

# **The Political Economy of Audio-Visual Copyright Enforcement**

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## **Abstract**

There appear to be wide variations in levels of enforcement against piracy and illegal copying in the AV entertainment industries. In particular, copyright holders such as the Motion Picture Association of America appear to be very aggressive, while firms at the retail level, especially cable operators, appear to tolerate or even encourage piracy and illegal copying in some cases. It is argued that these differences exist because of asymmetries of enforcement costs and control, interdependent demand in the movie release system, and inefficiencies due to profit-sharing payment contracts for electronically distributed media. In conclusion, public welfare issues and several possible policy solutions are considered, including facilitation of greater vertical integration, greater reliance on public authorities for enforcement, and a change in the Digital Millennium Copyright Act regarding the system of restitution payments private firms can collect from copyright infringers..

## **I. Introduction**

Cable and DBS operators, pay TV networks, movie distributors, video retailers, and other players in the audio-visual industries present themselves to the public as earnest pursuers of software pirates and illegal copiers. This enthusiasm, along with claims of large financial losses due to piracy, is usually taken at face value by the press and legislators. In reality, there appear to be wide variations in copyright enforcement effort within the AV industries. In some cases, firms even appear to encourage piracy or illegal copying.

While a great deal of economic and other research has been concerned with copying and piracy in the copyright industries, enforcement effort in the audio-visual industries has not been systematically studied. In this paper, I identify available evidence of variations in enforcement effort, and then attempt to explain those variations using basic microeconomic models. I then consider issues of economic welfare and possible ways that public policy might be used to improve the current situation of piracy enforcement.

Section II below begins with a review of some relevant literature, followed in Section III with a brief discussion of the technologies available for piracy and illegal copying in the AV industries, and estimates of harm that have been made. Section IV discusses various methods used to confront piracy and illegal copying and relates anecdotal evidence of differences in enforcement effort. In Section V, I turn to economic explanations for the patterns we observe, and then focus in Section VI more specifically on distortions in the incentives of cable television and other multi-channel program distributors at the retail level. Section VII concludes with a summary and discussion of public welfare issues and possible policy solutions.

## **II. A brief review of relevant literature**

Economic and other research about the general subjects of piracy and copying is, of course, very extensive. Of particular relevance to the analysis of this paper are economic assessments of estimates of harm from illegal copying or piracy that have been published by industry groups. Besen (1987) argued that such estimates, typically for

industry use in government lobbying or public awareness campaigns, are often overstated. Principal among flaws he identified is an assumption that all those individuals or households who are claimed to illegally use copyrighted products for free would otherwise have purchased the product if the piracy or illegal copying opportunities had not have been available. In fact, many of those illegal users probably would not have otherwise bought the product, and therefore cannot reasonably be claimed as losses to the industry.

Beginning mainly with Takeyama (1994), a number of papers have indirectly studied piracy enforcement issues in computer software by demonstrating that illegal software usage can in the long run be beneficial to software suppliers because of network effects. That is, illegal users increase the customer base, which may provide the critical mass necessary for successful diffusion of the product, and they also become potential customers of product upgrades issued by the same supplier at a later time. Among other contributors to this theme in the economic literature have been Conner & Rumelt (1991), Shy & Thisse (1999), Slive and Bernhart (1998) and Banerjee (2003). While these papers are primarily theoretical, they offer an economic rationale for an apparent tolerance of copyright infringement by software suppliers.

In another stream of the economic literature, Liebowitz (1985), Besen & Kirby (1989), and others have presented models showing that under certain circumstances, consumer copying can be beneficial to suppliers of intellectual property, notably when two conditions hold: one, copiers have lower costs of duplication and distribution than suppliers of the “originals,” and two, the suppliers are somehow able to appropriate some or all of the value that copiers receive from consuming the copied products. Implicitly, at least, these results offer possible explanations for tolerance by intellectual property suppliers of copying activity.

### **III. Methods and Incidence of Piracy and Illegal Copying Activity**

Undoubtedly the main AV product subject to piracy or illegal copying has been theatrical movies, but the variety of cable and DBS programming has also been subject to

theft. There are a variety of different ways that these products can be illegally obtained or copied.<sup>1</sup>

One category of illegal activity is “hard goods” commercial piracy, or piracy involving resale of illegitimate physical products, motivated by financial gain from serving the demands of others. An early method, apparently no longer common, is to steal or “borrow” a 35 mm print of a movie from a theater, and use it to manufacture and distribute counterfeit DVDs or VHS tapes in the U.S. or foreign markets--usually before the movie is available on legitimate home video media. In other cases, theater patrons record theatrical movies with a video camera pointed at the screen for the same purpose. Increasingly common is for pirates to somehow obtain DVDs or cassettes of a movie prior to its commercial release and duplicate them for illegal distribution. Most commercial piracy of these types apparently involves distribution of products outside the U.S.

