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Promises to Keep: Technology, Law, and the Future of Entertainment

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Chapter 6: An Alternative Compensation System

Imagine that I own a rocky promontory on the coast of Maine. A submerged reef extends from my land a half mile seaward. Mariners have trouble seeing the reef, especially at night or when it's foggy. As a result, ships have been running aground on the reef for centuries. Even today, small pleasure craft lacking sophisticated electronic navigation equipment frequently hit it in the summer months. Some are seriously damaged, and a few are wrecked.

One evening, after I've helped to extricate yet another smashed sailboat from the rocks, a friend suggests to me, "You know, you ought to build a lighthouse on the point. A bright light would warn boats to steer clear. If each boater paid you even a fraction of the benefit of the signal to him, you could make a tidy profit." We discuss the possibility for a bit. All aspects of the plan make sense, except one: we can't figure out how I could charge the beneficiaries of the lighthouse. My friend suggests making a deal with a nearby charter company, which rents boats to sailors unfamiliar with the local waters--who in turn run aground especially often. But such a contract would cover only a portion of the cost of the lighthouse. And once I made the light available to the company's customers, I couldn't prevent all other sailors from making use of it for free. In short, we can't envision a profitable business model. Stymied, we abandon the idea.

This parable, familiar to economists, illustrates what they refer to as the problem of "public goods." They point out that a small number of socially valuable products and services have the following two related characteristics: First, they are "nonrivalrous." In other words, enjoyment of them by one person does not prevent enjoyment of them by other persons. Second, they are "nonexcludable." In other words, once they have been made available to one person, it is impossible or at least difficult to prevent other people from gaining access to them. Goods that share these features are likely to be produced at socially suboptimal levels. Why? Because potential suppliers of them, like me, recognize that they would not be able to recover from consumers the costs of producing them. Besides lighthouses, things that fall into this category include roads, national defense, inventions, and recorded entertainment.¹

For centuries, governments have sought in various ways to counteract the danger that public goods will be underproduced. Looking back over the historical record, we can see that their efforts have taken five forms. First, they sometimes supply such goods themselves. Navigational aids and national defense are the clearest examples. Today, throughout the world, virtually all lighthouses and armies are supplied by governments, rather than by private parties. Some kinds of inventions are also generated in this way. In

the United States, for example, much innovation in the fields of aerospace, agriculture, and medicine comes from government laboratories operated by the National Aeronautics and Space Administration, the Department of Agriculture, and the National Institutes of Health, respectively.

Second, governments sometimes pay private actors to produce public goods. In the United States, the grants given to artists by the National Endowment for the Arts and the grants given to private universities and individual researchers by the National Institutes of Health exemplify this approach.²

Third, governments sometimes issue *post-hoc* prizes or rewards to persons and organizations that provide public goods. The lure of such rewards is intended to offset, in whole or in part, the disincentive to produce them in the first instance. Reward systems have been employed in various countries in various industrial contexts. For example, the British government offered a prize of £20,000 to the first person to invent a chronometer that would enable mariners to measure longitude accurately--on the condition that the inventor make his or her creation freely available for public use. In the 1950s, the governments of the Soviet Union and the People's Republic of China experimented with various reward systems to stimulate innovation. And the American government employs a reward system to encourage innovations relating to atomic energy. A long line of political and economic theorists--from James Madison to Steven Shavell and Tanguy van Ypersele--have argued that such systems should be employed more broadly.³

Fourth, governments sometimes protect the suppliers of public goods against competition, typically by granting them exclusive rights to make their products available to the public. For example, in the nineteenth century, American state governments would commonly authorize a private company to build a road, bridge, or canal; empower the company to charge tolls; and (most important) guarantee that no competitive transportation system would be built for a prescribed period of time. Patent law rests on a similar strategy: inventors are given exclusive rights for twenty years to "make" or "sell" objects embodying their inventions. Those rights enable the patentees--provided that there are no good substitutes for their creations--to charge consumers high enough prices both to recoup the costs of their training and inventive activity and to earn a profit.

Fifth and finally, governments sometimes assist private parties in devising or deploying devices that increase the "excludability" of such goods--and thus enhance the ability of producers to charge consumers for access to them. The most familiar example of this strategy is trade-secret law. It is sometimes possible for companies to sell innovative products (for example, new soft drinks or software programs) without revealing the inventions that underlie them (the chemical formulae for the drinks or the source code for the programs). So long as the companies take "reasonable precautions" to maintain the secrecy of their innovations, the law will lend them a hand, by forbidding competitors to ferret out the innovations through "improper means." The same principle supported the statutes adopted by some American states that forbade a particular type of reverse engineering of vessel designs, thereby compelling competitors to use more circuitous ways of learning and replicating the dimensions of novel boats.⁴

Each of these strategies has disadvantages. The first three all invest government with the power to determine which people or projects to fund or reward and thus create, to varying degrees, the danger that government will wield that power unwisely or repressively. The fourth raises the prices that both consumers and subsequent creators must pay for access to public goods, thus reducing consumer welfare and potentially impeding cumulative innovation. The fifth suffers from the same difficulty and, in addition, may foster unnecessarily expensive (and thus socially wasteful) ways of replicating innovations. Which then is best? It varies entirely by context.⁵

