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# Alternative Methods for Protecting Digital Content

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**AT THE CROSSROADS OF LAW & TECHNOLOGY:  
FIFTH ANNUAL CONFERENCE, ALTERNATIVE  
METHODS FOR PROTECTING DIGITAL  
CONTENT<sup>†</sup>**

*F. Jay Dougherty, Moderator\**

*Ed McCaffery\*\**

*Fred von Lohmann, Panelist\*\*\**

*Ronald C. Wheeler, Panelist\*\*\*\**

**MR. DOUGHERTY:** I think this panel is going to be very, very interesting because our goal here is to take a step back and consider what you might look at as the current business model for protecting content in a digital environment, which is what we've really been focusing on all day. I'll let the gentlemen up here put that in a little closer perspective for you. We have gentlemen with two somewhat opposing points of view as to the appropriateness and efficacy of the current system. Also, there are a number of suggestions besides copyright law and presumably the Digital Millennium Copyright Act<sup>1</sup> to approach the problem of seeing that creative people are compensated for their creativity. So we're very lucky today to have two terrific speakers in connection with these sets of issues. On my far right we have Fred von Lohmann, who helped advise the defense team and put a lot of time into the mock trial that we had today. Mr. von Lohmann is a senior staff attorney and IP specialist for the Electronic Frontier Foundation (EFF):<sup>2</sup> a very smart fellow. He's been involved in a

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<sup>†</sup> On May 21, 2004, the Program for Law & Technology at Caltech and Loyola Law School presented a symposium on Alternative Methods for Protecting Digital Content to protect the rights of copyright holders. The following is an edited version of the transcript from the conference panel and discussion. More information about the program can be found at <http://techlaw.lls.edu>.

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1. See generally 17 U.S.C. § 1201 et seq. (2000).

2. The EFF is a San Francisco-based organization promoting "digital civil liberties." See <http://www.eff.org/about> (last visited Oct. 23, 2004).

variety of cases, including those that you've heard about today, regarding the Digital Millennium Copyright Act. In addition, he has handled issues involving peer-to-peer file sharing and protection of content in the digital environment. On my immediate right we have Ron Wheeler who is Senior Vice President of Content Protection at Fox Entertainment Group. I believe that all of the studios have a person in a similar role dealing with intellectual property and piracy issues. In addition, Mr. Wheeler functions as Fox Entertainment Group's primary legal representative in connection with negotiating content protection licenses, anti-piracy policy, and domestic, legislative, and regulatory policy issues. So these gentlemen are quite knowledgeable about the current business model and have ideas about the proposed alternative business model. The plan is to start with Mr. von Lohmann providing a critique of the current business model. Essentially—not to cut into Mr. von Lohmann's clock—I would view the current business model that we're looking at as a combination of copyright, legal anti-circumvention protection, and technological protection. Moreover, Mr. von Lohmann will critique that business model and briefly describe to you some alternatives proposed in academia and otherwise for achieving that result. Mr. Wheeler will then make some remarks in defense of the current model and critique some of the alternative models. Hopefully, we will have a few moments for interaction with you before the judge comes back with his result. So, Mr. von Lohmann, will you take it away?

**MR. VON LOHMANN:** Sure. Thanks for the invitation, and again, congratulations. I'm sure we all agree that the students were fantastic. You've heard a great deal today about some of the issues that have arisen in connection with the Digital Millennium Copyright Act, the so-called DMCA, and its interaction with research, teaching, and the implications for copyright industries if their protection technologies are broken. I want to just cover very quickly how this system, described by Professor Burk earlier, has actually worked out in practice. The DMCA was enacted about five years ago and we've had some experience with it. I want to talk a little bit about some alternatives that might be worth considering at this stage because, as I think it will come as no surprise, it's my view that the DMCA is actually failing at its stated goals. So really quickly, to sort of reprise a bit of what Professor Burk mentioned, the DMCA really has a relatively straight-forward purpose. The notion was that in the digital environment, end-users, consumers, and the public would essentially have access to the kinds of tools that would make it very easy to make lots of copies—essentially “perfect copies,” to use the oft-repeated description. The view was that it would be too expensive and too difficult to attempt to enforce copyright law the old-fashioned way, namely by going after each infringer

