4 Copyrights

Copyright—authors' exclusive right to authorize reproduction of their creative works, and related rights—has been the subject of some of the most contentious regulatory debates of the information age. Before the Internet, it was largely an industrial policy issue affecting companies in the publishing, music, film, and consumer electronics industries. But as the Internet and digital duplication tools have lowered the marginal cost of reproduction and distribution of digital works toward zero, copyright law has increasingly come into conflict with decades-old consumer behavioral norms about the noncommercial reuse of copyrighted work.

Regulation based on blanket restrictions on reproduction now faces severe effectiveness and legitimacy challenges, with very large volumes of copyrighted work being shared without authorization every year over peer-to-peer (P2P) file-sharing networks.

Right holders, claiming that "the answer to the machine is in the machine" (Clark 1996), have persuaded governments to target new copyright regulation at personal computers, media devices, and ISPs. In particular, new legal protection has been given to digital locks that restrict access to protected work, and more recently some governments have placed graduated-response requirements on ISPs to police the behavior of their users. Potential sanctions range from warning letters, through restrictions on connection speed, to disconnection.

In this chapter, we assess the outcome and broader lessons of these attempts to regulate the technology underlying the control and distribution of digital creative works.

Public Policy Objectives

Market Failures

The fundamental economic justification for copyright is that without regulatory intervention, it is difficult for producers to restrict information goods to paying customers. A laissez-faire approach would likely suffer from free riding by information consumers, and hence theoretically from the underproduction of works in the market.

Since the eighteenth century, governments have granted exclusive rights of reproduction to authors in an attempt to incentivize the creation of printed books "for the Encouragement of Learning" (Statute of Anne 1710) and "to promote the Progress of Science and useful Arts" (U.S. Constitution 1787). The continental European approach to authors' rights emphasizes the natural right of individuals to control their work (Hugenholtz 2002, 241), which includes "moral rights" such as the right to be acknowledged as the author of a work, and the right to object to "distortion" or "mutilation" (Berne Convention 1886, sec. 6bis).

There are significant social costs to providing exclusive rights to authors. Information goods are nonrivalrous in consumption; as Thomas Jefferson wrote in 1813: "He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me" (Jefferson 1854). Therefore a deadweight loss results from a marginal price above zero, since all those consumers who would have been willing to pay between that and the actual price of an information good miss out on its value.

Information goods are recognized as essential to democracy, education, research, and other public goods (Stiglitz 1999). Copyright also has the potential to stifle freedom of expression. Hence copyright policy must try to balance the rights of authors and their incentives to create against potential social losses resulting from overprotection.

In the United States this has led the courts to develop a fair use doctrine that allows certain uses of copyright works without prior authorization as long as this does not damage the commercial market for the work. In the EU, an exhaustive list of optional exceptions is included in the 2001 Copyright Directive (2001/29/EC), including parody, research, and news reporting. The member states of the EU have implemented widely different combinations of these exceptions in national law, creating an extremely

fragmented market for copyrighted work in a supposed free trade area (Hugenholtz 2000).

Copyright is a limited monopoly rather than a market intervention to promote competition. Most information goods also have high fixed costs but low marginal costs of production. It is therefore unsurprising that many industries structured around copyright ownership are highly concentrated. The three major recording labels (Sony/BMG, Universal Music Group, and Warner Music Group) control around 65 percent of the world market, and there are only six major U.S. film studios (Patry 2009).

The limited interventions that have been made by competition regulators have been at the periphery, for example, with attempts by the European Commission to increase competition among the national collecting societies that collect royalties for music performances in each member state (Ungerer 2005).

Social Impact of Technology

Data on levels of unauthorized online sharing of copyright works are difficult to gather and are often modeled using proxies such as levels of P2P file-sharing traffic on large networks. Cisco Systems (2011) estimated such traffic would see a compound annual growth rate of 23 percent between 2010 and 2015. Market research companies conduct frequent surveys asking respondents about their downloading behavior. One of the largest surveys, covering 8,000 adults across thirteen countries, found that 29 percent had downloaded music without payment (Synovate 2010). Some unauthorized sharing traffic has shifted to "cyberlocker" sites such as Megaupload, which was shut down by coordinated international police action in 2012 (U.S. Department of Justice 2012).

It is difficult to use such statistics to produce accurate estimates of economic effects, especially on the wider economy. Different types of downloading activity are legal in different jurisdictions. Survey respondents may be afraid to report illegal activity or exaggerate it. The rate at which consumer access to infringing copyright works reduces expenditure on legitimate works is extremely hard to measure (Hargreaves 2011b). Infringement has a complex range of economic impacts, some positive, for different stakeholders (U.S. Government Accountability Office 2010).

An independent review for the U.K. government concluded that "sales and profitability levels in most creative business sectors appear to be

holding up reasonably well . . . many creative businesses are experiencing turbulence from digital copyright infringement, but . . . at the level of the whole economy, measurable impacts are not as stark as is sometimes suggested" (Hargreaves 2011a, 6). The review noted that music industry revenues have continued to grow year-on-year, up 5 percent in 2009, as did book sales from 2004 to 2009.

Fundamental Rights

Article 15 of the International Covenant on Economic, Social and Cultural Rights emphasizes the social nature of copyright: to protect authors' rights, but also to enable everyone to participate in cultural life and benefit from scientific progress.