Other forms of piracy involve theft or illegal copying by individuals to obtain AV products, such as cable subscriptions, pay TV movies, or DVDs, for personal use without paying for them. Theft of basic cable subscriptions, for example, can be obtained by physically tapping into wires running down a street, or taking advantage of newly acquired living quarters already wired for cable without notifying the cable operator. Pay cable TV subscriptions or PPV exhibitions can be illegally obtained through “black boxes” that have been programmed to descramble signals. On older cable systems, traps that block certain channels at or near the home premises can be physically removed by the resident. DBS subscriptions can also be obtained illegally, usually by obtaining illegally manufactured “smart cards” that descramble the satellite fed transmissions. Another form of “personal piracy” is back-to-back copying of rented or purchased VHS tapes or DVDs, either by using two VCRs wired in tandem, or comparable equipment for playing and recording DVDs. Of course, while the actual piracy events in these cases are usually not undertaken for financial gain from others, the makers of illegal boxes, smart cards, etc., that are ancillary to these activities, generally are performing illegal acts for

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<sup>1</sup> The Motion Picture Association of America website describes a wide variety of piracy methods: <http://www.mpa.org/anti-piracy/>

financial gain, and are thus subject to prosecution under the 1999 Digital Millennium Copyright Act (DMCA) or other laws.

A rapidly developing type of unauthorized duplication and distribution of AV products involves Internet distribution, mostly of theatrical movies. If encryption codes can be evaded, DVDs can be “stripped” to digital files small enough to be e-mailed or distributed via file sharing websites or software. Or potentially, the encryption systems of movies obtained through legitimate Internet media can be defeated for the same purposes. Apparently in most cases, those involved in the initiation of these activities do not seek financial gain directly from duplicating and distributing the products, although those who obtain movies by these means obviously intend to avoid paying for them through other channels

Trade organizations in the affected industries have published a number of harm estimates from piracy or illegal copying, and other estimates have been made by the media. Not including Internet piracy, the MPAA claims losses of over \$3 billion worldwide in 2003 from movie piracy worldwide (about 10% of their total world income from the distribution of theatrical movies).<sup>2</sup> The most recent available MPAA estimate for video losses to piracy in the U.S. alone, published in 2000, was \$250 million (about 2% of total studio revenues from U.S. video distribution of theatrical features).<sup>3</sup> As of mid-2004, The National Cable Television Association (NCTA) claimed losses of \$6.6 billion in the U.S. from theft of basic and premium services in 2000, or about 17% of total U.S. industry revenues.<sup>4</sup> DBS suppliers do not appear to make an official claim of their losses from piracy, and estimates vary widely. A trade publication, *Satellite Business News*, estimated losses of \$300 million, or about 3% of total revenues, in 2001.<sup>5</sup> A 2002 article in *USA Today* stated there were 1 to 3 million illegal DBS subscribers in the US, or between about 5% and 16% of total legal subscribers.<sup>6</sup>

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<sup>2</sup> *ibid*

<sup>3</sup> <http://www.mpa.org/anti-piracy/>; accessed 4/25/2004; see also MPAA, *Fact Sheet: Film and Video Piracy*, February, 1997.

<sup>4</sup> <http://www.ncta.com/Docs/PageContent.cfm?pageID=89website>; accessed October 28, 2003.

<sup>5</sup> “DirecTV gets aggressive on signals theft,” *Los Angeles Business Journal*, December 17, 2001.

<sup>6</sup> David Lieberman, Millions of Pirates are plundering satellite TV, *USA Today*, December 2, 2002, p. 1A.

#### **IV. Enforcement and related efforts against piracy and illegal copying**

Enforcement against AV piracy and other illegal copying activity is heavily dependent on corporate initiative, coordinated partly through industry trade associations. The MPAA, for example, which represents movie studios typically having about a 90% share of the theatrical film market, collects complaints, investigates them, and assists prosecutions against all forms of movie piracy, including makers and users of copyright circumvention software or devices. The MPAA relies on government enforcement agencies and the court system to conduct actual prosecutions, but also files private suits against suspected pirates and lobbies Congress extensively.