one at a time. So the theory was that copyright owners would avail themselves of digital tools to protect their content encryption, and, as Mr. Hunt aptly described, more sophisticated content protection technologies designed to communicate certain restrictions between devices to protect content as it moves between devices and over the Internet. The notion was that there would be the technology, but as Mr. Hunt also averred, the technology is probably not, by itself, going to be enough to protect content. There would also have to be legal protection to stand behind it, what Professor Burk referred to as what amounts to an anti-hacking regime. That's what the DMCA was designed to do—to prohibit individuals from circumventing or bypassing these content protection technologies, and perhaps more importantly, to prevent people from being able to build circumvention tools. These circumvention tools, technologies, and devices would allow people to easily defeat the protection technologies. So, the view here was that we can't go after every possible infringer out there in the world. It would be easier and more efficient to go after the smaller number of individuals who have the sophistication to build circumvention tools that would attack our protections. This is all very tenable. I can understand why in the mid-nineties, when this regime was sort of dreamed up by policy makers in Washington, this seemed like at least a plausible way to approach the digital future. Well, five years later, how has it actually worked out? Again, I want to emphasize some of the points made by Professor Burk earlier. It actually has not worked out so terribly well.

First, I'll start with the issues that concern the Electronic Frontier Foundation the most, and it's what I would call "collateral damage," or what Professor Burk called "unintended consequence." Namely, that the DMCA has been used not so much to prevent piracy, and not so much to go after people intent on infringing, but rather to go after competitors. To take two examples mentioned earlier, already the DMCA has been used by a printer manufacturer, Lexmark, to attempt to eliminate the secondary market for refilled printer toner cartridges.<sup>3</sup> The theory was that the toner cartridge has a protection measure that negotiates with the printer, so you can only use an authentic Lexmark toner cartridge that has not been refilled. I would suggest that this wasn't what Congress had in mind when it enacted the DMCA five years ago. Garage door openers have been another front in this war.<sup>4</sup> The nation's leading garage door manufacturers

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<sup>3</sup> *Lexmark Int'l, Inc. v. Static Control Components, Inc.*, 253 F. Supp. 2d 943 (E.D. Ky. 2003), preliminary injunction vacated and case remanded by *Lexmark Int'l, Inc. v. Static Control Components, Inc.*, 2004 U.S. App. LEXIS 22250 (6th Cir. Oct. 26, 2004).

<sup>4</sup> *See Chamberlain Group, Inc. v. Skylink Techs., Inc.*, 292 F. Supp. 2d 1023 (N.D. Ill. 2003).

invoked the DMCA to prevent you from being able to buy a substitute opener for your own garage door. In areas closer to the entertainment industry, there have certainly been situations where the Digital Rights Management (DRM)<sup>5</sup> suggests that it's more useful to limit competition than piracy. Apple's iTunes Music Store is probably the best example of this. Those of you that have experience with the iTunes product will know that although there is a so-called DRM technology that is used by Apple called FairPlay,<sup>6</sup> it is trivial to circumvent. In fact, I hesitate to even use the word "circumvent" because it doesn't actually require you to hack anything. You download the music, and then using the same program, you can burn the music to CD. Then again, using the same program you can rip it in an unprotected format. So, circumvention is putting it too strongly. You merely use the software in the way in which it is designed and you can defeat the protection. While it may not be any good to stop so-called piracy or Internet redistribution, it's very good if you, as Apple, don't want anyone else's digital music player to be able to interoperate with your iTunes Music Store. Moreover, if you're Apple Computer and you're making your money selling iPods, well suddenly that DRM starts to make a lot of sense: not to prohibit piracy, but to prevent and control competition. That's one big area of concern.

There are also impacts on innovation and research, and you've seen a great example of that today. There have been occasions where researchers' efforts to conduct investigations into computer security were chilled for fear that they or their educational institutes would be sued or threatened with suit for violations of the DMCA based on their research. Professor Ed Felton at Princeton is probably the best-known example, and his case is discussed in the supplemental learning materials that were handed out. Finally, as Professor Burk pointed out, all of the traditional exceptions to copyright—educational exceptions, fair use exceptions, and a whole host of exceptions contained in the Copyright Act, some of which are very vintage, are effectively trumped by technical protection measures. If the technical protection measure does not enable you to make a fair use, it is no defense for you to say in court, "but your Honor, I wasn't circumventing to be a pirate. I was circumventing to do something that is lawful under copyright law." The defendants who have made that argument have had, so far, the courts respond by saying that it is no defense.<sup>7</sup> The DMCA does not ask

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5. For a discussion of Digital Rights Management see Renato Iannella, *Digital Rights Management (DRM) Architectures*, 7 D-LIB MAGAZINE 6 (June 2001) at <http://www.dlib.org/dlib/june01/iannella/06iannella.html>.

6. <http://www.apple.com/support/itunes/authorization.html>.

7. See, e.g., *Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 459 (2d Cir. 2002).

whether your purpose for circumvention was to violate copyright law. It does not ask whether you are a pirate. It asks simply, “did you circumvent?” “Did you bypass?” If so, end of story. Again, as Professor Burk pointed out, there are a few exceptions that are in the DMCA. But the exceptions are very few and far more limited than the traditional exceptions, including fair use, that have characterized the copyright.

So, there are three collateral damage effects from the DMCA: (1) effects on competition; (2) effects on innovation and research; and finally, (3) effects on fair use and copyright exceptions. Make no mistake, it’s quite clear that five years down the road we will all be paying a price—a price of unintended consequences, thanks to the DMCA. So ask yourself: What about the benefits? Has it proven worthwhile? Have we actually, thanks to these technical protection measures, beaten digital piracy? Contained it? Slowed it? Managed it? Eliminated it from the scene? Well, of course, quite the contrary.

In fact, DRM has proved to be of little or no use at all in combating the digital piracy that the entertainment industry was most concerned about. DVDs are perhaps the best example. Free software downloadable from thousands of Internet websites around the world enable you to rip, make copies, and decrypt the content on DVDs. In fact, I think most motion picture folks would agree that virtually every DVD released today, and certainly all the blockbuster films, are available for free download on the file sharing networks right now. So, DRM doesn’t appear to be solving that problem and the DMCA doesn’t appear to be making a difference in that fight. The reason, quite simply, is because the fundamental insight and assumption of the DMCA—that, somehow, if we target circumvention technologies we will be spared from the necessity of going after every individual infringer—has proven to be untrue. In fact, quite the contrary is true. In a peer-to-peer environment, so long as the content can be cracked and removed from the protection by anyone, all it takes is one sophisticated user. Or as a colleague of mine puts it, it’s a smart cow problem. It only takes one smart cow to lift the latch on the gate and then all the less sophisticated cows just trod on out behind it. Right? This is a view that has been restated in more sophisticated terms by four senior Microsoft engineers in a paper that has come to be known colloquially as “the Microsoft/Darknet Paper.”<sup>8</sup> If you Google “Microsoft” and “Darknet,” it will be your top hit. It basically says that unless you have perfect protection DRM is useless at preventing subsequent piracy. Now this may

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8. Peter Biddle et al., *The Darknet and the Future of Content Distribution*, (2002) at <http://crypto.stanford.edu/DRM2002/darknet5.doc>.

seem somewhat counterintuitive, because after all, isn't it enough to stop unsophisticated users to keep honest people honest. The Microsoft engineers looked at that and said, no, that doesn't actually work where peer-to-peer distribution channels make it possible for the circumvented content to be circulated itself. In other words, when you download a movie from a peer-to-peer system, you don't need to circumvent the CSS<sup>9</sup> encryption yourself. In effect, all the content comes to you pre-circumvented. So somewhere, anywhere on the planet, a sophisticated user has defeated the DRM. Every DRM expert and every computer security expert that I've ever spoken to agree that there is no digital rights management technology for mass market entertainment applications now or in the near future that will be resistant to a sophisticated attack. And we saw a little bit of that today in the context of DTCP.<sup>10</sup> There are high costs and very few benefits.

What about alternatives? Well, let me suggest that there are other approaches to this problem. There are approaches that perhaps deserve additional attention five years down the road when the DMCA approach seems not to be working. Let me just list a few and we can discuss them in more detail. One is essentially to do nothing. Now this isn't necessarily such a radical view. When the VCR was introduced in the mid-1970s, the motion picture industry made many of the same "sky is falling" arguments that it makes today with respect to digital copying and peer-to-peer file sharing. It said that the VCR would destroy the industry. There are many famous quotes by Jack Valenti on this point from 1976 to 1984. It turned out that the VCR did no such thing. The motion picture industry adapted and found a way to make plenty of money. In fact, using this technology, more money than they ever had before.

