised constitutional complaints as serious as those of Donaldson's time. Yet unlike their predecessors, the publishers did in the end win their fight with the pirates. Faced with the prospect of private commandoes roaming the country, the government resolved to bring music piracy under the remit of the public police.

In effect, a new kind of entrepreneurship came into being around 1900—a business of intellectual property policing. It derived in part from the proliferation of private detective agencies and security companies in the mid-nineteenth century. The dubious activities of agencies like Pinkerton's were soon being put to use to guard creative properties in several fields. Daniel Kevles has discovered one of them: Pinkerton's was hired by seed companies to seek out farmers

planting proprietary fruits—something which, Kevles points out, had no legal warrant whatsoever. The music publishers were but one example. But they stood out because they did not hire one of these new agencies but formed their own force. The subsequent history of intellectual property policing would see the growth and entrenchment of such forces across economic fields.

Building on this foundation, after World War II the private policing of intellectual property became an element in the biggest boom in private policing and military industries since at least the Renaissance. The large trade associations were the first to create permanent divisions devoted to the task, and a pattern emerged. The Motion Picture Association of America, for example, formed its group by 1975. Like the music publishers, it recruited its members from the public police (mainly the FBI), and the force again proved a spur to legislators: Congress soon imposed the first major criminal sanctions against movie pirates. In 1982, Britain followed with its Federation against Copyright Theft (FACT). Again, its chief investigator came from a background in the Serious Crimes Unit, the Fraud Squad, and the Flying Squad; he had also commanded the Anti-Terrorist Unit. And again, criminalization swiftly followed. Moreover, such groups took full advantage of the skills their officers learned in their days in the police. FACT hit on a strategy of recruiting video rental franchisees as informers, encouraging them to distinguish themselves from fly-by-night rivals by revealing information about piratical activities. The federation also found that it could get secret judicial authorization to enter and search the premises (including homes) of suspects. Hundreds of these actions took place in the late 1970s and early 1980s, and only when a Luron pirate had the gumption to object was the practice ended. At that point Britain passed a law giving the regular police search and seizure powers.

The enforcement business also emerged as semiautonomous divisions within major companies. It is hard to be certain—secrecy pervades this sector—but it seems likely that many prominent corporations in the digital and pharmaceutical realms created anti-piracy and anticounterfeiting units in the generation after 1970. Many were spun off, becoming independent corporations marketing encryption devices, digital watermarks, and more ambitious detection and policing services. As freelancing pirate-hunters, they stood ready to answer companies' desire to outsource this vital service.

At the same time as expanding their reach inward, into homes, the intellectual property police also extended it outward, across the world. By the mid-1980s major trade associations had divisions dedicated to coordinating anti-piracy measures in Asia, Africa, Europe, and the Americas. The Joint Anti-Piracy Intelligence Group, founded in 1984, became an intellectual property counterpart to Interpol, with the capability to track cargo vessels across oceans

and tap local customs agents to intercept them when they made landfall. In some circumstances private antipiracy forces now rival or outstrip all but the most munificently funded police forces with which they cooperate. Such bodies have consolidated, becoming permanent players alongside governments, the United Nations, and indeed Interpol itself in a vast administrative and juridical machinery devoted to antipiracy actions. By now, a World Intellectual Property Organization conference on enforcement can expect to attract more than 500 participants, from governmental, NGO, and corporate bodies across the world.

In short, the policing of intellectual property has become a huge hybrid enterprise, in which the interests of states, private corporations, multinationals, and world bodies like the United Nations are intertwined. Its strategies and tactics, as well as its institutional character, have roots extending back to the origins of capitalism in the early modern period. This raises evident issues, not the least of which is that of public representation. There are real concerns related to privacy and cognate rights, and it is unclear how those concerns can be raised or addressed at present. A prominent example arises in the biotechnology industry. As is well known, biotech concerns came to view the distribution and reuse of patented genetically modified organism (GMO) seeds beyond rather narrow limits as what it called "seed piracy." Corporations devoted substantial resources to building antipiracy efforts. What this has involved in practice is contested. Monsanto alone acknowledges that it "investigates" about 500 "tips" about seed piracy every year, and the company has been reported to employ its own department of 75 employees with a \$10 million budget to do so. It also hires private detective companies. For years Monsanto's agents have been accused of traipsing onto farmers' grounds, sometimes claiming to be engaged in mapping or some other civic job, and occasionally accompanied by regular police officers. There are even allegations that they have acted as *agents provocateurs*. How many of these allegations are well founded remains to be seen. But they do have precedents in the history of IP policing. At the very least, they make it worth asking once again the old question so central to all policing: *quis custodes custodiet?*¹²