By all appearances, the MPAA is the most aggressive anti-piracy organization in the AV industries in terms of its enforcement efforts. Its anti-piracy program was started in the U.S. in 1976, well before other industry organizations launched theirs. As of 1996, the MPAA reported that it had over 100 employees in the U.S.,<sup>7</sup> and in 2000, it reported having conducted 60,000 investigations and 18,000 raids worldwide.<sup>8</sup> Principal among targets of these investigations and raids are bogus DVD manufacturing plants and those who sell them at the street level, and makers of a variety of illegal copyright circumvention hardware. If anything, the MPAA seems to have escalated its efforts in response to Internet piracy and related activities, extending its legal activities to the prosecution of individuals it alleges to be involved in circumvention of copyright encryption software.<sup>9</sup>

Since the 1970s, the MPAA has vigorously lobbied Congress to strengthen laws and stiffen penalties in the U.S., with widely acknowledged success. The MPAA has also worked with U.S. government agencies to force foreign countries to strengthen and enforce intellectual property protection laws, often by means of threatening general trade sanctions. These high profile anti-piracy efforts have aroused a good deal of ire around the world and in the U.S. among public interest and other groups who claim the MPAA has been too aggressive. The MPAA does not appear to have slowed down in response,

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<sup>7</sup> MPAA, *Film and Video Piracy: It's a Crime*, April 29, 1996.

<sup>8</sup> <http://www.mpaa.org/anti-piracy/>, accessed October 28, 2003.

<sup>9</sup> Laura M. Holson, Studios Moving to Block Piracy of Films Online, *New York Times*, September 25, 2003, p. 1.

and the spirit of their current efforts seems to be reflected in Jack Valenti's (President of the MPAA) statement "If we have to file a thousand lawsuits a day, we'll do it."<sup>10</sup>

The primary cable television anti-piracy organization is the National Cable Television Association's Office of Cable Signal Theft (OCST), formed in 1986. The OCST, described as a "joint venture" with the MPAA, collects complaints, serves as an "information clearinghouse," partly by publishing case studies, and offers "Anti-piracy tool kits" to cable operators.<sup>11</sup> In addition to collecting and publishing information about the extent of cable piracy in the U.S., the NCTA also lobbies Congress on piracy issues. Unlike the MPAA, though, the NCTA leaves the initiative for detecting piracy and enforcing anti-piracy efforts to its cable operator membership, the most significant of whom are Multiple Cable System Operators (MSOs), such as Comcast and Time-Warner Cable. The primary focus of these MSOs' activities is to detect and pursue illegal subscribers to their various services. Another organization, the Broadband and Internet Security Task Force (BISTF) is funded by a consortium of cable networks, cable operators, and other corporate interests. The BISTF collects complaints and publishes cases studies of cable enforcement efforts.<sup>12</sup>

Cable operators have a variety of means to detect and deter piracy. The primary method of detection appears to be "tap audits," which are periodic house-to-house efforts to compare records of legitimate subscribers against longer lists of households that they determine, either by electronic means or by inspection of premises, to be actually receiving the service. In more technologically sophisticated cable systems, operators have used "electronic bullets" to detect thefts. In 1993, for example, Time Warner's Staten Island cable system offered a free T-shirt to subscribers during a PPV boxing match, but all legitimate boxes were programmed to scramble the ad. Thus, only those receiving the match illegally could see the ad. Four hundred people who responded to the ad were

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<sup>10</sup> Benny Evangelista, "DIGITAL DUPES / Movies, music industries try to keep pirated copies from spinning out of control," San Francisco Chronicle, January 31, 2000, p. B1

<sup>11</sup> <http://www.ncta.com/Docs/PageContent.cfm?pageID=89>, accessed October 28, 2003.

<sup>12</sup> <http://www.broadbandsecurity.bigstep.com/>, accessed October 28, 2003.

determined to have been receiving the signal without paying.<sup>13</sup> In other cases, electronic bullets have been used to actually disable illegal boxes.<sup>14</sup>

There is a long history of anecdotal evidence suggesting that the enthusiasm of cable operators for piracy enforcement has contrasted sharply with that of the MPAA. In a 1981 *Forbes* article, for example, cable operators were reported to be “ambivalent about small-time living room larceny.”<sup>15</sup>, and thus “slow to lay out money for today’s anti-piracy systems.”<sup>16</sup> A 1994 *Multichannel News* article cited the “apathetic refusal of cable ops to talk to each other about security” and discussed the failure of cable ops to invest in the new techs that prevent PPV piracy.<sup>17</sup> Then in 1998, an executive of a major MSO, Media One, was quoted to say: “The cable industry in Ohio is getting serious about cable theft.”<sup>18</sup> In 2000, another trade press article about piracy reported that the cable industry was now focusing attention on a “long-neglected” scourge. “We left the key in the car. We were looking the other way...”<sup>19</sup> There have also been frequent reports of unenthusiastic response of cable operators to reports of piracy. In one incident, for example, a video store renter learned of a local hospital worker who was altering set top boxes to steal PPV, but when he called Cablevision to complain he couldn’t get through.<sup>20</sup> There are exceptions, according to trade reports. Some operators have begun campaigns that attempt to arrest pirates outright, such as with the bullet campaigns of Media One offering free merchandise.<sup>21</sup>

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<sup>13</sup> *Multichannel News*, July 25, 1994

<sup>14</sup> One incident involved 140 Enfield, Connecticut subscribers (x) on Continental Cablevision systems during the Evander Holyfield v. Riddock PPV boxing match. *Journal Enquirer*, March 8, 1993; see also *Multichannel News*, March 21, 1994. In another 1991 incident, Warner Cable of Queens sent out an electronic bullet that disabled all illegal boxes and encrypted the boxes with the birth date of the author of the computerized bullet. This identified 400 illegal boxes. In Cablevision systems in New York, home control interdiction devices were reported to be in all new settop boxes going to subscribers. (*Newsday*, 9/23/99).

<sup>15</sup> *Forbes*, December 7, 1981, p. 96

<sup>16</sup> “Video Pirates;” (PPV and copying file)

<sup>17</sup> *Multichannel News*, July 25, 1994, p. 80

<sup>18</sup> *Business Wire* (date)

<sup>19</sup> *Communications Daily*, January 24, 2000.

<sup>20</sup> *IAC*, February 24, 1992

<sup>21</sup> *Atlanta Constitution*, January 6, 2000.

On other occasions, multi-channel providers seem to have displayed much more aggression in their search for cable thieves, especially in recent years.<sup>22</sup> Overall, though, while their enforcement efforts seems to be on the rise, there seems little doubt that cable system operators have been and remain less energetic about stopping piracy than the MPAA and other copyright owners.

DBS providers and video retailers are also involved in anti-piracy efforts, but they also seem to lack the aggressiveness of the MPAA. DBS providers, through an industry trade association, SBCA, and on their own, also report information and pursue piracy violators, but the role of their trade association in assisting these efforts is difficult to determine. There is not, for example, piracy information or an evident way to report piracy on the SBCA website.<sup>23</sup> In an industry squabble, Echostar accused DirecTV of intentionally ignoring piracy, permitting a 10% rate of illegal reception.<sup>24</sup> The Video Software Dealer's Association's (VSDA) involvement in anti-piracy efforts mainly seems to have consisted of funding a series of studies on the extent of theft of and copying from PPV systems, a medium whose economic success directly affects video software retailers.<sup>25</sup>

## **V. Reasons for Differential Enforcement**

How can we explain the apparent contrasts in piracy enforcement among AV entertainment industry players? From an economic perspective, I advance three principal reasons. The first involves costs and control of enforcement, while the second and third involve asymmetry in the economic impacts of piracy and illegal copying on different industry players.

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<sup>22</sup> See, for example, "Cable gets serious about theft," *Television Digest*, July 9, 2001, for a description of accelerated efforts by cable operators.

<sup>23</sup> <http://www.sbca.com/>

<sup>24</sup> DirecTV's falling star, *Broadcasting & Cable*, July 23, 2001; *Video Business*, August 6, 2001.

<sup>25</sup> "2001 Pay-per-View Home Taping Survey Summary," April-August, 2001, Macrovision Corporation, is apparently the latest of a series of such studies conduction; a previous study was conducted for VSDA in 1996. PPV Encryption: A Wait-and-See Game, *Multichannel News*, May 11, 1998

### **(1) Asymmetry of enforcement costs and control**

A straightforward influence on piracy enforcement is that those parties that suffer most from piracy are not necessarily those who control enforcement against it or who have the burden of paying for it. Most piracy takes place through manipulation of retail level systems, and the burden of detection necessarily lies with those systems. Overwhelmingly, for example, the responsibility for detecting illegal users of cable or DBS services falls on cable operators or DBS operators. The process of using tap audits or sending electronic signals to detect pirates requires heavy use of the cable system's hardware and software, as well as subscriber lists—resources that the operators do not want to lose their control of. As we also discuss further below, multi-channel operators have different economic incentives than copyright holders.

The house to house methods used to detect pirates and follow up with enforcement are also heavily labor intensive, and as the cable industry frequently reminds everyone, expensive to conduct. As we should expect, operators openly admit that they regard piracy enforcement as an economic matter that requires an adequate return on investment for them to undertake. At least some extent, high cost could explain a lack of anti-piracy enforcement by cable operators or other multi-channel providers.

Comparable forces affect the Internet. ISPs or portals like AOL and Yahoo, or file sharing sites themselves, have information and a degree of control over their users' activity that they also generally do not want to put in the hands of copyright owners. Enforcement effort is also costly. These conditions also tend to create asymmetric enforcement interests involving Internet piracy.

### **(2) Asymmetric economic impacts of piracy and illegal copying: interdependent demand in the movie release system**

The main target of piracy and illegal copying efforts-- major theatrical feature films--are released to the public in a timed sequence. The process begins with theaters, followed by video sales and rentals five or six months later, then PPV 45 to 60 days on, then monthly subscription pay TV networks about a year after theatrical release. Finally at the end of the line, usually beginning at about the two to three year mark, syndication

of the movie to cable or broadcast networks, or to local broadcast television stations, begins.

A key economic characteristic of this release pattern is interdependent demand. Consumers, that is, may decide to see a particular movie on PPV instead of renting a video if PPV prices are low enough compared to video rental or sales prices, or if the window between video release and PPV release is short enough. At the aggregate level, pricing or windowing strategies leading to higher PPV demand thus means lower video demand, and similarly throughout the release sequence.

The implication of interdependent demand is that piracy or illegal copying at any point within the sequence hurts copyright owners (namely the movie studios) more than it hurts owners of the pirated or copied medium. For example, if illegal back-to-back copying of videos occurs, video retailer revenues are hurt to the extent that some of those people who obtain the illegal copies may decide not to rent or buy a legitimate video. Because of interdependent demand, though, demand for PPV, pay TV networks, and even theaters also decline to the extent that users of illegal videos might have instead purchased the movie from one of those media. Thus, the movie studios generally lose more from piracy or illegal copying than do the individual media in the release sequence.

The operators of different media within the release sequence are keenly aware of these asymmetries of impact, and their behavior is clearly affected. For example, PPV system operators have publicly objected to MPAA efforts to lobby for legislation to prevent any copying from digital PPV exhibitions (a practice which is currently legal, at least nominally), because demand for PPV itself is obviously enhanced if subscribers have the opportunity to copy movies off of those channels.<sup>26</sup> Of course, both studios and the cable operators benefit from enhanced PPV demand, but the MPAA's objections to PPV copying seems to confirm that they believe the resulting reductions in demand for home video or other non-cable distributed media outweigh those benefits.

Inevitably, these asymmetries influence copyright enforcement efforts, which are understandably undertaken by all the profit making firms in the industry on a cost-effectiveness basis. The initiatives that the VSDA has taken to fund studies that attempt

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<sup>26</sup> PPV Encryption: A Wait-and-See Game, Multichannel News, May 11, 1998 (x)

to document a high prevalence of PPV piracy and copying are another telling example of interdependent demand in the release sequence.<sup>27</sup> Interdependent demand for movies within the release sequence is thus consistent with the observation that copyright holders are more aggressive than retail media in attempting to prevent piracy and illegal copying.

### **(3) Asymmetric economic impacts of piracy and illegal copying: Profit-sharing payment systems for electronically distributed media**

Electronically distributed media products like PPV movies or monthly subscription pay networks are sold at the retail level on a contingency basis. For every pay subscription a cable system sells, for example, contracts call for the cable network to receive some share of the retail price, or some set per-unit dollar amount. Usually, copyright holders that are one step removed, namely the movie studios, in turn receive a contingency payment depending on the number of actual subscribers.

This contingency payment system results in a fundamental problem with respect to piracy enforcement that is illustrated in Figure 1. In the illustration, an \$8 monthly retail price to receive HBO triggers contingent payments of \$5 to the pay network, which in turn gives \$2 to the movie studio. For the illustration, pay network and studio costs are assumed to be zero, so their total revenues are assumed to be net revenues. The cable operators incur more substantial marginal costs of distributing and billing for the network and these costs are assumed to be \$2 in the example, leaving the cable system with a \$1 net profit for each subscription sold.

Unlike most retail goods, the pay network subscription doesn't really exist until it is actually transmitted to the subscriber, and if that transmission is an illegal one, neither the pay network nor the copyright holder know about it and they receive nothing. The cable operator therefore only has an incentive to invest economic resources in piracy enforcement up to the point that its marginal return from prevention is equal to the marginal cost of the enforcement. In this example, the operator will only invest up to \$1 per illegal subscriber that can be discovered and converted to a paying customer.

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<sup>27</sup> Apparently the main purpose of these studies has been to persuade the studios not to shorten the window between video and PPV release.

From a combined industry perspective, though, the total net value of the cable subscription is \$6 (\$8 less the \$2 cable operator cost), so that it would pay to invest three times as much--\$6 per illegal subscriber that can be converted to a paying subscriber-- for enforcement effort.

It is interesting to compare this situation with retail shoplifting, which is said to cost U.S. stores approximately 3 to 5% of total sales annually.<sup>28</sup> In the usual case, retail stores buy products from wholesale distributors and manufacturers and then mark them up for resale. When someone steals one of these products off the shelf, that act represents a straightforward, out of pocket cost to the store—not to the manufacturer or wholesaler. To limit shoplifting, retailers hire floorwalkers and incur other expenses up to the point that the marginal return from them is equal to the loss of goods from the theft, which can reasonably be assumed to be somewhere between their wholesale and retail price level. Retailers of hard goods, then, have a higher incentive to stop theft than do cable systems or other multi-channel program suppliers.

It is important to note also that the fragmented nature of the electronic payment system means that even the networks and the copyright owners also have low marginal incentives to stop cable piracy. Even the MPAA, then, would seem to have muted incentives to stop cable piracy for these reasons. The problem of low enforcement incentives due to profit sharing does not, however, generally apply to video retailing. Like other retailers, video retailers generally buy the videos for a set wholesale price, and it is entirely up to the stores to prevent their theft.

In summary, these three basic reasons contribute to piracy enforcement problems in the AV media. For the case of multi-channel electronic delivery, though, this is not the end of the story. In some circumstances. As we further discuss below, these retail suppliers may actually benefit from piracy and illegal copying, further distorting economic incentives for enforcement.

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<sup>28</sup> Andrea Elliott, “In Stores, Private Handcuffs for Sticky Fingers, New York Times, June 17, 2003, p. 1 (x).

## VI. Potential benefits to multi-channel operators from piracy

The step-by-step procedures by which cable TV operators have confronted piracy have been widely reported in the media, and have also been published by the NCTA, the BISTF, and other organizations in the form of case studies for other cable operators to use as models in their own anti-piracy efforts.

The primary method for detecting pirates of basic cable service is tap audits. Cable operators rarely, however, seem to prosecute basic cable thefts.<sup>29</sup> Rather, they declare an amnesty campaign in which “unauthorized users” are informed of their culpability by mail, and then offered the opportunity to become paying customers in lieu of prosecution. As one operator commented, “We’ve decided to give these cable thieves the opportunity to become good, paying customers.”<sup>30</sup>

According to press reports and case studies published by the NCTA and BISTF, illegal-to-legal subscriber “conversion rates” are typically in the 30% range, but may go higher. Among a number of case studies, two were available on the BISTF website as of mid-2003; a Time-Warner Memphis audit in 1998 resulted in a 29.6% conversion rate; a series of tap audits by Time-Warner Syracuse over the 1995-2001 period, resulted in a 26.7% conversion of basic service illegals to paying subscribers.<sup>31</sup> Some reports have indicated substantially higher rates. For example, a 1998 Comcast campaign in Baltimore was claimed to result in conversion of 6000 of 11,000 illegal subscribers to paying customers.<sup>32</sup> According to a 2001 *Television Digest* report, an NCTA spokesman indicated that a typical rate of conversion from illegal to legal basic subscribers is 25% to 40 %.<sup>33</sup>

What these data reveal is that the majority of basic cable pirates are low value consumers who are unwilling to pay the regular price for cable service. The NCTA claims industry losses from basic cable theft to be \$4.0 billion per year, but since this

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<sup>29</sup> *Albuquerque Journal*, October 2001.

<sup>30</sup> *Baltimore Sun*, March 9, 1998.

<sup>31</sup> <http://www.broadbandsecurity.bigstep.com/>, accessed October 28, 2003.

<sup>32</sup> *Baltimore Sun*, 3/9/98

<sup>33</sup> *Television Digest*, July 9, 2001. See also 9<sup>th</sup> annual Signal Security Ideas Competition, Cable, 1996, NCTA.; Signal Security Handbook, 1996 Edition, NCTA for collections of case study data.

estimate is based on the assumption that all of the thieves would have paid in the absence of the opportunity to have the service for free, actual losses are evidently much lower.<sup>34</sup>

These data and the anti-piracy procedures of cable operators also suggest, though, that the operators may benefit from piracy as a marketing device. Typically, tap audits are conducted periodically at discrete intervals (eg, several months or years), rather than continuously. Illegal subscribers thus accumulate during the intervals, and after the audit, the offer to become a legitimate subscriber is made. This strategy is very similar to a market penetration strategy in which cable or DBS operators offer basic service, or certain premium networks, at no charge for the first one or two months in an attempt to get subscribers hooked before payment is demanded. As the dealer of a “satellite piracy store” in Windsor, Canada recently declared in connection with their sale of reprogrammed access cards for DBS service, “Its like heroin. Once you have access to all those channels, all those movies, you can’t give it up.”<sup>35</sup>

To the extent that tap audits are successful as cable system marketing strategies, the networks and copyright holders also benefit from the conversion of short term basic or premium service pirates to regular customers. With premium service theft, however, such synergy between the interests of copyright holders and cable operators does not necessarily obtain because nearly all subscribers who buy premium channels also buy basic service.

To see how basic and premium service theft can lead to different outcomes for this reason, consider the question: What if cable operators successfully caught all the pay TV pirates among their legitimate basic subscriber roles, and demanded that they pay up to continue receiving the pay services? Some of those subscribers would do so, to the benefit of the operator, as well as the pay networks and the studios. Lower value basic subscribers, though, are likely to respond by disconnecting their cable service altogether, perhaps to move to DBS or just to live with whatever free local broadcast stations are in the market--to the detriment of the system operators.

The logic of how theft of premium cable services can actually be profitable to cable operators can be illustrated with a simple abstract model (Figure 2).

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<sup>34</sup> <http://www.ncta.com/>

<sup>35</sup> New York Times, May 9, 2002 NYT.

There are two consumers A and B, and their price demands for basic and premium cable service are as indicated in the Table. A is the high value consumer, willing to pay higher prices for both basic and premium service than the low value consumer, B. Basic service, we assume, is required as a pre-condition to obtain optional premium service.

In the initial case, say that no piracy is possible. The optimal pricing strategy of the cable operator is to charge \$8 for basic service and \$10 for premium service. At those levels, both A and B buy basic service, while only A chooses premium. Revenues of the system are \$26 in total.

Now assume that piracy become possible and we make an additional assumption that only the low value consumer, B, is willing to take the risk of stealing the premium service. In that case, the operator's optimal price for basic service rises to \$10, while the premium price remains at \$10. Both A and B again purchase basic service. In this case, both A and B also receive premium service, but only A pays for it. Total revenues of the operator rise to \$30, an increase of \$4.

Basically what happens in this model is that the operator uses non-enforcement of premium network piracy as a price discrimination device. Consumer B is willing to pay \$10 to receive both basic and premium service since total benefits to B from basic plus premium equal \$11 ( $\$8 + \$3$ ). If anti-piracy measures were taken, however, this discrimination would not be possible.

The NCTA claims that approximately the same rate of theft for basic services, 9.5% applies to premium networks and PPV services. Curiously, though, illegal-to-legal conversion rates for premium cable network or PPV theft do not appear to be published in case studies or other reports, so we do not have direct empirical support for this model. Reasonably assuming that conversion rates are in the same range as those for basic service, however, the model offers a plausible explanation for cable operator laxity in enforcement against premium or PPV channel theft by legitimate basic subscribers. It is also consistent with common knowledge that cable operators often activate premium channels for basic cable subscribers at the time of installation, even when only basic services are ordered by the subscriber.

More recently, cable operators may have developed a better alternative to converting premium cable thieves to paying customers through amnesty campaigns and the like. The 1999 DMCA permits private parties harmed by copyright infringement to bypass the court system and seek restitution of their losses directly from infringers. Cable operators are apparently taking lucrative advantage of these opportunities. One press report indicated that in 2000, a major cable operator, *Cablevision*, identified 5000 households that it alleged were illegally receiving premium cable service. Of these, 2000 households were reported to pay between \$1500 and \$3000 each in response to a letter demanding such payments as an alternative to court prosecution. In one of the cases studied reported on the BISTF website, Time Warner of South Carolina claimed that it collected \$377,000 in settlements from 357 illegal pay cable receivers that it confronted with the prosecution alternative.<sup>36</sup>

Though one can only speculate on this point, it would seem that the method of demanding restitution is more lucrative than attempts to convert subscribers to paying customers through amnesty offers.

The benefits of the restitution payment system, while it presumably has significant deterrence effects, may still be of limited consolation to copyright holders or cable networks, because the latter groups do not appear to share in these payments.

## **VII. Implications and Possible Improvements**

We have identified several economic reasons that enforcement effort against piracy or illegal copying within the audio-visual entertainment industries may widely vary. In particular, multi-channel program suppliers and other media firms operating at the retail level are likely to have lower incentives for enforcement than copyright holders. Although systematic data are absent, this analysis is consistent with anecdotal evidence presented that multi-channel operators and some other information product retailers engage in lower enforcement effort than copyright holders such as the MPAA, and may in some cases even encourage piracy or illegal copying.

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<sup>36</sup> <http://www.broadbandsecurity.bigstep.com/>, accessed October 28, 2003.

What is the socially optimal level of enforcement for piracy and illegal copying in the AV industries? Viewed from the flip side: what is the optimal level of piracy and illegal copying in the industry that should take place?

From an economic perspective, the optimal level must reflect enforcement costs. As a first approximation, it is perhaps reasonable to take the retail physical goods shoplifting model serves as an appropriate guideline. That is, anti-piracy enforcement should continue up to the level that the economic returns from it reflect the full marginal net value of the products in the marketplace.

The unusual nature of the intellectual property industries, however, complicates the issue. In these industries, economic welfare is in a tug of war between two objectives: maximizing the supply of intellectual property that the industry creates and maximizing the number of consumers who are able to enjoy these products as long as marginal costs of distribution are covered. Other things equal, the Lindhal rule should apply: the supply of intellectual property should be increased to the point that the production and distribution costs of the last product made available are just equal to the aggregate benefits received by its users. On the other hand, there is an inevitable tradeoff between preserving these incentives to create and charging prices to users which reflect the generally very low true marginal costs of distributing to more consumers. Without the ability to perfectly price discriminate, the optimal supply of property, and thus the optimal amount of anti-piracy enforcement, cannot be clearly defined in economic terms.

A further issue in the anti-piracy case is whether or not we should consider the benefits to individuals who make use of pirated or illegally copied products. Abstractly speaking, at least, economic welfare principles would say yes. Common social conventions would reply no, though in at least some circles, social sympathy appears to be with those who make and use illegal copies. Another important issue is whether strong anti-piracy enforcement has too many negative external effects, such as intimidation, reduction of legitimate “fair use,” or the stifling of creativity—all charges that critics of the copyright industries have recently made.<sup>37</sup> A final economic question is how the responsibility for piracy enforcement should be divided between private corporations and

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<sup>37</sup> See, for example, Lawrence Lessig (2001).

the publicly funded policing and judicial system. The current emphasis on corporate vigilante activity is not necessarily optimal.

Whatever the correct welfare model, it seems evident that anti-piracy enforcement in the AV entertainment system has undesirable distortions due to the asymmetries between retailer and copyright owner incentives. What might be done at the policy level to reduce or eliminate those distortions?

One possibility might be facilitation of vertical integration between copyright holders and distributors, such as through further relaxation of media ownership rules. If, for example, cable operators are owned by cable networks or movie studios, distortions in the enforcement incentives of the different industry branches are presumably internalized and we return to the higher enforcement, retail shoplifting model. It is interesting that a disproportionate number of the published case studies of cable piracy enforcement seem to be provided by Time Warner, the only media company that holds large interests in all three industry branches: cable systems, pay cable networks, and a movie studio. That apparent imbalance suggests a testable hypothesis of our assertions that cable operators have lower enforcement incentives on their own than do copyright holders. One could examine the behavior of integrated vs. non-integrated cable systems to determine whether the number and frequency of tap audits are greater for integrated systems.

It is likely that one reason the movie studios have chosen to vertically integrate by offering their own platform for the Internet distribution of theatrical films is anti-piracy concerns. An independently owned website for distribution of theatrical films is like a cable operator in that it does not have as strong an economic incentive to prevent piracy or copying as the studios. A vertically integrated system, however, internalizes incentives to those of the industry as a whole. Unrelated antitrust concerns, on the other hand, have been raised about the horizontal joint venturing of several studios into *Movielink*, and it is not evident how the joint venture aspect of this arrangement would in itself assist piracy enforcement.

To some extent, industry consortia or joint ventures to stop piracy may simulate the effects of vertical integration. As we noted in Section III above, for example, the MPAA is listed as a ‘joint venturer’ with the NCTA in the latter’s anti-piracy organization. Such consortia are likely to have limited effect for two reasons. First, they

do not fundamentally change the different economic incentives of the firms involved. Secondly, they invite problems of moral hazard. For example, if the MPAA agreed to compensate cable operators for evidence of successful anti-piracy efforts, it would encourage cable operators to allow piracy to spread with the intention of receiving greater compensation for stopping it later.

A second improvement might come from greater involvement of public authorities in the detection and prosecution of piracy and illegal copying activity. In theory, at least, this change in responsibility would eliminate the incentive distortions of private sector enforcement. On a practical level, such a change is unlikely because of the costs it would impose on the general public. Issues of the appropriate level of public enforcement would require resolution.

A final and more practical suggestion would be to modify the DMCA to require that restitution payments to private firms intended to compensate harm from copyright infringement be shared with copyright owners rather than simply retained by cable operators or other retailers of the final products in question. Such a change would have the effect of reducing retailer incentives to engage in copyright enforcement, but it would allocate the compensation in a more efficient manner, tending to increase the supply of intellectual property.

In conclusion, it may be that the most powerful force encouraging anti-piracy enforcement in the AV industries will be technology. As methods available to multi-channel and other retail distributors, as well as copyright owners, become cheaper and more effective, their incentives to use them will naturally increase--at least to the extent that they gain some benefits from doing so.

*End text*

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**Table 1**

**Hypothetical Illustration of Enforcement Incentive Problem: Pay Cable Piracy**

HBO subscription price	\$8
Movie studio net revenue	3
Pay network net revenue	2
Cable operator net revenue	1
Cable operator distribution cost	2

**Table 2**  
**Economic model of profitable pay TV theft**

	High value Consumer A	Low value Consumer B
Basic	10	8
Premium	10	3

Assumptions: (1) 2 consumers, A and B, with the indicated price demands for basic and premium cable service; (2) only low value consumers will steal premium channels (3) no costs or profit sharing

Results:

Case I, no piracy: basic price = 8, premium price = 10, total revenue = 26

Case II, premium piracy permitted: basic price = 10, premium price = 10; total revenue = 30