Now, this isn't to say that they did nothing about trying to contain the piracy. That's not the case. In fact, the industry both experimented with business models and attempted to employ at least some protection technology in the case of the VCR, Macrovision, to try and contain the threat on that side as well. The important lesson there is that there was no government intervention to prevent people from doing research into how Macrovision functions, or to prevent different VCR companies from

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<sup>9</sup> CSS, or Content Scrambling System, is a weak proprietary encryption system used on some DVDs. See the definition of Content-scrambling System at [http://en.wikipedia.org/wiki/Content-scrambling\\_system](http://en.wikipedia.org/wiki/Content-scrambling_system) (last visited Oct. 23, 2004).

<sup>10</sup> "DTCP" refers to Digital Transmission Content Protection, which prevents DVD players from transmitting data streams over digital interfaces like IEEE-1394 and USB, provided the content on the DVD itself has already been encrypted by CSS or another encryption system. See *Digital Content Protection, Part II*, EXTREMETECH.COM at <http://www.extremetech.com/article2/0,1558,1638232,00.asp> (last visited Nov. 11, 2004).

creating competitive products. The DMCA is what added these costs. The ability to deploy self-help measures has always been there and I wouldn't argue that copyright owners should be prevented from taking steps to lock up their content. My beef is with the notion that the DMCA will step in and make it unlawful for people to compete, to innovate, to research. So, we could do nothing. Another possibility would be to embrace a category of options that, together, I call collective licensing. This is the model that was used, for example, for the player piano, which the song writing industry of the early 1900s claimed would be the death of their business. Well, Congress, rather than stepping in and trying to regulate the technology or prohibit people from building player pianos, stated that copyright owners deserve to be fairly compensated. We will require that if you are going to record a song, you have to pay the songwriter a fee. But once you've done that, there's no further control. A songwriter can't prevent you from recording it. This same approach, a compulsory licensing approach, has been embraced many times in the years since by cable television, satellite television, and most recently, Internet webcasting. So that's a possibility.

Another flavor of collective licensing is the model that's used by ASCAP<sup>11</sup> and BMI<sup>12</sup> to license broadcast radio. A radio station buys a blanket license in exchange for a regular payment. Having done that, the radio station is entitled to play whatever music it likes, as often as it likes. Perhaps most importantly, on whatever equipment it likes. That's a possibility here. The music industry, which claims to be under the greatest threat from Internet piracy, could take that approach. The motion picture studios could do so as well, if they chose to. Frankly, I think the motion picture studios continue to do fantastically well with their existing business model. I'm not sure there's a need for them. But that is an alternative.

Finally, there's the alternative of using technology mandates, something that has been particularly unpopular among technology companies for some time. It's somewhat unprecedented. We have, however, two precedents, one quite recent. The first in 1992, as mentioned by Professor Dougherty earlier, was the Audio Home Recording Act<sup>13</sup> that,

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11. ASCAP, the American Society of Composers, Authors, and Publishers, is a society of nearly 200,000 members that "protects the rights of its members by licensing and distributing royalties for the non-dramatic public performances of their copyrighted works." Marilyn Bergman, *About ASCAP*, at <http://www.ascap.com/about/> (last visited Nov. 11, 2004).

12. "BMI is an American performing rights organization that represents approximately 300,000 songwriters, composers and music publishers in all genres of music" by collecting license fees for "public-performances," which it distributes as royalties to its members. [Http://www.bmi.com/about/backgrounder.asp](http://www.bmi.com/about/backgrounder.asp) (last visited Oct. 23, 2004).

<sup>13</sup> Pub. L. 102-563, § 1, Oct. 28, 1992 [hereinafter AHRA].

for those of you who remember, gave audio enthusiasts the lovely innovation called SCMS: Serial Copy Management System. The SCMS was the technology mandated into all digital audio tape recorders in order to prevent copies of copies. Well, of course, that didn't work out so well. Many who observed that business thought that the technology mandate had something to do with the technology never catching on. So that didn't pan out terribly well. The most recent technology mandate is the broadcast flag, described by Mr. Hunt earlier, that requires all digital television technologies to include content protection systems to the extent that they are going to be able to receive and then have digital outputs, essentially, of flagged, high-definition television content.

So these are some alternatives. You could either do nothing or allow business models to compete and allow existing entertainment industries to find a new way to profit in new technologies along with doing whatever self-help they feel is sensible. You could use collective licensing, whether done voluntarily by the entertainment industry, or imposed by the government through a compulsory license. Finally, you could choose technology mandates. Now, I will gladly say that I think the third is a terrible option from EFF's point of view. It does a great deal to hurt innovation and a number of other things. We've fought the broadcast flag for that reason. In terms of the second option, collective licensing, we at EFF endorsed that approach for music. We think that approach may well give us a sensible road out of the peer-to-peer lawsuits that seem to be afflicting us, yet not resuscitating the record business. I have no pre-existing view on whether or not that's a sensible view for the motion picture association or its members. I actually think the motion picture companies are doing pretty darn well. They're enjoying some of the most profitable years in history. So perhaps we should instead, for the motion picture industry, resort to the first option: wait and see. See if, in fact, new business models can arise.

**MR. WHEELER:** I'm okay with a wait and see approach as long as we get to keep the DMCA because I gather the do-nothing approach requires the repeal of the DMCA.

**MR. VON LOHMANN:** That would be nice.

**MR. WHEELER:** That would be nice. Well, that would make a huge difference to the motion picture industry. I think Mr. von Lohmann clearly illustrated the difference between the music industry and the motion picture industry in his thorough discussion of what the current system and alternative systems do. I'd just like to pick up and make a few comments so we can throw it open to questions and have a little discussion. The reason I think the movie industry is doing better than the music industry—

there's one technological reason—is that it's quite a bit harder to trade television and movie files than music files at the moment. But that will change over time. There's another big reason, which is the existence of the DMCA. From the time that the current digital formats, including DVD, were released—and as Mr. von Lohmann mentioned, DeCSS<sup>14</sup> was developed in 1999—theoretically every DVD on earth has been hackable using DeCSS. But the fact that DeCSS is illegal under the DMCA, as a postulate for why there isn't greater damage to DVD sales, has a lot going for it in terms of increasing sales of DVD's. I think DVD is a poster child for the DMCA—the good aspects of the DMCA.

I'd like to briefly address the alleged downside to the DMCA. I point out, primarily on the competition front, that the courts have all the cases that Mr. von Lohmann mentioned, or almost all of them, in hand, and I think that five years is way too soon to decide that the DMCA has failed in its stated goal and is being misused in some fashion. I think we have to give the courts a chance to work. We have to let the decisions filter up to Congress, to see if they require tinkering in the language of the DMCA. I predict that they will not. I think that with regard to the comments about innovation, Congress obviously attempted to allow for encryption research. I know that was the topic of the case here. They may or may not have actually gotten it right. Again, I think we need a little bit more experience with the cases, including this one on a hypothetical level. As for fair use, I think that with the massive amounts of copying that's taking place on peer-to-peer networks and otherwise, at the moment it's premature to say that the DMCA and TPMs<sup>15</sup> have stifled fair use. I think probably it's fair to say that audiovisual content and music content are being more widely copied for all purposes, fair and unfair, than at any time in history. So again, I think the evidence really isn't there of the massive harms caused by the law, and I think there's quite a bit of evidence on the other side.

Just looking forward a little bit, I think that looking at online distribution—Mr. von Lohmann is concerned about iTunes for competitive purposes, for example—as a potential way out of the music companies' current plight is also a fair point of assessment. iTunes and similar models, for competitive purposes or otherwise, could well be the salvation of the music industry, especially if you think about the problems of interoperability that are currently being worked on, again, because they have the DMCA to back up the choice of DRM's, FairPlay and otherwise.

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<sup>14</sup> “DeCSS is designed to circumvent ‘CSS’ the encryption technology that motion picture studios place on DVDs to prevent the unauthorized viewing and copying of motion pictures.” *Universal City Studios, Inc.*, 273 F.3d at 435.

<sup>15</sup> TPMs refers to “technological protection measures,” as referenced in the DMCA.

I think that FairPlay allows MP3 CD copies to be made in the clear. This can be ascribed to the fact that the CD is, itself, in the clear and all CD players don't have the ability to decrypt FairPlay, so they really didn't have a choice. It's not as though they deliberately made it open to the world. I think again, the music industry is a good example of the VCR analogy of doing nothing and seeing what happens. I think what happened was pretty scary. To the extent that the movie industry illustrates the beneficial impacts of the DMCA, I submit they outweigh the negatives, at least at this point in time. I would further remind everyone that the copyright office has triannual reviews of the DMCA to assess precisely the negative impacts that Mr. von Lohmann describes. The most recent report in October concluded that it was not a barrier to fair use. People could disagree with the result, but the point is that Congress was wise enough to have a review proceeding, and it will continue every three years from now on. So I don't know that the situation is as dire as all that. In my world, the do-nothing approach leaves the DMCA in place where it won't be too bad for the copyright industries or for consumers.

I now turn to some of the other schemes that Mr. von Lohmann outlines: compulsory licensing and collective licensing. In part, because the current system isn't as broken down in my mind as Mr. von Lohmann thinks it is, I think it's way premature even in the music industry context to talk about those solutions, particularly those which involve commercial entities paying fixed amounts set by highly publicized royalty bureaus, or those in contentious court actions between collective licensing, ASCAP, and BMI. Certainly, I think it would be very coincidental if those outcomes were rational in the end.

On the tech mandate side, obviously I feel a little differently about the broadcast flag. My company was the one that invented the broadcast flag and I was one of the main supporters of it. I continue to believe, even while some people can create potential negatives from the broadcast flag, that by including some protection for their content as part of the balance, it shows a helpful prophylactic attitude by not waiting until the situation in the music industry has been reached, but instead by trying to get a little ahead of the problem. So I don't see the downsides. I think the AHRA is an illustration of how not to do a tech mandate. Mr. von Lohmann briefly alluded to the fact that the statute itself may have slowed the rollout of digital audio tape. I think the larger problem was that the PC was not anticipated nor covered in the statute. But again, the basic system burdened devices of a certain type and made them less attractive to consumers than they would have otherwise been. That seems like a funny way to protect copyrights. Broadcast flag and some other similar

mandates, on the other hand, are quite a bit more sophisticated. They target functionalities and not individual devices and very narrowly target so as not to burden more than necessary.

Finally, I just wanted to highlight an alternative that Mr. von Lohmann briefly alluded to which is something that's been termed "speed bumps," basically a cat-and-mouse game on the peer-to-peer networks. Certainly, and much like the DMCA, speed bumps are a useful tool, not a complete answer. We've never sunk the industry and my company has never looked at the DMCA as a silver bullet any more than we've looked at the Copyright Act as a silver bullet. What we're in the business of doing is keeping the number of people who engage in piracy down to a reasonable level. We've always had piracy, we always will. We think that the current system with our proposed improvements may not be perfect, but it's the best alternative.

**MR. DOUGHERTY:** Well, I'd like to draw out a comment or a question here. Mr. von Lohmann mentioned that we've seen other new technologies come along that permitted personal copying and that the content industries cried "the sky is falling." Of course, that was true not only with the VCR, but also the cassette. Any recordable, portable technology in particular, was particularly threatening to the entertainment industry, and the cassette recorder was about, I guess, the earliest version of that. But, what I wanted to mention was that each of those prior technologies—the recorded cassette, the VCR, the digital audio—were copying technologies. They permitted the ability to easily make copies of works. The problem now with the Internet isn't so much a copying technology, although it's true that a variety of technologies, including PCs, can make digital copies. But it's really the first time, I think—and maybe I'm wrong about this—that what we have is a distribution technology that permits very good quality distribution, and something in the nature of viral distribution, and peer-to-peer distribution. Doesn't that suggest that we're facing a different kind of threat or different kind of a problem than prior technologies have presented to the entertainment industry? I think both of you might have a response to this.

**MR. VON LOHMANN:** Well, the first response is that I disagree with you. I think we have seen this before. Broadcast radio is one good example where the copyright owners of the day cried "the sky is falling" over broadcast radio for exactly the same reasons. This allowed the transmitting of these performances to millions of people with no way of tracking who listened or how many. Of course, in the end a solution was worked out through collective licensing. A second response, though more fundamental, is that I don't dispute that the Internet poses new and different

challenges just as every new technology has in the past. The question raised here is whether the DMCA, in effort to ban circumvention of technical protection measures, is the most sensible response to this new set of challenges. And this is where I just disagree. I think there is no evidence that a DRM today is giving any assistance to efforts to contain the kind of Internet redistribution that appears to be at issue. Again, as I said, it's not that every peer-to-peer user is circumventing; quite the contrary, it is just copying. All of the content comes pre-circumvented, and the DMCA doesn't appear to be influencing that. So yes, it's a new set of challenges, but the question is: is this set of tools actually responsive to those challenges? And I would suggest that the empirical evidence is really not there. In fact, I think it's safe to say that if movie studios tomorrow stopped using CSS altogether, there would be very little change in sales. I think today DVD sales are motivated by great price, great product, and the ease with which you can get them, including rental and at least some nascent download models. I think today DVD is a great example of exactly the opposite of what Mr. Wheeler suggests. I think DVDs demonstrate why the DMCA is a good business model—promoting good pricing and lots of response to consumer desire. That's what protects your business. That's what makes you profitable. CSS sure isn't what's doing it.

**MR. WHEELER:** Well, you're just assuming a hypothetical, that the sales would be identical without CSS.

**MR. VON LOHMANN:** It's not a hypothetical.

**MR. WHEELER:** Of course, it is.

**MR. VON LOHMANN:** No, because DVD decryption software has been available at retail for eighteen months and over a million copies were sold.

**MR. WHEELER:** Yes, and not everyone uses it, and not everyone trades peer-to-peer. Instead, each has had a choice of purchasing DRM encrypted discs and DRM encrypted downloads. So it absolutely has an impact on the number of people engaged in file trading. That's the competition with trading in unencrypted files. Actually, I think the smart cow/dumb cow analogy doesn't give the dumb cows enough credit for looking at the alternatives that are available to them.

**MR. VON LOHMANN:** It's the unsophisticated cows.

**MR. WHEELER:** Unsophisticated cows. I think that the fact that DVDs are such a great deal—and by the way, I disagree that they would be as robust a business model without CSS, certainly, that's counterfactual—is precisely what has limited the damage from peer-to-peer. So I think that DRM and the DMCA that protects it has a direct impact on controlling the amount of piracy and peer-to-peer networks for all your digital content.

**MR. VON LOHMANN:** I would just suggest that it is not, in fact, counterfactual. In fact, it is the empirical reality. Today, consumers can choose to make unencrypted, perfect copies of DVDs for a total outlay of zero dollars. You can download software that does this and works very well under Windows. Even the least sophisticated cow can use it. Until a very short time ago, you could go to Best Buy and purchase software for a nominal cost (between forty and eighty dollars) that was at least reasonable for over a million Americans to pay. So in fact, with the DVD today in the market, CSS is not imposing a real barrier to anyone who's interested, who's motivated to make a copy.

**MR. WHEELER:** Alright, but you're making an assumption about people's behavior suggesting that people would just as soon trade in unencrypted files as consumer-protected ones. I question that assumption.

**MR. DOUGHERTY:** Also, I wonder what you can encrypt DVDs for. I mean, DVD-recordable is only a pretty new technology. And it is still somewhat expensive, although it's obviously coming down fast.

**MR. VON LOHMANN:** Eighty nine dollars as of last week for an 8X DVD burner. So, not so much.

**MR. DOUGHERTY:** In which format?

**MR. VON LOHMANN:** Both: dual, +R, -R, +RW, -RW.

**MR. DOUGHERTY:** And without the DVD recordable technology, you have to suck up a great deal of storage on your computer if you wanted to store a lot of films.

**MR. VON LOHMANN:** Two hundred fifty gigabyte hard drive, as of last week, 120 dollars.

**MR. DOUGHERTY:** Well, we look back. Consider Moore's Law.<sup>16</sup> Obviously, this is improved. This technology has come along really in the last year or two, giving the DVD time to really become a business model, whereas before that really wasn't that viable.

**MR. VON LOHMANN:** I agree. But if this notion—the butt of this CSS protection, that the market would be under siege and substantially diminished—if that thesis were correct, then what you've outlined should be reflected in the marketplace. If, in fact, DVD burners and the technologies necessary to make DVD copies widespread and inexpensive have, in fact, come to the market in the last year or two, then why is it that we have not seen a concomitant drooping in DVD sales and popularity? In

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<sup>16</sup> J.A. SIMPSON & E.S.C. WEINER, *THE OXFORD ENGLISH DICTIONARY* (Oxford University Press), at <http://dictionary.oed.com> (Dec. 2002) (“[a] broad principle relating to the rate at which the density of transistors in integrated circuits, and hence the power and miniaturization of computers, is expected to increase with advances in microchip technology, originally predicted by Moore as approximately doubling every year now modified to approximately every two years.”).

fact, we've seen the opposite.

**MR. DOUGHERTY:** Do we have any stats about how many DVD recordables have been purchased? Is it a large part of the population at this point?

**MR. VON LOHMANN:** There are a lot of spindles of DVD blanks that are being sold.

**MR. WHEELER:** Right. But the point I'm making is a different one, not that the technology doesn't exist. I conceded that from the beginning. The difference is that the encrypted, DRM-protected disc is an attractive proposition. You assert without proof that it would be just as attractive in unencrypted form. I think we have empirical evidence that distributing music in the clear was something of a mistake of the music industry and got them into the dilemma in which they now find themselves. The movie industry went a different way with encrypted distribution. It does not find itself in the same straits, and yet you say that's irrelevant. I don't think you have the evidence to back that up.

**MR. VON LOHMANN:** I would simply suggest that DRM is not the explanatory variable here, and that all the empirical evidence supports that. So, for example, had music been protected, would the music industry find itself in any different position? The answer, I think we quite plainly know.

**MR. WHEELER:** Your proof being . . .

**MR. VON LOHMANN:** My proof being, take a look at the protective formats that the music industry has been introducing.

**MR. WHEELER:** Which are growing by leaps and bounds.

**MR. VON LOHMANN:** And which have made absolutely no impact on the peer-to-peer file sharing activity. In fact, I was just on a panel with a gentleman from Big Champagne,<sup>17</sup> which measures the usage of files on peer-to-peer networks. And he, based on actual empirical study of the networks, concluded that every exclusive track, at least on iTunes, has been available on Kazaa within two minutes of its release.

**MR. WHEELER:** Of course. Of course it has been. That doesn't mean that DRM is a failure. You're jumping to conclusions.

**MR. VON LOHMANN:** It does mean that DRM is a failure.

**MR. WHEELER:** It's not about keeping it off of peer-to-peer. It's about keeping the number of people engaged in peer-to-peer to a reasonable level.

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<sup>17</sup> "BigChampagne is the leading provider of information about popular entertainment online."  
[Http://www.bigchampagne.com/bc\\_about.html?PHPSESSID=ad25ed1410b59c3879a017526e957f0e](http://www.bigchampagne.com/bc_about.html?PHPSESSID=ad25ed1410b59c3879a017526e957f0e) (last visited Oct. 23, 2004).

**MR. DOUGHERTY:** Would it be fair to say, Mr. von Lohmann, that if there were perfect digital rights management and perfect encryption that you'd be in favor of it?

**MR. VON LOHMANN:** Now who's got the counterfactual? I think I would be opposed. If there were such a thing, there would be absolutely no reason for the DMCA. In which case, I would say, "hallelujah." Let's repeal it tomorrow.

**MR. WHEELER:** Well, we agree with you on this one point, that there is no such thing as perfect DRM.

**MR. DOUGHERTY:** Let me change gears a little bit and say: what would be the problem with a substantial tax on the distribution pipelines, that was then distributed to copyright owners, and let's say, with or without trading and the DMCA?

**MR. WHEELER:** Well, I think one problem is the over-taxation problem. Basically, if you're talking about a tax on ISPs, then people who are using their ISP strictly for e-mail and non-copyrighted research activities would be paying for the downloading activities of others.

**MR. DOUGHERTY:** Assuming that could be tracked.

**MR. WHEELER:** Oh, tracking is on peer-to-peer. Anybody who is familiar with the area knows this is a tremendous problem. Essentially, the most you can do is look at uploads, shared folders. You can't track downloads. Actually, we prefer not to have to track downloads because of the privacy problems it entails, and because of the transaction costs and enforcement costs. It requires us to enforce copyrights. We think that the solution is to keep the DMCA in place, let the courts do the work on alleged problems with it, and continue to roll out DRM protected distribution models and new business models. May the best person, the best company, the best competitor win, and then see if it was really such a big mistake. Right now we don't see the evidence of it.

**MR. DOUGHERTY:** I'm afraid we have to wrap it up. I told you this would be the fun part. Thank you, gentlemen.

**MR. MCCAFFREY:** Well, as my thirteen-year-old daughter would say, who's sitting here, "You're going to have to take this trash outside." But it was a wonderful debate and we want to thank Mr. von Lohmann for his role in advising the defense team, and Mr. Wheeler for coming over from the distant Westside, and Professor Dougherty for all of the work he did on all of the panels. It was really very wonderful.