The EU Charter of Fundamental Rights specifies that "intellectual property shall be protected" (sec. 17(2)). This is most plausibly read as an explicit confirmation that copyright protection is included within the more general right to the protection of property—an important but qualified right to be balanced against conflicting public interests (Griffiths 2011).

These rights sit within the wider human rights framework and must be balanced with others, particularly freedom of expression and privacy. Copyright laws already to some extent internalize this balance with freedom of expression through limits such as the protection of expression, not ideas; term limits; and exceptions and limitations. The main tension between privacy and copyright comes with the introduction of enforcement mechanisms that involve covert surveillance by public or private bodies.

Under the European Convention on Human Rights, such measures require a clear justification and must be proportionate to their goals and include safeguards against abuse. The EU Court of Justice in its *Promusicae* case acknowledged this "fair balance," reiterated in *Scarlet* v. *SABAM* (2011) and *SABAM* v. *NetLog* (2012). It has been especially stressed by the European Data Protection Supervisor opinion on the Anti-Counterfeiting Trade Agreement, which emphasized that some proposed measures were "highly invasive," entailing "generalised monitoring of Internet users' activities" affecting "millions of law-abiding Internet users, including many children and adolescents" (2010, 3).

Intellectual property rights have also become a key part of global discussions on a "right to development." Many low-income countries have

Table 4.1
Public policy and market failure

Social impact of technology	Perfect digital reproduction at almost zero marginal cost on user equipment has rendered copyright ineffective. Massive infringement over P2P nets, cyberlocker sites.
Policy drivers—entry barriers, network and scale effects, competition	Incentivizing creativity. Grant of exclusive rights plus high returns to scale have created highly concentrated markets in music, film, software (the last with additional network effects).
Fundamental rights in policy design	Rights to remuneration in Universal Declaration of Human Rights, and moral rights in Berne Convention.
Lessons	Policy focus has largely been on protecting the rights of creators at the expense of freedom of expression and privacy.

complained about the high price of software and textbooks resulting from international intellectual property agreements. These types of copyright-protected goods are essential for development in a global knowledge economy. As the government of Pakistan told the U.N. Commission on Human Rights in 2001, "It is painfully evident that in the short and medium term, the costs being borne by the developing countries are higher than the gains, and that the balance between the rights holder (mostly from the developed countries) and the user of intellectual property has shifted dramatically in favour of the former."

We summarize the issues in public policy and market failure in table 4.1. The ability of end users to reproduce and distribute digital work on a large scale using the Internet has limited the effectiveness of regulation based on control of copying, although the overall economic impact on the music, film, and other copyright industries is highly disputed. There has been limited sensitivity to privacy and freedom of expression harms caused by code regulation efforts.

Types of Code Regulation

New copying technologies throughout the twentieth century were first seen as significant challenges to copyright regulation, but then successfully developed into new industries that ultimately benefited rights holders. Player piano rolls, phonograph records, jukeboxes, radio, and cable television all developed in the United States with the aid of copyright exemptions and compulsory licenses, while the video rental industry depended

on the first-sale doctrine permitting a wide variety of uses for lawfully owned work (Litman 2001; Ginsburg 2001; Lesk 2003).

Home audiotape and video-recording equipment became mass-market items during the final third of the twentieth century, for the first time putting cheap, high-quality reproduction machinery into consumers' hands. Industry lobbyists complained that "home taping is killing music" and that "the VCR is to the American film producer and the American public as the Boston strangler is to the woman home alone" (Lesk 2003). The executive secretary of the American Federation of Television and Radio Artists told the U.S. Congress that the electronics revolution could "undermine, cripple, and eventually wash away the very industries on which it feeds and which provide employment for thousands of our citizens" (Litman 2001, 106–107). It was only a narrow decision by the U.S. Supreme Court (*Sony* v. *Universal Studios* 1984) that protected the manufacturers of technologies with "substantial non-infringing uses" from liability for copyright infringement by users.

Primitive attempts were made to limit the capabilities of these technologies, with restrictions on tape-to-tape recorders (*CBS Songs* v. *Amstrad Consumer Electronics* 1988; Australian Tape Manufacturers Association 1993). The Cartrivision system prevented consumers from rewinding rented videotapes for viewing a second time, requiring the payment of a fee to a rental store with specialist equipment (Patry 2009).

The first sophisticated attempt to regulate home copying through regulation of home copying technologies came with the introduction of the digital audio tape (DAT) standard. The Recording Industry Association of America opposed the U.S. sale of DAT recorders in the late 1980s, threatening legal action against anyone selling DAT machines (Patry 2009). The recording industry (particularly CBS Records) lobbied Congress for a legal requirement for DAT machines to implement a system called CopyCode, which would prevent the reproduction of prerecorded music. CBS's opposition weakened when it was bought by DAT manufacturer Sony.

Eventually rights holders settled for a requirement that DAT recorders implement a Serial Copy Management System (SCMS) that prevented the reproduction of first-generation copies. This became part of the U.S. Audio Home Recording Act of 1992, which also levied taxes on recorders and blank media (Ginsburg 2001). SCMS was also included in the later MiniDisc and Digital Compact Cassette formats. At the same time, the United

States introduced a ban on the supply of devices that assisted with unauthorized decryption of satellite programs. This provision was later included in the North American Free Trade Agreement (sec. 1707(a)).

Technological Protection Measures and Rights Management Information

From the late 1980s, the World Intellectual Property Organization (WIPO) debated including in its model copyright law provisions that would require copy protection functionality in all devices used to access copyrighted work. However, because of concerns about the impact on competition and innovation, WIPO instead developed provisions that restricted the circumvention of copy control functionality (Ficsor 2002). Both of WIPO's "Internet treaties" (the Copyright Treaty and Performances and Phonograms Treaty), agreed in 1996, contain provisions that parties "shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights."

The United States introduced with the Digital Millennium Copyright Act of 1998 a ban on the circumvention of "effective access controls," as well as of circumvention devices and services. The EU mirrored this restrictive language in article 6 of its Copyright Directive. However, some member states that joined the EU in 2004 gave users more flexibility in national laws, allowing them to circumvent access controls in order to make legitimate use of copyright works (Gasser and Ernst 2006; Kerr 2010).

Because all access to and use of digital work involves temporary reproduction within computing devices and communication networks, copyright has a much greater impact on the use of digital than analog works. It has moved from regulating duplication to regulating access. This has given rights holders much greater influence over the design of digital media technologies than they ever had over printing presses, radios, televisions, or videotape players. It has been backed up by anticircumvention laws that cover all access to protected work, the seeming consequence of ambiguous language adopted by WIPO (Cunard, Hill, and Barlas 2003).

Also included in the WIPO Internet treaties are protections for rights management information that identifies a copyrighted work, its author, or terms and conditions of use. This information can be used to protect the moral rights of authors, such as attribution. It can also facilitate lower transaction costs in acquiring rights to use specific content. These rights

management provisions have been much less controversial than the equivalent anticircumvention provisions, mainly because they do not prevent users of such work from exercising their rights under copyright law.

Intermediary Liability

In addition to statutory protection for technological protection measures (TPMs) and rights management information, rights holders have attempted to co-opt Internet intermediaries in copyright enforcement action. This has included lawsuits against the operators of P2P systems such as Napster, Grokster, KaZaA, and Pirate Bay; attempts to gain injunctions requiring ISPs to block access to infringing sites; and legislation to introduce "notice and takedown" liability safe harbors.

The operators of the first mass adoption P2P file-sharing systems were obvious targets of legal action for rights holders. In the first major case, *A&M Records* v. *Napster* (2001), the U.S. Court of Appeals for the Ninth Circuit found that Napster was liable for contributory and vicarious copyright infringement. Napster claimed its system was "capable of substantial non-infringing use," a defense under the 1984 Betamax decision (*Sony* v. *Universal* 1984). But the court found that Napster, which indexed the files being shared by its users, could segregate and prevent infringing uses. By not doing so, it was guilty of contributory infringement, since it "had actual knowledge that specific infringing material is available using its system" (1022).

The trial court ordered Napster to prevent the trading of copyrighted works using its system. The company agreed to pay a $26 million settlement to rights holders and attempted to design a subscription service that would use audio fingerprinting software to block infringement. Because the company could not meet the "near-perfection" standard demanded by the trial judge, it shut down the network (Samuelson 2006). In the meantime, a judge blocked the sale of the company to Bertelsmann Music Group, which led to its bankruptcy (Evangelista 2002).

Later generations of P2P systems were designed so that operators could claim to be lacking such actual knowledge of infringement. Grokster, Streamcast, and Sharman Networks (running KaZaA systems) and Pirate Bay (running a search engine and tracker for the BitTorrent system) were still found by courts to be "inducing" (in the United States), "authorizing" (in Australia), or "assisting" (in Sweden) infringement.

In the United States, the Supreme Court found in *Metro-Goldwyn-Mayer Studios* v. *Grokster* (2005) that "one who distributes a device with the object of promoting its use to infringe copyright, as shown by clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties." Grokster distributed an e-newsletter promoting users' ability to access popular copyright music, did not use filtering tools, and profited from increased advertising revenue as infringement increased. The Court decided that the Sony Betamax defense was not relevant given this active inducement (Ginsburg and Ricketson 2006). Grokster then settled with the plaintiffs, stopping distribution of its software and support for the associated network. It agreed compensation of up to $50 million damages but lacked the resources to pay (Leeds 2005).

The Australian federal court reached its decision regarding KaZaA because it found that Sharman had given ineffective warnings to users about infringement and taken no technical measures to reduce it. Since Sharman's business model depended on maximizing sharing, it did "authorize" infringement. Sharman Networks ultimately agreed to pay $100 million to settle the case and became a legal download service (BBC 2006).

In Sweden, a district court found that Pirate Bay's monitoring of the location of tracker file components and search facility for torrents meant that the site operators were criminally liable for assisting users in making copyright work available (Carrier 2010). On appeal, each of the four defendants was sentenced to several months in prison and fines totaling 46 million kronor, confirmed by the Swedish Supreme Court (TorrentFreak 2012).

In all of these cases, the ongoing relationship between the P2P system operators and users was a key element in a finding of liability. Unlike the sale of tape-to-tape recorders, these organizations' relationships with their users continued after the sale, with upgrades and even help lines, as well as the provision of server capabilities (Ginsburg and Ricketson 2006).

More generally, there was widespread concern as the Internet industry developed in the 1990s that intermediaries such as ISPs could become liable for hosting or carrying infringing material from third parties. Many legal systems include principles such as vicarious and contributory liability (such as the United States) and authorization of distribution (the United

Kingdom and Australia), which could have led to serious damages being awarded by courts (OECD 2011c).

In response, many jurisdictions created safe harbors that protected intermediaries against liability as long as they took specific actions to reduce infringement, created in Title II of the U.S. DMCA and articles 12 to 15 of the EU's Electronic Commerce Directive (ECD). These notice and takedown regimes protect service providers from liability until they have "active knowledge" (usually supplied by notice from a rights holder) of infringing content. At this point providers must expeditiously remove or block access to such content. The DMCA further requires that providers identify infringing customers in response to a subpoena and terminate the accounts of repeat infringers. Both regimes specifically protect ISPs that merely transmit or temporarily cache data for their users; the DMCA also explicitly protects information location tools such as directories and search engines.

One question that has remained controversial is the extent of these safe harbors and particularly the scope of "actual knowledge" (Seltzer 2010). In reviewing U.S. cases, Ginsburg (2008) suggested that some courts had required an "immense crimson banner" rather than a red flag identifying infringement. In *Perfect 10* v. *CC Bill* (2007), the U.S. Ninth Circuit Court of Appeals found that the use of domain names such as "illegal.net" and "stolencelebritypics.com" did not in itself provide knowledge that the featured photographs were infringing, since it could simply be "an attempt to increase their salacious appeal." However, the use of specific movie, TV program, or recording titles might raise greater concern, especially if those titles had been repeatedly included in takedown notices or uploaded by a user who had previously posted infringing content.

A further question is how well these regimes will adapt to new Internet technologies and business models, in particular in the United States, where the DMCA safe harbor is limited to specific types of intermediaries (Lemley 2007). In addition, courts have so far refused to impose any obligation on intermediaries to use more sophisticated technology that might automatically identify infringing works, such as YouTube's ContentID system (Hassanabadi 2011).

ECD explicitly prevents a general monitoring requirement being placed on intermediaries or a requirement to "seek facts or circumstances indicating illegality" (ECD Art. 15). Samuelson (2006) suggested that *Grokster* was a pyrrhic victory for rights holders, since it leaves open the possibility that

P2P system operators may avoid liability for "inducement" by operating the same technology while avoiding making any statements encouraging its use for infringement.

That said, the DMCA and ECD both allow rights holders to take action for injunctive relief against intermediaries; this is explicitly required by Article 8 of the EU Copyright Directive (Directive 2001/29/EC). A test case in the United Kingdom saw movie studios obtain a High Court order against the country's largest ISP, British Telecom, requiring it to block customer access to Newzbin2, a site that allowed users to search for indexes of infringing Usenet files. The judge agreed with the applicants that the order would be justified "even if it only prevented access to Newzbin2 by a minority of users" (Marsden 2012). The judgment referred to a number of similar orders granted by courts in Denmark, Belgium, Italy, Sweden, and Austria (sec. 96). Further orders were quickly made against other ISPs and filesharing sites (*Dramatico Entertainment* v. *British Sky Broadcasting* 2012).

"Graduated Response"

A more recent rights holder strategy has been the introduction of "three strikes" or "graduated-response" schemes, by statute (Taiwan, France, South Korea) or following legal action (Ireland). Under these schemes, ISPs send warnings to customers alleged by rights holders to have been detected committing copyright infringements. After several such warnings to an individual customer, ISPs take further action such as reducing bandwidth, imposing download caps, blocking access to specific sites or P2P protocols, or terminating customer accounts (Yu 2010).

Irish ISP Eircom agreed to introduce such a scheme after legal action by four multinational record companies that wanted to require it to monitor all subscriber traffic for evidence of infringement. The Irish data protection commissioner investigated this scheme after 300 users claimed they had wrongly been accused of infringement (McIntyre 2011).

The first version of France's so-called HADOPI three-strikes law was found to be unconstitutional because it allowed users to be disconnected by an administrative agency. The revised law, approved by the Constitutional Council, allows judicial review of disconnection. The U.K. Digital Economy Act 2010 includes powers for the government to introduce "obligations to limit Internet access" and "injunctions preventing access to

Table 4.2
Types of code and code regulation

Layer	1990s focus on TPMs has largely failed. Now graduated response, ISP blocks.
Location (manufacturers, ISPs, servers, clients)	Previously software and hardware vendors. Now ISP Domain Name System blocking and so on.
Enforcement of code	WIPO Internet treaties require anticircumvention measures. The Digital Millennium Copyright Act 1996 and EU Copyright Directive ban devices and circumvention. HADOPI, DEA, and infringement actions used to impose on ISPs.

locations on the Internet," although for now, these are not to be introduced following the High Court's Newzbin2 injunction, which was issued under earlier legislation.

In its first nine months of operation, the Haute autorité pour la diffusion des oeuvres et la protection des droits sur internet (HADOPI) HADOPI (High Authority of Diffusion of the Artwords and Protection of agency received 18 million notifications from rights holders, identified around 900,000 alleged infringers, and sent 470,000 first warnings and 20,000 second warnings (Columbus 2011). As Patry (2009) observed of earlier takedown notices in the United States, they are sent by outsourced companies that "rely on automated processes, indirect evidence of infringement, but who have a direct financial incentive to send out as many notices as possible" (169).

Table 4.2 summarizes the types of code and code regulation that we have assessed. Code regulation of TPMs in end user systems largely failed to achieved its objectives in the 1990s and early 2000s, and attention has now shifted to blocking at the ISP.

Institutional Political Economy

In the nineteenth and early twentieth centuries, the main copyright actors were publishers and book exporting states. France, Germany, Spain, and the United Kingdom signed the 1886 Berne Convention for the Protection of Literary and Artistic Works on behalf of their colonies. Along with the Berne Union secretariat, they actively encouraged these states to remain signatories after independence. However, subsequent attempts by develop-

ing nations to revise the treaty to support their education systems failed, with a 1967 Stockholm Protocol ignored by developed countries and a compromise 1971 revision achieving little (Drahos and Braithwaite 2002).

Later in the twentieth century, the music, film, software, and semiconductor industries became important players. These industries successfully coordinated their lobbying to globalize U.S. intellectual property rules, beginning in 1983 with the Caribbean Basin Recovery Act. This was the first time the U.S. government linked trade and intellectual property policy, blocking U.S. market access to Caribbean nations where government-owned organizations were rebroadcasting copyrighted material without consent. In 1984 rights holder groups persuaded Congress to extend this regime to the U.S. Generalized System of Preferences, which applied to 140 developing countries and territories (Drahos and Braithwaite 2002).

With strong encouragement from rights holders, Congress also amended section 301 of the Trade Act to give the president authority to take action against trading partners that were not giving "adequate and effective" protection to intellectual property. Rights holder groups supplied extensive support to the U.S. trade representative to make use of these powers in bilateral negotiations, putting pressure on trading partners including Korea, Italy, Malaysia, Singapore, India, and Brazil. The European Community created a similar mechanism, the "new commercial policy instrument," which was used to take action against Indonesia, Thailand, and Korea (Drahos and Braithwaite 2002).

These mechanisms were used to persuade developing countries to support the development of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) within the General Agreement on Tariffs and Trade (GATT) trade negotiations. Previous international IP discussions had taken place at WIPO, where developing countries had a stronger voice. The other prong of this approach by rights holders, acting mainly through their joint Intellectual Property Committee, was to put pressure on the European Community and the government of Japan—the other main actors in the GATT process. This succeeded in creating a strong TRIPS agreement as part of the establishment of the World Trade Organization. The tight coordination of interests between copyright holders (mainly the publishing, film, recording, and computing industries) and other major rights holders (particularly the patent holders of the pharmaceutical industry) was vital in achieving this outcome (Drahos and Braithwaite 2002).

TRIPS contains a broad range of provisions concerning copyright term, scope, and enforcement. However, it came too early to include anticircumvention provisions protecting TPMs. These provisions were taken up enthusiastically in the United States during the 1990s. President Clinton's Intellectual Property Working Group proposed a new Copyright Act chapter to ban circumvention devices or services, acknowledging that this "provision will not eliminate the risk that protection systems will be defeated, but it will reduce it" (IP Working Group 1995, 177).

The chair of the working group, Bruce Lehman, was also the U.S. representative to WIPO and saw that body as a route to get international agreement on these provisions body as a way to bypass congressional objections (Samuelson 1997). At WIPO, the United States pushed detailed model provisions on circumvention devices or services. However, in the run-up to the finalization of the Internet treaties, the developing world, led by South Africa and with significant input from civil society groups, resisted this language. As a result, Articles 11 and 18 of the Copyright and Performances and Phonographs Treaties, respectively, contain much more generic language (Ficsor 2002).

Further development of protection for TPMs has taken place in bilateral negotiations of free trade agreements (FTAs) with less powerful nations in the developing world and in multilateral groupings of advanced economies. Broad anticircumvention provisions have subsequently appeared in U.S. FTAs with a wide range of countries (Brown 2006) and more recently in EU FTAs (such as Article 10.12 of the EU–South Korea FTA agreed in 2010). They are also included in Article 27(5) of the Anti-Counterfeiting Trade Agreement (ACTA) agreed in 2010 by the United States, the EU, Japan, Canada, Australia, Mexico, Morocco, New Zealand, Korea, Singapore, and Switzerland, but rejected in 2012 by the European Parliament.

While WIPO and its members were busy giving legal protection to content protection mechanisms, TPMs initially received little support from major technology companies and were easily hacked. The mechanisms tested in the 2000 Secure Digital Music Initiative challenge were immediately broken by just one academic research team (Craven et al. 2001). Widely deployed systems, such as the content scrambling system used in the DVD video format, were so easily circumvented they became ridiculed. Many came from small companies with a greater appetite for risk than

large rights holders, eager to gain market share (and power) for their platform. This encouraged the deployment of poorly tested systems that could easily be broken and sometimes threatened the security and privacy of users (Halderman and Felten 2006).

Only later did rights holders get buy-in from the major companies producing computing hardware (e.g., Intel and Apple) and operating system software (Microsoft and Apple). These were the only companies that could introduce even vaguely effective digital locks. But while all of these technology giants now include TPMs in their core product lines, market developments, particularly the triumph of the unprotected MP3 music format, driven by ease of use and interoperability, have rendered them irrelevant in the music market. New high-definition protected video formats such as HD-DVD, designed with much greater care and industry input than earlier TPMs, are still being broken (Waters 2007).

Rights holders with hardware divisions such as Sony had a strong incentive to push the use of protected formats best suited to their own players and recorders (Halderman and Felten 2006). But ironically the market power that Apple gained with the success of the iTunes Music Store allowed the company to demand better access to unprotected content from the major recording labels. Very little music is now sold in TPM-protected formats, although Apple still applies it to TV programs, films, and applications in the iTunes store. Amazon is building a similar dominant position in the e-book market, partly based on the control it gains over users through its protected Kindle format.

ISPs were very successful in lobbying for notice and takedown regimes during the late 1990s, protecting them from broader liability for copyright infringement by their users. They have been less successful in resisting graduated-response regimes. The industry costs associated with these regimes can be significant. An Industry Canada study showed that sending a single notification of alleged infringement cost large ISPs C$11.73 and small ISPs C$32.73 (2006). The U.K. government estimated that the three-strikes regime in the Digital Economy Act would cost ISPs 290 million to 500 million pounds (Department for Business 2009).

This difference in political efficacy may reflect the fact that ISPs have more divided interests with three-strikes regimes than over secondary liability protection. P2P traffic is often the largest single category of data flowing over ISP networks, which can lead to significant congestion and

bandwidth use charges. Many ISPs are trying to develop businesses as premium content providers, and some are part of larger telecommunications companies that supply cable TV and other paid-for video content. Both of these provide incentives for ISPs to reduce customer copyright infringement, even where they are protected from secondary liability.

In some cases, large rights holders have merged with telecommunications providers such as NBC Universal and Comcast. These conglomerates have the same types of incentives for copyright enforcement as did Sony after it purchased Columbia Pictures Entertainment in 1989 (and later Metro-Goldwyn-Mayer). Rights holder groups are also adept at using music and film stars to lobby politicians, with the author of one independent review of intellectual property policy for the U.K. government later complaining that "politicians often do and say silly things when they come into contact with celebrities" (Gowers 2008).

Civil society groups have campaigned relentlessly for stronger user protections to be included in new copyright laws, with varying success. The Electronic Frontier Foundation led a successful campaign for a DMCA provision that allows the librarian of Congress to exempt certain classes of works from anticircumvention provisions, where users are being "adversely affected . . . in their ability to make noninfringing uses" (sec. 1201(a)(1)(c)). As eastern European countries implemented EU law while becoming members, members of the European Digital Rights coalition campaigned for them to make maximum use of flexibilities in the directive to protect user rights, particularly over anticircumvention rules (Brown 2003). But generally civil society has been kept out of or sidelined in the negotiations leading to copyright law revisions (Litman 2009) and has had to battle for influence in legislatures and courts. At the OECD, the civil society coalition refused to approve Internet policymaking principles developed in a multistakeholder process, since they included liability for copyright infringement in some circumstances for intermediaries (Civil Society Information Society Advisory Committee 2011).

The successful campaign against the 2012 Stop Online Piracy Act (SOPA) introduced in the U.S. House of Representatives demonstrated the political impact of a coalition including Internet technology companies, nonprofit Web sites such as Wikipedia, civil society groups, and the broader user community. SOPA would have given rights holders wide powers against ISPs, search engines, domain name registrars, payment processors, and

advertising companies. However, coordinated action, including traditional lobbying, online petitions, consumer boycotts, and a one-day blackout of popular Web 2.0 sites, brought support from President Obama and caused the bill to become stalled in Congress. Rights holders, unused to this level of political pushback, complained that "misinformation" was fueling the campaign. News International chairman Rupert Murdoch complained that "Obama has thrown in his lot with Silicon Valley paymasters who threaten all software creators with piracy, plain thievery" (Wortham and Sengupta 2012).

The SOPA backlash from the user community was strong enough to threaten other legislative attempts to strengthen copyright provision, with several European governments pausing their ACTA ratification processes and the European Commission referring it to the EU Court of Justice for assessment of its compatibility with fundamental rights (Brand 2012). An unprecedented campaign by European civil society groups led the European Parliament to reject the agreement, preventing its ratification by any EU member states (European Digital Rights 2012).

Table 4.3 summarizes the various actors and their contribution to copyright policy. While rights holder associations were successful during most of the development and diffusion of the Internet in shaping policy in their interests, overreach on SOPA led to a setback. It is not yet clear whether this represents a fundamental change in the balance of interests or just signals the need for a change of political tactics.

Outcomes

Copyright policy has traditionally been settled in "dark, smoky rooms" between major corporate stakeholders, facilitated by government (Litman 2001). This produced reasonably stable outcomes so long as these stakeholders were themselves the major target of regulation. Litman characterized this as a process in which publishers, movie studios, recording companies, and TV broadcasters "jointly controlled the playing field" and that it was now "nearly impossible to wrest that control away" (2009, 313). The result was often concentrated markets in information goods. Upstart market entrants were the main innovators, breaking in using radical new technologies and often initially paying little attention to copyright concerns (Wu 2010).

Table 4.3
Institutional political economy

Key actors: national, regional, global	Rights holder associations (International Federation of the Phonographic Industry, Motion Picture Association), U.S/EU/Japan operating at national, EU and international (WIPO, ACTA) level. Have forum-shifted to avoid civil society (WIPO, to WTO, to ACTA). Technology industry and nonprofits.
How legitimate and accountable?	Much policy laundering, forum shifting, exclusion of civil society, bullying of developing world, fantasies that "the answer to the machine is in the machine," not the business model.
Multistakeholderism	Civil society involvement at WIPO weakened anticircumvention measures in Internet treaties (see Drahos 2003) but led to forum shift. Activists had to fight to involve legislators (in the United States and EU) in ACTA debates.
Key technical actor buy-in	Early TPMs produced by small software companies ineffective. Hardware (Trustworthy Computing Group) and operating system vendors now more involved, but still have limited effectiveness. Some ISPs have fought against three-strikes and blocking, although these may be in the interests of large ISPs as they raise entry barriers/reduce neutrality.
Lessons	Code distracted attention from business innovation for more than a decade. Graduated response has been pushed through with little multistakeholder involvement, resulting in policies widely criticized as contrary to freedom of expression. SOPA reaction could be a turning point.

This pattern was reproduced online during the late 1990s and 2000s. Individual developers and start-ups developed MP3 storage and P2P distribution systems that became highly popular but were subject to extremely adverse legal decisions. They gained legitimacy when adopted by companies such as Apple and Spotify that were eventually able to overcome great resistance from the major record labels, revolutionizing the music market. Innovative business models squashed by rights holders during the 2000s, such as My.MP3.com (Ginsburg 2001), have been resurrected in forms that give less control to right-holders.

The production of copyright policy in private, government-facilitated corporate discussions worked reasonably well when the main affected parties had at least partial representation. It has become increasingly prob-

lematic as sanctions against unrepresented users have become the main topic of smoking-room discussion. It violates a core democratic right of interested parties to participate, in the words of the U.N. Committee on Economic, Social and Cultural Rights, in "any significant decision making processes that have an impact on their rights and legitimate interests" (Helfer and Austin 2011, 513).

This has also been a problem at the international level. After becoming frustrated with the influence of developing countries at WIPO, major rights holders shifted debate to the GATT trade discussions. Here they successfully pushed the process that led to TRIPS (Drahos and Braithwaite 2002). During a decade of discussions at WIPO over a proposed broadcasting treaty, civil society and developing country representatives complained of exclusion from key decision-making processes, a lack of transparency, and even of public interest briefing papers being thrown into a trash bin in the rest room (Gross 2007). Negotiations over ACTA took place in secret for two years between rich-world economies, with negotiating texts circulated by the U.S. government to industry representatives but withheld from civil society groups as "classified in the interest of national security" (Love 2009).

Even academic copyright experts complain of being ignored. Amsterdam University's Institute for Information Law wrote to the European Commission in 2008, warning that two studies it carried out for the commission had been "almost entirely ignored" in a way that "seem[s] to reveal an intention to mislead the Council and the Parliament, as well as the citizens of the European Union," and that "reinforces the suspicion, already widely held by the public at large, that its policies are less the product of a rational decision-making process than of lobbying by stakeholders" (Hugenholtz 2008). Two independent reviews for the U.K. government felt the need to emphasize that policy should be based on evidence and not "lobbynomics" (Gowers 2006; Hargreaves 2011a). Litman argued that "the copyright war has been intensely polarizing. The conflict has been protracted and venomous. The middle ground seems to have disappeared" (2009, 317).

This is not only a theoretical problem. The exclusion of major stakeholders (users and bodies responsible for fundamental rights and, to a lesser extent, ISPs and technology companies) from negotiations over Internet era copyright reform has produced unbalanced and impractical

outcomes at the national and international levels. And it has allowed rights holders to block innovative new business models, which could have increased revenues for creators while better meeting consumer needs, but perhaps threatened short-term revenues (Patry 2009).

Governments and rights holders have found it extremely difficult to extend effective copyright regulation from a relatively small number of companies to the billions of individual users of the Internet. A U.K. government review found that downloading was the most common offense committed by ten to twenty-five year-olds and that 63 percent of downloaders had full knowledge that it was illegal (Gowers 2006). Courts cannot process quickly enough lawsuits against the vast numbers of unauthorized sharers of music, and mistakes and disproportionate punishments seen in such cases have caused enough negative publicity for the recording industry to cause it to focus on more automated, code-based strategies.

These strategies, however, have generally been blunt attempts to bludgeon users of copyrighted work into compliance rather than nudge them toward legal use of work. The first has been to file an automated blizzard of lawsuits and takedown notices against individuals using software to detect sharing of copyright works. This software has proven to be "notoriously inaccurate, leading to lawsuits against people who don't even have computers or who are dead" (Patry 2009, 13) and even against computer printers. Entirely original videos have been taken down from sites such as YouTube as infringing. It can be expensive and time-consuming for affected individuals to have suits dismissed or work put back up, especially if a fair use or dealing defense is involved (Patry 2009).

Motion Picture Association of America president Dan Clickman reportedly responded to these problems by stating, "When you go trawling with a net, you catch a few dolphins" (Doctorow 2007). But such an untargeted approach is hardly appropriate where, in three-strikes systems, inaccurate allegations could lead to individuals' disconnection from the Internet and all of the online services they rely on (Yu 2007).

While courts have found against the suppliers of software and services enabling large-scale infringement using P2P file sharing (most notably in the *Grokster* and *Pirate Bay* cases), this has not been enough to stop individual developers from continuing to supply such software. Indeed, P2P systems have continued to evolve in the face of legal action, removing the

central points of failure that enabled Napster to be closed down by the Californian courts.

The legal protection of TPMs has done little to stop the unauthorized access to and sharing of protected work, but has had a negative impact on competition, interoperability, innovation, and security research. TPMs can stop the design and production of compatible or interoperable devices that allow access to protected content, while blocking scientific research into the quality of security mechanisms. They stop users from exercising their fair use or dealing rights, since machines are unable to judge the sometimes subtle factors that courts would assess in allowing these exceptions (Electronic Frontier Foundation 2010), meaning, for example, that the World Blind Union is still finding that TPMs are preventing the visually impaired from using text-to-speech software to access protected e-books.

TPMs can even sometimes threaten the safety of users' computers and the Internet more broadly—to the point where officials from the U.S. Department of Homeland Security warned that "in the pursuit of protection of intellectual property, it's important not to defeat or undermine the security measures that people need to adopt in these days" (Mulligan and Perznowski 2007, 1174).

Consumer resistance eventually resulted in the abandonment of TPM restrictions on most downloaded music, although it is still a central part of the strategy of the movie industry, where it may better fit consumer desires to rent rather than own films. It is not yet clear whether the greater efforts to provide consumer-friendly legal services for online movie access will be sufficient to avoid the widespread infringement suffered by recorded music once sufficient bandwidth becomes widely available to consumers.

Freedom of expression can be greatly damaged by TPMs that prevent lawful uses of copyrighted work, or the blocking of Internet sites or users alleged to be infringing copyright without a full judicial proceeding (La Rue 2011). The DMCA encourages Web sites to immediately take down content when served with notice, but users are rarely in a position to make use of the DMCA's put-back provisions (Lemley 2007).

Demands from rights holders that ISPs disconnect customers and block access to allegedly infringing sites are particularly dangerous for freedom of expression. In a report to the U.N. Human Rights Council, the U.N.'s special rapporteur on freedom of expression said he was "alarmed by

proposals to disconnect users from Internet access if they violate intellectual property rights" (La Rue 2011). The European Commission vice-president for fundamental rights, Viviane Reding (2012), responded to the ACTA debate with a statement that "copyright protection can never be a justification for eliminating freedom of expression or freedom of information. That is why for me, blocking the Internet is never an option."

But Pamela Samuelson's comment still rings true: "all too often in recent years, when courts have perceived a conflict between intellectual property rights and free speech rights, property has trumped speech" (2001). The First Amendment has a limited impact on private action, although it can be argued that copyright enforcement implicates this (Yu 2010), but European governments have no such excuse given their "positive duties" to secure their citizens' rights under the European Convention on Human Rights.

Large rights holders have spent nearly two decades trying to alter the nature of the Internet and personal computer to fit business models relying on scarcity and the control of copies, with little success. After trying all of the alternatives, some have finally begun to work seriously with innovators developing technologies that can remunerate creators without taking control of individuals' PCs or Internet connections.

These alternatives include systems such as YouTube's content ID fingerprinting system, which allows rights holders to choose whether automatically detected infringing videos should be investigated and taken down or, alternatively, to share in the advertising revenues generated by such videos. "All-you-can-eat" subscription services such as Spotify give paying customers streaming access to very large libraries of licensed musical work, coming close to the "celestial jukebox" envisaged in the early days of the Internet. Major Chinese search engine Baidu struck a deal with Universal, Warner, and Sony to allow users access to a large catalogue of works on an advertising-supported basis (Xinhua 2011a). And a review for the U.K. government suggested the development of a "digital copyright exchange," which would enable the automated trading of licenses and reduce the cost of dispute resolution (Hargreaves 2011a, 28).

Many of these technologies could have been developed much earlier given cooperation from rights holders. The BBC complained that it took "nearly five years" to put together the licenses required to launch its iPlayer service (Ofcom 2006). Technology start-ups complain that licensing nego-

Table 4.4
Outcomes and divergences

Transparency	Unclear causation from present system—Hargreaves (2011a) analysis very useful; e.g., digital copyright exchange. More transparency to more just solutions?
Enforcement	Problem of the second user—individuals can be a network and succeeding infringements impossible to police (as well as 'fair use'). Enforcement against corporations possible and legal business models and licences are effective enforcement in the sense of recompense.
	3 Strikes preposterous
Interoperability	DRM closes off interoperability—iTunes prior to unlocking, for instance.
Efficiency	Levy one option to avoid enforcement?

tiations can take an inordinate amount of time, have inconsistent results, and sometimes result in threats of legal action (Hargreaves 2011a). The evolution of digital copyright policy provides an abject lesson in the damage caused to innovation and the public interest of allowing self-interested industry groups to drive policy, excluding other stakeholders and basing regulatory decisions on "lobbynomics."

The outcomes and divergences of policy are summarized in table 4.4.