For decades, the primary approach used by most governments in the world to stimulate the production of music and movies has been a variant of the fourth strategy. Copyright law--supplemented, in some countries, by the associated law of "neighboring rights"--has protected composers, performers, and filmmakers against competition in the reproduction, adaptation, distribution, and performance of their creations, thus enabling them to raise the prices they charge consumers and licensees. The resultant profits have provided a crucial stimulus for creativity. As we saw in Chapter 2, the various business models that were built upon this legal foundation had some flaws, but until recently they worked reasonably well. Certainly, they generated an enormous stream of entertainment products. As we saw in Chapter 3, during the 1990s a spate of technological innovations destabilized this approach. The rapidly increasing popularity of digital recording and storage systems, the improvement of compression technologies, and the communicative power of the Internet made it ever harder for artists and their assignees to enforce their rights under copyright law. Near the turn of the century, the resultant threats to established business models prompted the American government (as well as governments in other countries) to turn their attention to the fifth strategy. The producers of entertainment (and other informational products) were given extensive legal protections against the circumvention of encryption and other private access-control systems. As we saw, this shift in strategy increased somewhat the ability of producers to shield their creations from unauthorized reproduction and thus protected their income streams, but it had other, substantial drawbacks: curtailment of traditional "fair use" privileges; high transaction costs; and, most important, frustration of the opportunities for semiotic democracy latent in the new technologies.

The growing disadvantages of strategies four and five suggest that we should consider a fundamental change in approach. Specifically, this chapter proposes that we replace major portions of the copyright and encryption-reinforcement models with a variant of the third strategy--a governmentally administered reward system. In brief, here's how such a system would work. A creator who wished to collect revenue when his or her song or film was heard or watched would register it with the Copyright Office. With registration would come a unique file name, which would be used to track transmissions of digital copies of the work. The government would raise, through taxes, sufficient money to compensate registrants for making their works available to the public. Using techniques pioneered by American and European performing rights organizations and television rating services, a government agency would estimate the frequency with which each song and film was heard or watched by consumers. Each registrant would then periodically be paid by the agency a share of the tax revenues proportional to the

relative popularity of his or her creation. Once this system were in place, we would modify copyright law to eliminate most of the current prohibitions on unauthorized reproduction, distribution, adaptation, and performance of audio and video recordings. Music and films would thus be readily available, legally, for free.

Painting with a very broad brush (details will come later), here would be the advantages of such a system. Consumers would pay less for more entertainment. Artists would be fairly compensated. The set of artists who made their creations available to the world at large--and consequently the range of entertainment products available to consumers--would increase. Musicians would be less dependent on record companies, and filmmakers would be less dependent on studios, for the distribution of their creations. Both consumers and artists would enjoy greater freedom to modify and redistribute audio and video recordings. Although the prices of consumer electronic equipment and broadband access would increase somewhat, demand for them would rise, thus benefiting the suppliers of those goods and services. Finally, society at large would benefit from a sharp reduction in litigation and other transaction costs. The ensuing sections of this chapter describe this system in more detail and explore its merits and demerits.

Logistics

Registration

Essential to such a system would be a way of tracking digital copies of songs and movies. This might be achieved by inserting into the original version of each work a unique and durable digital fingerprint, which would then be replicated in each copy of the original. The barcodes now routinely placed on packages of food in the United States enable grocery stores to process sales quickly, to manage their inventories, and (most ominously), by correlating sales with customers' "discount cards," to keep track of what individual people are eating. In the near future, radio frequency identification (RFID) tags, buried in food packages and other consumer goods, will make the process even easier. Digital fingerprints could enable comparable tracking of entertainment products. A mechanism of this sort would probably be both feasible and effective. Some of the technology left over from the failed SDMI project, discussed in Chapter 3, could probably be harnessed for this purpose. But it would be expensive and, for reasons discussed below, unnecessary.⁶

A simpler approach would rely upon a centralized registration system. A musician or filmmaker who wanted to be paid when others made use of his or her creation would send a copy of it to a government agency, which would store the copy and provide, in return, a unique registration number. The creator would insert that number into the filename of the copy of the recording that he or she made available to the world. Following are some details:

- What government agency? You could imagine creating a new administrative agency for this purpose, but the Copyright Office already

runs, quite effectively, a registration system that could be modified slightly to fill this function.

- Would there be a registration fee? Yes, a fee large enough to make the registration system self-financing. But the simplicity of the mechanism would keep that fee at modest levels.
- Would each creator be obliged to register his or her creations? No. Unlike cars, songs and films could be unlicensed. Creators who wished for whatever reason to dedicate their products to the public domain could do so.⁷
- How would you submit your registration? Over the Internet, of course.
- What would a registration number look like? Probably a series of letters and numerals, preceded and followed by an identifier of some sort. Example: #4m8sp60wxi#. (There exist over three quadrillion unique sequences of ten letters and numerals, which should be plenty for the foreseeable future.)

How much information concerning the content of the material contained in a recording should the registrant be required to supply? Only so much as would be useful to the administrators of the system when deciding how much to pay the registrants of different recordings. For reasons explored in detail below, it would be both feasible and sensible for the administrators, when calculating payments, to differentiate between audio and video recordings and among recordings of different lengths. By contrast, it would do them little good to know whether an audio recording contained opera or rap music--or whether a video recording contained a western or a comedy. Accordingly, registrants would be required to indicate whether their submission consisted of a song or a film and how long it was, but nothing more.

The person or institution entitled to register a recording would be the copyright owner. Thus, for the reasons outlined in Chapter 2, the registrant of a video recording of a film would typically be the producer or the studio. The registrant of an audio recording of a song would typically be the performer or the performer's assignee. In addition, the registrant of an audio recording would be required to specify the owner of the copyright in the underlying musical composition. The forms for both types of work would permit designation of more than one author--when and only when they qualified as "joint authors" under the copyright statute. In short, the new system would leave in place the current legal standards for determining who is the author of a creative work--just as it would the current system of contracts and customs by which "authors" compensate other people and organizations who participate in the creation or marketing of entertainment products.⁸

This feature means that, sometimes, there would arise disputes over who is the rightful copyright owner of the work underlying a particular recording. To handle such disputes as efficiently as possible, the Copyright Office should be empowered to create a

formal “opposition” procedure closely analogous to the procedure currently used by the Patent and Trademark Office to handle challenges to trademark registrations. Decisions in such proceedings could be appealed to the federal courts.

What about recordings that incorporate portions of other recordings--rap songs that contain “samples” of other copyrighted recordings, movies that contain excerpts of other movies, and so on? To gather the information necessary to compensate fairly both the creator of the incorporated work and the creator of the incorporating work, the form would require each registrant to indicate how much of the material contained in the submitted recording had been taken from other registered recordings. A precise accounting would be unnecessary. Rather, the registrant would pick among five ways of characterizing the proportion of the recording that had been taken from others--none; a small amount (less than 5 percent); some (5 to 50 percent); most (50 to 95 percent); all or almost all (95 to 100 percent)--and then list the registration numbers of the works incorporated in whole or in part. Because these figures would be determined quantitatively (by dividing the duration of the incorporated material by the duration of the composite recording) rather than qualitatively (assessing how important to the final product was the incorporated material), they would be relatively easy to determine. However, some registrants would be tempted to underreport the extent of their reliance on others’ work. To deter such behavior (and to encourage others to detect and challenge it), we might provide that proof of underreporting would result in all of the revenue that the registrant would have earned through the system being diverted to the registrant of the recording from which the underreported material was taken.⁹

Figure 6.1 is a sample of a registration form that could be used to gather the data of these various sorts.

Figure 6.1. Registration Form.

Name:
Email address:
Street address:
The recording you are registering is a:
 Sound recording
 Video recording
If the recording you are registering is a recording of a musical composition, indicate the owner of the copyright in the underlying composition:
How much (measured by duration) of the material in the recording you are registering consists of material taken from other registered recordings:
 None
 Less than 5%
 Between 5% and 25%
 Between 25% and 50%
 Between 50% and 95%
 Between 95% and 100%
Indicate the registration numbers of the recordings from which you derived material and the duration of each:

Determining Aggregate Compensation Levels

To run the system, the government would need to raise money. How? Through taxation. That much seems clear enough. Two harder questions remain: How much money would the government be obliged to raise? And what would it tax?

To answer the first question, we need first to determine the amount of money the government would be distributing to creators. That sum, plus the administrative costs of the system, is the amount that would have to be collected. Any of several different principles might be employed to determine how much creators receive. The choice of principle will make a large difference in the cost and operation of the system, so it's important to be clear at the outset concerning the governing criterion.

One possible approach would strive to give creators the full social value of their creations--or, more precisely, the full social value of their creations minus the money that they are able to make through other channels. What is the full social value of an entertainment product? An economist would say that it's the sum of the "consumer surplus" and the "producer surplus" that could be reaped from making it available to the public. That, in turn, is equal to the total amount that consumers (including other creators who wished to improve upon or adapt it) would be able and willing to pay for access to the product--up to the point where the marginal cost of producing an additional copy

equals the marginal benefit reaped from it--minus the costs of producing that number of copies. More crudely, it's the total benefit that all members of society could reap from the product.

A criterion of this sort seems to underlie the most recent and sophisticated analysis of reward systems as alternatives to intellectual property systems--the paper, mentioned above, by Steven Shavell and Tanguy van Ypersele. In the view of those authors, "the optimal reward equals the expected surplus over the distribution of possible demand curves." The authors contend that, if the rewards given to inventors are less than that amount, "there will be an inadequate incentive to invest" in research. If the rewards exceed that amount, "there will be an excessive incentive to invest" in research.¹⁰

Should we use this guideline when reshaping the music and film industries? For two reasons, the answer seems to be no. First, it would be extremely expensive. The cost of reproducing and distributing digital copies of songs and movies is very low, and the total amount that consumers in the aggregate would pay for access to those copies is very large. The difference between those two figures would be an enormous sum. It would be very difficult, for political reasons, to impose taxes large enough to raise that much money.

Second, as Arnold Plant and Glynn Lunney have shown, awarding the creators of intellectual products the full social value of their creations would seriously distort the system of incentives that shape people's choices of professions. Most workers do not reap the full social value of their efforts. Schoolteachers, civil-rights activists, and university-based research scientists, for example, all confer on society gains that vastly exceed their incomes. Enabling musicians and filmmakers to reap everything they have sown, without transforming comparably the systems by which workers of all other types are compensated, would exacerbate the problem discussed at the end of Chapter 2--in which too many people wait tables in New York and Los Angeles, waiting for the big break, while too few prepare to become teachers.¹¹

A radically different approach would abandon the quest to create an optimal pattern of incentives, and would instead strive, through the distribution of government rewards, to give creators what they *deserve*. This may have been what British reformer Robert MacFie had in mind when he urged giving inventors, as an "honorarium," "what is fair, considering utility, cost of preliminary trials, originality, probability of others making the same discovery, etc." This criterion seems unpromising for a different reason. Natural-rights theorists, from John Locke to Robert Nozick, have struggled with little success for centuries to determine the "just" proportion between a person's efforts and the reward he or she reaps. It seems implausible that, in designing a reward system to handle the new technological environment, we could succeed where they have failed.¹²

A final criterion would be harder to defend on theoretical grounds but more practical: make creators, as a group, whole. More specifically, we could use the new reward system to compensate creators and their assignees for the losses they have suffered--and will likely suffer in the immediate future--as a result of being deprived of their ability to enforce their copyrights in the new technological environment. The

attitude underlying this approach is the same one that prompted Fritz Machlup to remark, famously,

If we did not have a patent system, it would be irresponsible, on the basis of our present knowledge of its economic consequences, to recommend instituting one. But since we have had a patent system for a long time, it would be irresponsible, on the basis of our present knowledge, to recommend abolishing it.¹³

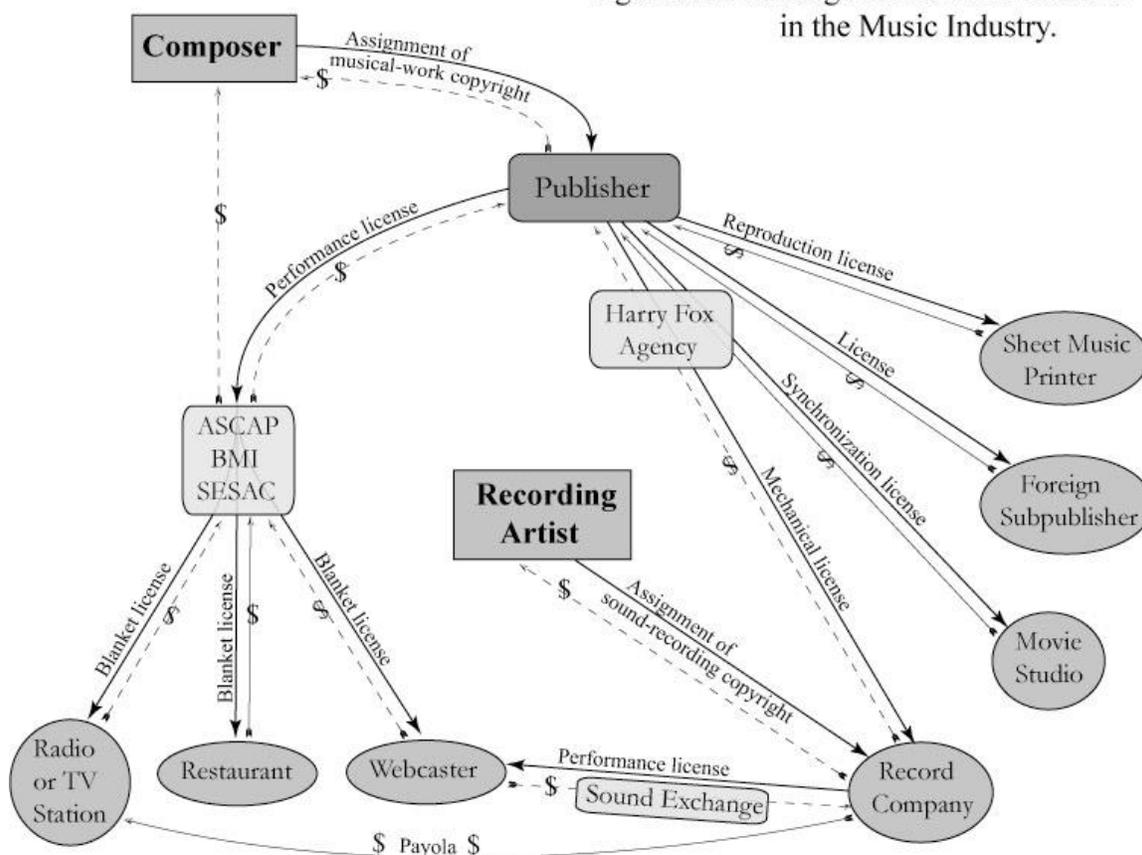
In the same spirit, it would seem wisest, when replacing the current copyright system with a system of government rewards, to begin by holding more-or-less constant the aggregate amount by which creators are currently compensated--and only to make adjustments, up or down, to their collective incomes when we have better information about the likely effects of such changes.

What would application of this criterion entail in practice? It's impossible to say with precision given the limited amount of data available to us at present. The relevant numbers would have to be determined by an administrative agency after an extensive fact-gathering process. For the reasons outlined in Chapter 5, the best candidate for the job would likely be a new, quasi-independent arm of the Copyright Office, the judgments of which would be subject to meaningful review by the Court of Appeals for the D.C. Circuit.

Following is a discussion of the kind of accounting that the Copyright Office would have to conduct. As you will see, many of the estimates that we will deploy are soft. The purposes of the analysis are merely to illustrate the methodology that the office would have to employ and to suggest that a reward regime founded on this approach would be practicable.

Let's start with the music industry. In Chapters 2 and 3, we examined the various streams of revenue that currently flow to the owners of copyrights in musical compositions and sound recordings. Shown with dotted lines in Figure 6.2 (a variant of Figure 3.1) are the channels that would likely be constricted by elimination of the current prohibitions on the reproduction, distribution, and performance of audio recordings over the Internet.

Figure 6.2. Endangered Revenue Streams in the Music Industry.



Implicit in this chart is a prediction that three business models would be corroded. The first--and by far the most important--is sales by record companies of CDs and tapes. As revenues from that source diminished, all of the streams of income that flow “upward” from the record companies would also shrink. A second, less certain effect would be diminution of the audiences (and therefore the advertising revenues) of radio stations, as consumers came to rely increasingly on the superior, ad-free offerings available through the Internet. If that occurred, the public-performance royalties paid by the stations (which, in turn, are tied to their gross revenues) would also diminish. Finally, and least important, the small payments that are currently being made by the Webcasters to the music publishers and record companies would disappear, not because the Webcasters would go out of business, but because nonpermissive streaming would now be lawful.

In estimating the magnitude of these changes, it seems fair to use as our baseline the year 2000, approximately the moment when album sales began to fall off under the pressure of the technological changes. (Indeed, adoption of that date is generous, because a healthy economy led to unusually high levels of consumption of entertainment products.) During that year, sales of CDs, tapes, and records in the United States earned

the record companies gross revenues of approximately \$7.35 billion (53 percent of \$13.868 billion in total retail sales).¹⁴

What percentage of this income would the companies lose if we permitted unlimited copying of sound recordings? Plainly, that figure would increase over time and eventually might approach 100 percent. For the immediate future, however, the percentage would be significantly less. Neil Netanel, relying upon careful empirical work by Stan Liebowitz, estimates that the companies would lose no more than 20 percent of their sales revenues through unlimited noncommercial file-sharing. That number does not correspond exactly to what we are seeking, insofar as it contemplates legalizing only a subset of the activities that our new system would permit. However, for the immediate future, it seems a plausible figure. Since 2000, declining sales of albums have cost the recording industry a total of 18% of their revenues. The extent to which the slump in sales was caused by file sharing and CD burning is currently a hotly contested issue. Against the backdrop, to project a loss of 20 percent during the first year in which the new system were in operation thus seems, again, generous--recognizing, of course, that this number would have to be revised (presumably upward) as consumers' behavior changed.¹⁵

Twenty percent of \$7.35 billion is \$1.47 billion. To determine the actual injury suffered by the record companies, we would have to deduct from that figure the amounts that they would save as their sales declined. Approximately 15 percent of the record companies' gross revenues is currently devoted to manufacturing costs--the costs of producing CDs and cassettes, packaging them, preparing the artwork, and shipping them to distributors. A decline of \$1.47 billion in revenues would thus be partially offset by a savings of \$221 million in manufacturing costs. The net loss would thus be \$1.249 billion. It is possible, as Brett May and Marc Singer suggest, that the companies would also experience savings in "overhead" (as their operations shrank) and variable marketing costs (by taking advantage of the increased efficiency and precision of Internet-based marketing). But again, we will take a conservative line and, for the time being, not assume any reduction in those expenditures. (May's and Singer's projections--along with some analogous predictions made in Chapter 1--will have greater bite when we're ready to predict how this system would change over time).¹⁶

The record companies are not the only copyright owners we need to worry about. Also injured by declining sales of CDs and tapes are the music publishers, the holders of the copyrights in the compositions embodied in those products. In 2000, total American phono-mechanical license fees were \$691 million. A 20 percent reduction in sales would thus cost them \$138 million. This affects our accounting in two, roughly offsetting ways. First, it requires us to add to the total amount that we would be obliged to raise in taxes a sum of \$138 million, tentatively earmarked for the music publishers. Second, it requires us to reduce the \$1.249 billion tentatively earmarked for the record companies by \$145 million--the amount that they would save in mechanical royalties as a result of their declining sales. (The difference between the two figures represents the 5 percent bite that the Harry Fox Agency typically takes out of those royalties.)¹⁷

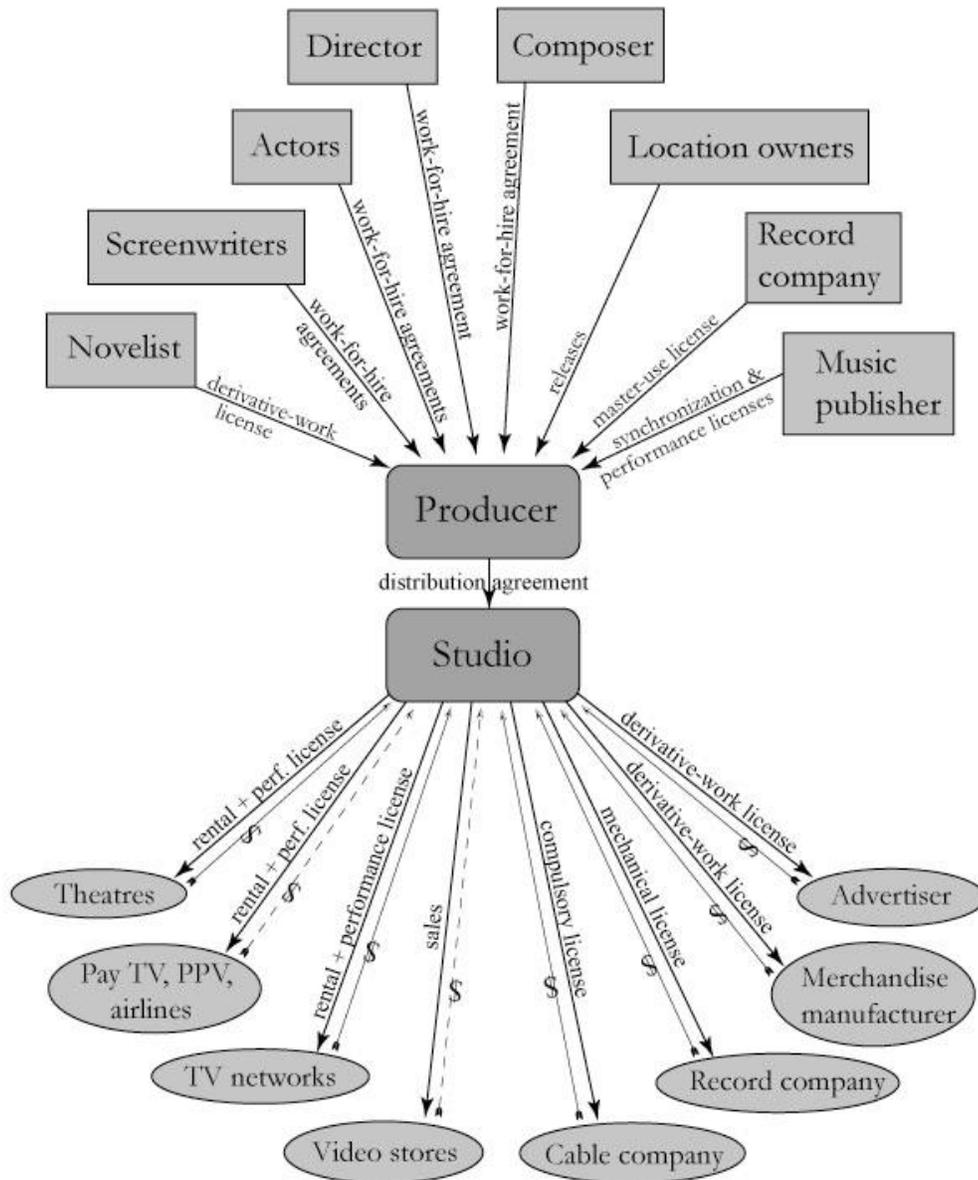
Our final figures: \$1.104 billion for the owners of the copyrights in sound recordings; \$138 million for the owners of copyrights in musical compositions.

The second of the three sources of injury arising from free Internet-based reproduction, distribution, and performance of audio recordings would be smaller but not trivial. Radio stations would suffer in this new world, because a wider variety of better-quality, ad-free music would now be obtainable for free on the Internet. How much would their incomes decline? It's impossible to say at this point. The stations have not to date complained that Webcasting has eroded their markets, and consumers would probably not suddenly abandon altogether their favorite disk jockeys. So let's guess, wildly, that the stations' revenues would decline 5 percent in the first year in which this new system were in place--expecting that they would decline more sharply in the future. (To repeat, this and all other estimates made in this section would be reevaluated, using financial data submitted by the relevant parties, by the Copyright Office. Our goal here is just to outline the methodology and identify "ballpark" numbers.) What would be the corresponding injury to the owners of the copyrights in musical works? In 2000, total public-performance royalties paid by radio stations in the United States were \$292 million. Five percent of that amount would be approximately \$15 million. Added to the loss of \$138 million they would suffer from declining record sales, this would produce a total injury to the owners of musical-works copyrights of \$153 million.¹⁸

For two reasons, we can safely ignore for the purpose of our accounting the last of the three potential sources of injury. First, in our baseline year, the license fees paid by Webcasters were trivial compared to the other figures we are considering. Second, as we saw in Chapter 3, the reason why the record companies pressed (successfully) for a right to collect those fees was to compensate them for diminution in their sales of CDs and tapes. The system we are constructing provides them an alternative (indeed, substantially more generous) way of recouping those losses.

As rough as these numbers are, the numbers for the film industry are even rougher. Legalizing the reproduction, distribution, and performance over the Internet of digital versions of movies would likely adversely affect, in the near term, three of the many streams of revenue upon which the studios currently depend: sales and rentals of videotapes and DVDs; cable and satellite television licenses; and pay-per-view licenses. Figure 6.3 (a variant of Figure 2.3) identifies with dotted lines these sources of injury.

Figure 6.3. Endangered Revenue Streams in the Film Industry.



The first of the threatened sources of revenue is the biggest. In 2000, sales and rentals of videotapes and DVDs generated income at the retail level of \$21.856 billion. \$7.8 billion (approximately 36 percent) of that money ended up in the coffers of the studios.¹⁹

Revenues attributable to distribution through subscription cable and satellite services--such as HBO, Showtime, and the Movie Channel--are harder to estimate. During 2000, total spending on such services was approximately \$7.314 billion. Roughly two thirds of that amount (\$4.876 billion) was retained by the operators of the local cable

franchises, and one third (\$2.438 billion) went to the services themselves. A significant portion of the latter sum was paid to the studios in license fees, but exactly how much is hard to determine, in part because the major cable channels were owned by the same conglomerates that owned the studios themselves. Until we can obtain better data on this front, we'll assume that 50 percent of the money (\$1.219 billion) was earned by the studios.²⁰

The smallest but fastest growing of the three revenue streams is pay-per-view. In 2000, the total amount spent by Americans for pay-per-view movies was \$1.426 billion. Absent more refined data, we'll assume that 40 percent of that amount (\$570 million) went to the studios.²¹

Now comes the softest part of the analysis. In the immediate future, what would likely be the adverse impact upon these revenue streams of legalizing the reproduction and distribution of digital video files? Three related circumstances suggest that that adverse impact would be substantially less (in percentage terms) than the harms sustained by the music industry. First, transmitting even compressed video files over the Internet takes a long time, even through broadband connections, and storing those files requires vastly more hard-disk space than is required for audio files. Second, relatively few consumers currently own the equipment necessary to collect, store, and project digital video files. Third, the motion picture industry has not made a colorable claim that, up to this point, its revenues have been materially undermined by unauthorized Internet distribution. Together, these factors suggest that our estimate of near-term harm should be much lower than the 20-percent figure we used for the music industry. A 5-percent figure is more plausible. (When ascertaining this number the Copyright Office would, of course, rely less on seat-of-the-pants reasoning.)

Putting these various estimates together, to offset the likely injuries sustained by the owners of copyrights in movies, we would need, in the first year, approximately 5 percent of (\$7.8 billion plus \$1.219 billion plus \$570 million), which comes to \$479 million. Added to the \$153 million and \$1.104 billion we would need to make whole the owners of copyrights in musical works and sound recordings, this produces an aggregate figure of \$1.736 billion.

We're not quite done. To this sum would have to be added the cost of creating and running a new branch of the Copyright Office. How much would that be? A useful point of reference is the cost of running ASCAP, the largest private American performing rights organization. In 1998, ASCAP's overhead expenses were 16 percent of its collections. Would the Copyright Office be more or less efficient? Different factors point in different directions. Its collections would be approximately four times those of ASCAP, enabling it to enjoy economies of scale. On the other hand, it would be a government agency--and those, as Robert Merges emphasizes, are generally less efficient intermediaries than are private organizations. In addition, start-up costs would be substantial. It seems likely that the latter factors would predominate. Let's then adopt a conservative estimate: 20 percent of the office's collections would be devoted to administrative costs. To pay copyright owners \$1.736 billion, it would thus have to raise

in taxes \$2.170 billion. Last but not least, that number would have to be adjusted for inflation. For that purpose we'll use (for simplicity) the Consumer Price Index for the past three years plus a rough projection of likely inflation during 2004. The net result: \$2.389 billion.²²

That's a large figure. To be sure, the federal government routinely spends even larger amounts on related projects. The annual budget for NASA, for example, is currently about \$15 billion per year, and the National Science Foundation distributes about \$5 billion per year in research grants. Still, \$2.389 billion is a lot of money.²³

In a few pages, we'll consider where such a daunting sum might come from. Before taking up that question, however, it's important to acknowledge that the criterion that we have been employing thus far (and that would guide the Copyright Office in making much more precise estimates of the harms suffered by copyright owners) can help us only during a transitional period. The question of how much money would be necessary to put copyright owners, collectively, in the same position they would have occupied in the old technological and legal universe would become, over time, ever harder to answer and would make less and less sense as a guideline. Periodically (presumably annually) the office would be obliged to recalibrate the amount of money it needed to collect and distribute. On what basis would it make those adjustments?

Gradually, a more ambiguous and controversial criterion could and should come to dominate the agency's decisionmaking. In rough terms, the emergent goal would be the public interest. Slightly more precisely, the office would strive to determine the amount of money that, when distributed to creators, would sustain a flourishing entertainment culture. The best way to answer that question would be iteratively--through frequent, modest adjustments of the tax rates, followed by studies of the impact of each change. If, in a given year, the entertainment industry seemed starved, the office would enrich the mixture a bit. If it seemed flush, the office would constrict a bit the flow of money.

The judgments underlying these adjustments would be unavoidably impressionistic. The aspiration of the office would not be to increase the flow of money to musicians and filmmakers until it produced what economists would describe as the socially optimal output of entertainment products. For the reasons sketched above, fidelity to that criterion would be prohibitively expensive and would draw an excessively large number of workers into the entertainment industry. Instead, the office would strive to select a level of aggregate reward sufficient to provide consumers a rich array of entertainment products. In pursuing this goal, its staff could and should estimate the rewards, other than income attributable to the distribution of recordings, available to musicians and filmmakers--including nonmonetary benefits (the various sources of gratification available to participants in the entertainment industry) and the revenues that they could earn from live performances. Plainly, the larger those supplementary rewards, the smaller must be the pot of money collected through taxes. But more important than these essentially predictive sources of information would be the office's judgments

concerning the quantity and quality of the recordings currently being produced and the observed impact of its most recent adjustments on the production of new products.

Would judgments of this sort involve the exercise of discretion? Certainly. Can any government agency be trusted to wield this power responsibly? We'll take up that question in the next section. Before then, however, we have many other logistical issues to consider.

Taxation

The two and a half billion dollars a year necessary to run this system might be raised in one of two ways. First, we might increase slightly the federal income tax. Currently, approximately 87 million households pay federal income taxes in the United States. If the increased tax burden were spread evenly over that population, each household would pay an additional \$27 per year. If, more plausibly, the burden were distributed in accordance with the rates those taxpayers are already paying, then taxpayers with higher incomes would pay somewhat more than that amount, while taxpayers with lower incomes would pay less than that amount.²⁴

This approach would have two major advantages. First, it would be efficient. The relevant tax increases could be implemented without incurring any significant additional administrative costs. Nor would the relevant tax base have to be reevaluated in future years.

The other advantage is more subtle but equally important: a slight increase in the income tax would probably result in less distortion of the behavior of people subject to the tax than would any alternative system of financing. To be sure, the income tax does distort behavior. Specifically, it causes people to work less (in other words, to substitute leisure for the consumption of goods purchased with income). However, two circumstances, together, suggest that that effect should not trouble us unduly. First, most (though not all) economists estimate that the economic costs to which it gives rise--so-called "deadweight losses"--are moderate in scale. Second, as Louis Kaplow has shown, those losses are mitigated if the tax is imposed in order to pay for a public good (such as stimulating the production of entertainment products) that directly benefits the persons paying the tax. In the extreme case, if the incidence of the tax exactly matches the incidence of the benefits of the public good, people will behave no differently at all. Could we achieve such a perfect match between the amount by which each person benefited from increased access to music and film and the additional amount that he or she paid in taxes? Of course not. But the facts that the benefits of the system would vary roughly with income (that is, the greater one's income, the greater one's ability, by buying more or better entertainment equipment, to take advantage of the new distribution and consumption technologies) and that an increase in the federal income tax would be progressive suggest that the benefits and burdens of the increased tax burden would be roughly aligned, and thus that its distortionary effects would be modest. As we will see,

the most plausible alternatives to the income tax would likely have more serious impacts on the behavior of the people to which they are applied.²⁵

This approach does, however, have one equally substantial disadvantage: it would likely be politically unpopular. Several overlapping objections would almost certainly be deployed by opponents. One line of resistance would emphasize the fact that the rough alignment noted in the preceding paragraph would be just that--rough. Many people who pay significant income taxes would not benefit from the new compensation system--because they lack either the equipment or the inclination to download or stream recorded entertainment. To be sure, this is a common situation. (For example, childless homeowners reap no benefit from the local public schools, but help pay for them through their real-estate taxes.) But many voters consider such misalignments unfair and would resist creating more of them. A second, related objection is that the monies raised through an income tax, ostensibly to provide a fund for the creators of entertainment, could easily be diverted to other purposes. In the United States, this worry is not especially common. When the possibility of a tax-subsidized alternative compensation system is broached in developing countries, by contrast, this objection is routinely raised. A third line of resistance would find a more receptive audience in the United States. Critics would point out, accurately, that significant portions of the funds distributed through the system would be used to compensate the creators of kinds of material that many taxpayers find offensive. That fact would provoke angry questions: My tax dollars support pornography? Misogynist rap music? Violent movies? Some years ago, analogous objections contributed to the corrosion of the National Endowment for the Arts. The proposed system--vastly larger and more visible--would likely draw even more fire.

The second of the two ways in which the funds might be raised would be through a tax on the goods and services used to gain access to music and film. This is the approach advocated by Neil Netanel in his pioneering article exploring the possibility of an alternative compensation system for the music industry. Following Netanel's lead, we might identify four categories of devices and services suitable for taxation: (1) equipment used to make copies of digital recordings; (2) media used to store such copies; (3) services used to gain access to the Internet, either to download files or to stream recordings; and (4) peer-to-peer systems or other services used to share files.²⁶

Exactly what sorts of things fit into each of these categories would, of course, change over time, and one of the responsibilities of the Copyright Office would be to reassess, periodically, how digital entertainment is obtained, stored, and played. Following is a discussion (again, offered purely for illustrative purposes) of what such an analysis, conducted today, might reveal. With respect to each potential tax target, we will estimate the current volume of retail sales. