15 Price Discrimination and the Shape of the Digital Commodity

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the uses of incompatibility

Competition between nations has often produced incompatible technical standards. There are separate U.S. and European standards for television signals and electricity infrastructures; the United Kingdom parts ways with continental Europe on many points of infrastructure, from distinctive electrical sockets to right-side driving. Military purposes often justified strategic incompatibilities in widely used technologies, such as national differences in the gauge of train tracks or the caliber of rifles. Economic purposes were also common, such as insulating domestic markets by raising the costs of entry to foreign competitors (Slaton & Abbate, 2001; Tassey, 1995).

Early national choices regarding basic infrastructure tended to create "path dependencies" that shaped future developments and hindered the interconnection of national or regional systems (David, 1985; Hughes, 1987). The growth of global information networks reflects, in large part, the rise of a countervailing system of rewards for technologies and standard-setting processes that enhance interoperability, rooted in the concept of "network effects" and in the broader conceptual linkages between innovation, welfare, and trade characteristics of global capitalism. By a mix of accident and design, these processes have left us with a relatively small set of interoperable standards governing major communications infrastructures: one Internet, a few input–output (I/O) designs, shared file transfer protocols, and so on.[1]

The welfare-enhancing effects of interoperable networks are grounded in classical economics: Lowered transaction costs in moving from one to the other increase the volume of transactions (of information or goods), raising all boats. When the network is operated by a global cartel, however, a different structure of participation comes into play. The development of the DVD by the major film studios in the 1980s is a good example of this dynamic. The DVD stakeholders orchestrated a system of *regional coding,* a technical incompatibility designed to divide the international market (in this case, into six distinct zones, roughly corresponding to the continents). From a technical perspective, this was quite simple: Each disc contains a single bit of information that indicates its region of origin. Each DVD player checks for this bit and compares it to its own regional code. If the codes do not match, the device refuses the disc. In practice, this means that a disc purchased in the United States will not play on a European device, and vice versa. The DVD Copy Control Association (DVD-CCA) was established to act as sole licensor of this and other DVD technologies (such as the Content Scramble System [CSS] encryption method,

whose trivial cracking later became a test case of the anticircumvention clause in the Digital Millennium Copyright Act). Sole access to studio content enabled the DVD–CCA to enforce strict licensing terms, such as the requirement that DVD players output their contents only in formats approved by the studios. Together, these legal and technical protections established a chain of control: Encryption necessitates the license, the license regulates the manufacturer, the device regulates the user, and the contractual relations between them are backed by law.[2]

The film industry has historically discriminated between various markets—distinguished by time, medium, and location—to sell its product at an optimum price in each. Studios typically cascade the release dates of their films in various media. In the United States this usually means a progression through first-run theaters, second-run theaters, pay-per-view, hotel rental and in-flight screenings, video sales and rental, premium cable, basic cable, and network broadcast. Each version is generally cheaper than the last, and often of lesser perceived quality. International market segmentation follows similar strategies, from staggered international release schedules[3] to price discrimination in the international marketing of DVDs—shifting prices somewhat closer to the relative purchasing power of consumers outside the United States and Europe.

Price discrimination would be undercut if consumers could purchase DVDs at low prices in local markets and resell them elsewhere at higher prices, or if e-commerce sites could simply sell discs on an international scale at the lowest price. Regional coding reduces the opportunities for this kind of arbitrage, ensuring that the studios can set region-specific prices themselves. The ability to block arbitrage also assures opportunities for secondary exclusive distribution deals between studios and local partner companies. Partner companies will not have to compete with discs imported from other regions. In practice, studios need not even release a film in all regions if market prospects are poor. Although this is rarely the case with major Hollywood releases, it is routinely the case with foreign releases in the United States, which have no independent distribution networks.

There is no technical legacy underlying the region code—no path dependency, only a market logic that encourages inefficiencies at one level (interregional trade) to achieve greater market power at another (regional price discrimination). The cartel power of the studios allows them to shift the costs of this bargain to hardware manufacturers, who must license the underly-

ing technology, and to consumers, who find their consumption habits tied to regional infrastructures.

digital distribution and individual price discrimination

With the shift to online distribution, technically enforced regionalized pricing can be deployed even more effectively. Apple's iTunes Music Store, for example, has established different pricing structures for different countries; their digital rights management (DRM) system ensures against arbitrage, and their servers can automatically channel local users to the appropriate national site.[4]

But price discrimination by country or region goes only part of the way in achieving potential market efficiency. The limitations of the brick-and-mortar distribution of DVDs make it difficult to distinguish between markets in terms more fine-grained than continent and format; the cascading release can only distinguish between buyers in the broadest strokes. With online delivery, paired with databases that record consumer purchases and preferences, pricing schemes and release dates could be tailored *to individual consumers*. Charges might be adjusted not only by region, but by previous purchases, internet service provider, or membership in studio-specific "frequent buyer clubs." Preferences can be (and increasingly are) tracked, aggregated, analyzed, catered to, and used to set prices based on the best guess of what that user could and would pay. This kind of price discrimination can be cloaked as "bundling," in which packages of goods and services are priced together: iPods with half-price iTunes downloads, HBO and AOL music packages, Time Warner broadband along with freedom from advertisements on Warner Bros. DVDs.[5]

The digital distribution of cultural goods and the collection of customer information are linked processes: The latter supports the distribution scenarios and marketing schemes associated with the former. Price discrimination requires consumer data; the seller must know something about the buyers in order to assign them to a price category. DRM systems enable this linkage by regulating both user identity and the delivery of services: Users are authenticated before services are delivered. Next-generation DRM techniques extend this principle further by assigning decryption keys not to regions or to classes of devices, but to individual devices, enabling a new level of granular control of media consumption. Increasingly ubiquitous network connectivity for computers and electronic appliances enable not only enforcement of licenses but also the updating of DRM software and the close tracking of evolving consumer preferences.

Diminished privacy is an increasingly common price for access to digital services. The click-through contracts that accompany software installation are used to establish nominal user consent for various forms of surveillance, ranging from "tethered" media players that report titles back to their vendors to more invasive forms of spyware. Data collection and consumer profiling across the Web allow commercial entities to know a great deal about consumers; e-commerce sites increasingly encourage consumers to volunteer personal information as the basis for an ongoing "service" relationship that extends beyond discrete transactions; "cookies" allow a simple way for sites to record and retain individual information about repeat visitors (Agre, 1998; Brin, 1999; Cohen, 2003; Garfinkel, 2000).

Consent, when it exists at all, is severely limited by the length and complex language of software licenses. Even standard licenses are opaque to nonlawyers. By most accounts, they almost always go unread (see Lemley, 1995; Szabo, 1997). At present, there are no significant legal checks in the United States on these provisions. Liability for the misuse of private information is weak in U.S. law. Contractual arrangements, in contrast, are highly binding; the bnetd ruling described by Robert F. Nideffer (Chapter 12, this volume) recently affirmed the power of click-through provisions. The security of private information, in this context, depends on one's confidence in the security of the DRM code and the good intentions of the corporate owners.

A wide range of models for exploiting the new streams of consumer data are in use or development, from variable pricing based on the release of personal information to marketers, to incentives to watch additional commercials. The personal information required by DRM systems is transformed into a commercial asset and enabler of new services:

With Active Internet's DRM . . . the license acquisition process allows companies to gather targeted customer information. For example, many music distribution Web sites now request the consumer's e-mail address in exchange for audio file licenses. Music distribution companies can then use this e-mail address to keep the consumer up-to-date on concert schedules and new compact disc (CD) releases, or to market-related merchandise. Alternatively, unsigned bands can upload and market their music directly to fans using DRM technology, while record labels can generate interest in new bands by offering free downloads of their new music.[6]

The ease of price discrimination via DRM is likely to further encourage the transformation of fair use rights into "fared use,"[7] whereby users pay more to

enjoy the kinds of transformative reuses currently protected by law. As the Congressional Budget Office (2004) observed,

> **DRM would enable copyright owners to charge a price for their creative works that varied according to the particular use(s) made of them. No longer buying a work at the base price and enjoying wide subsequent rights of use, consumers would instead pay a price indexed to distinct rights over the copyrighted work. (p. 23)**

content protection versus protectionism

In the United States, individual price discrimination—linked both to concerns about the abuse of monopoly power and to a broader notion of market fairness that dictates equal access to the lowest priced services—has historically been unpopular with consumers. Maintaining this balance was long viewed as a government responsibility.[8] Increasingly, this consumer-oriented role is stood on its head. Consumers, this logic goes, will be better served by the wider array of services and products enabled by price discrimination. A fixed price will cut off low-end markets that a flexible price may reach (see, e.g., Cohen, 2000). Through means such as the Digital Millennium Copyright Act and other control-friendly initiatives, government plays a growing role in securing the architecture for this market model. Today, the efficiency arguments for price discrimination are much better developed than they were in past decades, better aligned with concentrated media markets, and—most importantly—more fully supported by the technologies of the day.

The economics of cultural goods are particularly suited to price discrimination: Cultural goods have high, fixed initial costs but rapidly diminishing marginal costs. But cultural goods have both a social and an economic life; copyright law says as much. Culture is a resource for democracy and learning as well as a commodity in the market. Copyright law established limits on control to balance the relationship between culture as commodity and culture as a public good.

"Content protection" is the mantra of DRM ad copy, but what is content being protected from? Answers are inevitably diverse: sometimes piracy, sometimes arbitrage, sometimes consumers switching away from a particular service, sometimes fair use practices, sometimes personal, noncommercial uses. As danah boyd (Chapter 8, this volume) argues, much of the complexity of culture—its shifting roles, interpretations, and audiences—is lost in the translation to flatter, digital versions of cultural life, often with unpredictable results.

Although price discrimination is theoretically a neutral intervention in the cultural sphere—and standard economic arguments would posit it as a social good that incentivizes cultural production—price discrimination linked to more complete control of the life of the cultural commodity is fraught with risk. Although it can expand the market for cultural goods, it also recaptures hard-to-quantify social surpluses derived from the ways in which these goods circulate outside market relations—illegally in some contexts but in ways expressly protected by copyright law in many others. In the current climate, this capture is celebrated by the major content owners as a requirement of digital services. Price discrimination can be presented as a social good that justifies DRM, which in turn can eliminate unauthorized uses (and competitors) in a fully discriminated market. The difficulty is that, in a democratic society, those uses have always included the noncommercial, public life of cultural goods.

references

Abbate, J. (1999). *Inventing the Internet.* Cambridge, MA: MIT Press.

Agre, P. (1998). *Technology and privacy: The new landscape.* Cambridge, MA: MIT Press.

Bell, T. (1998). Fair use vs. fared use: The impact of automated rights management on copyright's fair use doctrine. *North Carolina Law Review, 76,* 557–619.

Benkler, Y. (2006). *Wealth of networks: How social production transforms markets and freedom.* New Haven, CT: Yale University Press.

Bradner, S. (1999). The internet engineering task force. In C. DiBona, S. Ockman, & M. Stone (Eds.), *Open sources: Voices from the open source revolution* (pp. 47–52). Beijing: O'Reilly Press.

Brin, D. (1999). *The transparent society: Will technology force us to choose between privacy and freedom?* Reading, MA: Addison-Wesley.

Burk, D., & Cohen, J. (2002). Fair use infrastructure for rights management systems. *Harvard Journal of Law and Technology, 15,* 41–83.

Cohen, J. (2000). Copyright and the perfect curve. *Vanderbilt Law Review, 53,* 1799–1819.

Cohen, J. (2003). The law and technology of digital rights management: DRM and privacy. *Berkeley Technology Law Journal, 18,* 575–617.

Congressional Budget Office. (2004). *Copyright issues in digital media*. Available online at http://www.cbo.gov/showdoc.cfm?index=5738&sequence=0

David, P. A. (1985). Clio and the economics of QWERTY. *American Economic Review Papers and Proceedings, 75.* Available online at http://f.staff.umkc.edu/fkfc8/QUERTY.html

Drake, W. (1993). The internet religious war. *Telecommunications Policy, 17*(9), 643–649.

Erikson, J. (2003). Fair use, DRM, and trusted computing. *Communications of the ACM, 46*(4), 34–39.

Felten, E. (2003). A skeptical view of DRM and fair use. *Communications of the ACM, 46*(4), 57–59.

Garfinkel, S. (1998, November). The web's unelected government. *Technology Review,* 38–46.

Garfinkel, S. (2000). *Database nation: The death of privacy in the 21st century.* Beijing: O'Reilly Press.

Gillespie, T. (2004). Copyright and commerce: The DMCA, trusted systems, and the stabilization of distribution. *The Information Society, 20*(4), 239–254.

Gillespie, T. (2007). *Wired shut: Copyright and the shape of digital culture.* Cambridge, MA: MIT Press.

Hughes, T. (1987). The evolution of large technological systems. In W. Bijker, T. P. Hughes, & T. Pinch (Eds.), *The social construction of technological systems* (pp. 51–82). Cambridge, MA: MIT Press.

Jackson, M. (2001). Using technology to circumvent the law: The DMCA's push to privatize copyright. *Hastings Communications and Entertainment Law Journal, 23,* 607–646.

Kahin, B., & Abbate, J. (Eds.). (1995). *Standards policy for information infrastructure.* Cambridge, MA: MIT Press.

Kesan, J., & Shah, R. (2001). Fool us once shame on you—Fool us twice shame on us: What we can learn from the privatizations of the internet backbone network and the domain name system. *Washington University Law Quarterly, 79,* 89–220.

Lemley, M. (1995). Intellectual property and shrinkwrap licenses. *Southern California Law Review, 68,* 1239–1294.

Samuelson, P. (2003). Digital rights management ⟨and, or, vs.⟩ the law. *Communications of the ACM, 46*(4), 41–45.

Slaton, A., & Abbate, J. (2001). The hidden lives of standards: Technical prescriptions and the transformation of work in America. In M. T. Allen & G. Hecht (Eds.), *Technologies of Power* (pp. 95–144). Cambridge, MA: MIT Press.

Szabo, N. (1997). Formalizing and securing relationships on public networks. *First Monday, 2*(9). Available online at http://www.firstmonday.dk/issues/issue2_9/szabo/

Tassey, G. (1995). The roles of standards as technology infrastructure. In R. Hawkins, R. Mansell, & J. Skea (Eds.), *Standards, innovation and competitiveness: The politics and economics of standards in natural and technical environments* (pp. 161–171). Aldershot, UK: Elgar.

von Lohmann, F. (2002, April). *Fair use and digital rights management: Preliminary thoughts on the (irreconcilable?) tension between them.* Paper presented at Computers, Freedom, and Privacy conference, San Francisco, CA. Available online at http://www.eff.org/IP/DRM/fair_use_and_drm.html

notes

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1 For more on this subject, see, for example, Abbate (1999), Bradner (1999), Drake (1993), Garfinkel (1998), Kahin and Abbate (1995), and Kesan and Shah (2001).

2 For more on the copyright implications of this arrangement, see Gillespie (2004; 2007) and Jackson (2001).

3 This strategy is fast disappearing as studios try to diminish the window of opportunity for DVD pirates.

4 This issue is currently being investigated by the European Commission as a potential violation of rules on commerce within member states.

5 A similar technique has been proposed by cable Internet providers, wherein connections to partner websites would be allocated higher bandwidth. Yochai Benkler (2006, p. 147) raises this point, in reference to a 1999 white paper published by Cisco, called *Controlling your network—A must for cable operators*, available at http://www.democraticmedia.org/issues/openaccess/cisco.html.

6 Active Internet, *DRM benefits*, retrieved August 17, 2005, from http://www.activeinternet.com/drm/drm_benefits.asp

7 See Bell (1998). For the array of concerns about how DRM itself may restrict fair use, see Burk and Cohen (2002), Erikson (2003), Felten (2003), Samuelson (2003), and von Lohmann (2002).

8 In 1887, for example, the Interstate Commerce Act ended the long-standing tradition of individual price discrimination for train tickets.