Detectives and Detectors

What is new today is the coalescence of this antipiracy policing industry with an industry of tracking technologies. That too is an industry with deep historical roots. The alliance risks conferring an unwonted rigidity, and perhaps brittleness, on intellectual property. It changes the social nature of the concept.

The idea of using technology to combat piracy is an old one. In the West,

at least, it is almost as old as the printing press. A favorite early device was the insertion of an individuating mark into manufactured objects to identify them as emerging from a particular source. This was easy to do as long as the number of such objects was not large. For example, authors could sign each copy of an edition by hand to distinguish authorized copies from piracies. But this kind of tactic became impossible for editions of more than a thousand or so. Above that threshold, some kind of machine had to be used. This was a far more difficult proposition, because the very quality of reproducibility threatened to make the verifying mark vulnerable to the same piracy as the objects themselves. The distinct but closely related world of currency minting, for example, took centuries to integrate printing with policing successfully. In the late seventeenth century, counterfeiting was a serious national concern, threatening the very value of the currency itself, and Isaac Newton and Edmund Halley devoted much time and effort to the problem as officers of the mint. The concern grew more serious still when the prospect arose of adopting paper money. The history of this adoption is extremely complex, but the fear of counterfeiting—in effect, of pirating money—was a major deterrent whenever the idea was considered.¹³

From such origins antipiracy technologies have proliferated in the modern era, at least as far and as fast as the varieties of media in which intellectual property exists. At risk of drastically oversimplifying the situation and of flattening its historical morphology, it may be helpful to display a taxonomy of the various types in terms of a pseudo-Ramist scheme (fig. 11.1).

In this scheme, technologies may be either "preventative," in which case they are designed to *prevent* piratical copying (and, all too often, *any* copying), or "detective," in which case they are intended to reveal when copying has taken place. Preventative technologies may be *overt*, like the encryption that satellite television broadcasters use, which requires that the end user have a decoder to access the signal. Another example of this was photocopy-proof paper, which was made in the age of analog photocopiers to resist being copied from (it had a background color that the machines were unable to distinguish from the black of type, producing copies that were illegible). But they may equally be *covert*, in which case the object itself—an LP, say, in the 1970s—is usable without any special decoding device, but contains some imperceptible signal that prevents its copying. Media companies invested large sums in the seventies and eighties in an attempt to create an anticopying signal of this kind. It should be inaudible, but would prevent a cassette recorder from producing a taped reproduction of a record. CBS came closest, but in fact no such technology was ever deemed viable. With digitization it revived as a real possibility, because the mark could definitively be distinguished from the recording

nineteenth century, printers of tables would sometimes insert a deliberate error in one entry and look for that as a tell-tale marker when rivals produced their own versions. The error was in principle perfectly visible, but in practice—given that some of these tables ran to numerous pages of closely printed numbers—undetectable. Today, the descendants of these techniques include the markers used for tracking digital rights and distinctive genetic marks in some GMOs.

There are, by contrast, few *intrinsic* revealers of piracy—traces that are in some sense essential to the medium or the act itself. One that has played an important role in the history of the media, however, is the resonant feedback phenomenon known as “oscillation.” Oscillation was a major problem for early broadcasting. Early radio receivers, if imprecisely tuned, might begin to act as transmitters in resonance with the incoming signal, producing a “howl” that would drown out programming for a considerable area. Analogous problems occurred in telephone systems and in other kinds of electronic communications equipment (for example, sound systems in the early talkies). Oscillation was a complex phenomenon, hard to deal with both mathematically and technologically, because it involved a signal “feeding back” into itself. Attempts to deal with it consumed much time and investment in the 1920s communications industry. It has become well known that the origins of information theory lie partly in those attempts, pursued by figures like Claude Shannon at Bell Labs.¹⁵ But what has been forgotten is that, amplification aside, oscillation had positive uses. In particular, it became the basis of the first modern pirate-detection device. The British Post Office made use of it to detect radios (and later televisions) being used by citizens who had not paid their license fee to support the BBC.¹⁶

What to Be Worried About

This account of the history of antipiracy strategies and technologies is necessarily sketchy. The intent is to provoke questions. It should be sufficient, however, to suggest that there is indeed a subject of inquiry here, and a consequential one. When, in the seventeenth century, searchers on behalf of a company of printers and booksellers claimed the right to enter citizens’ homes and search for signs of piracy, it was a matter of fierce and impassioned controversy because it could be held to trample on the prerogatives of the subject. Nowadays, the polity, moral economy, and agency are all very different, but the ferocity and passion are no less evident, because access and surveillance remain among the most pivotal of political powers. It is all the more critical, therefore, to approach the issue historically, by looking at the development of

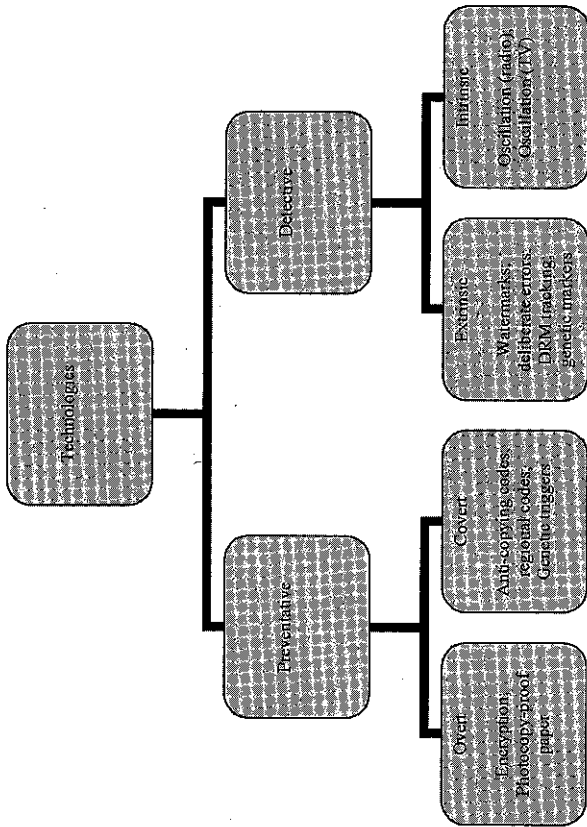


Figure 11.1. Typology of antipiracy technologies.

itself. The regional codes inscribed into modern DVDs are a simple and much-debated instance of this kind of device. Another example, in agricultural genomics, is the use of specific genetic triggers in GMO seeds, either to prevent their reproduction (the so-called terminator gene, so controversial that it has not been brought to market) or to prejudice them in some less severe way.

Other kinds of technology are designed to reveal when copying (or, in some cases, unauthorized access) has occurred. These depend on some kind of tell-tale but peripheral trace or signal, rather like an informational “clue” in a crime scene; they therefore fall into the history of such traces that has been outlined by Carlo Ginzburg.¹⁴ I have distinguished here between *intrinsic* and *extrinsic* traces. Extrinsic ones—the vast majority in such technologies—are deliberately inserted into an object by its producer, to be revealed later either in the act of copying or in the resulting copies. Examples include watermarks, both in paper (dating back to the Renaissance) and in the various digital rights management (DRM) systems used in today’s media. Another would be the use of radio frequency identification devices (discussed in chapter 20 of this volume by Tim Lenoir and Eric Giannela) to track pharmaceuticals from factory to pharmacy in a bid to prevent counterfeit drugs entering the medical system. Or, again, a peculiarly telling instance concerns mathematical tables: in the

skills, techniques, cultures, and technologies of anti-piracy. In a sense, this is the counterpart of Lawrence Liang's call to look at what piracy does, not what it is (see chapter 9 of this volume).

Intellectual property law lives in its application. When, therefore, scholars and campaigners urge a need to revise the law, they may be better advised to look at the burgeoning industry of enforcement that puts statutes into effect. That industry has a long history. At this point it has become powerful and far-reaching—but remains almost unknown to the public. The appropriate divisions of responsibilities, powers, and resources to sustain it in a responsible society have not yet been made, let alone made clear. It is a basic requirement of an accountable, social-democratic polity that they should be. We have got used to hearing about the perils of excessive intellectual property rights; we have also heard a lot about the perils of piracy. Yet the questions raised by the anti-piracy industry in action are modern versions of problems that history has made central to modern political order. Their terms—privacy, property, accountability, citizenship, freedom—are among what history has told us to recognize as the fundamental elements of a just society. There lies the moral implication of this history.

NOTES

1. C. B. Herrup, *The Common Peace: participation and the criminal law in seventeenth-century England* (Cambridge: Cambridge University Press, 1987), 59–61, 69–70.
2. E.g., J. Greene, *The trouble with ownership: Literary property and authorial liability in England, 1660–1730* (Philadelphia: University of Pennsylvania Press, 2005).
3. C. Blagden, *The notebook of Thomas Bennet and Henry Clements (1686–1719) with some aspects of book trade practice* (Oxford: Oxford Bibliographical Society Publications, n.s., 6, 1953 [i.e., 1956]), 67–100.
4. J. Feather, *Publishing, piracy, and politics: An historical study of copyright in Britain* (London: Mansell, 1994), 83–84; M. Ross, *Authors and owners: The invention of copyright* (Cambridge, MA: Harvard University Press, 1993), 74–78.
5. [A. Donaldson], *Some thoughts on the state of literary property* (London: printed for A. Donaldson, 1764), 3–4, 7–19, 24.
6. W. McDougall, "Copyright litigation in the Court of Session, 1738–1749, and the rise of the Scottish book trade," *Edinburgh Bibliographical Society Transactions* 5:5 (1988), 2–31, esp. 6–8.
7. R. Darnton, "The science of piracy: a crucial ingredient in eighteenth-century publishing," *Studies in Voltaire and the Eighteenth Century* 12 (2003), 3–29.
8. J. R. Harris, *Industrial espionage and technology transfer: Britain and France in the eighteenth century* (Aldershot, UK: Ashgate, 1998), 453–477; D. S. Ben-Atar, *Trade Secrets: Intellectual piracy and the origins of American industrial power* (New Haven, CT: Yale University Press, 2004).

9. E. Exman, *The brothers Harper* (New York: Harper and Row, 1965), 53–55, 393–396.
10. M. Carey, *Autobiography* (New York: E. L. Schwaab, 1942; orig. 1833–1834), 49–50.
11. J. Coover, *Music publishing, copyright and piracy in Victorian England* (London: Mansell, 1985), 88; British Library, Music Library, Ms. M.55 (Arthur Prestoni's scrapbook), fragment from Leeds, n.d.
12. The report on these practices by the Center for Food Safety (<http://www.centerforfoodsafety.org/pubs/CFSMOсантовFarmerReport13.05.pdf>, 23 June 2006), interested as it undoubtedly is, provides plentiful empirical citations and buttressing for its claims.
13. J. Craig, *Newton at the mint* (Cambridge: Cambridge University Press, 1946); S. Milhm, *A nation of counterfeiters: Capitalists, con men, and the making of the United States* (Cambridge, MA: Harvard University Press, 2007), 25–62.
14. C. Ginzburg, *Clues, myths, and the historical method* (Baltimore: Johns Hopkins University Press, 1989).
15. D. A. Mindell, *Between human and machine: Feedback, control, and computing before cybernetics* (Baltimore: Johns Hopkins University Press, 2002).
16. A. Johns, *Privacy: the intellectual property wars from Gutenberg to Gates* (Chicago: University of Chicago Press, 2009), chapter 13.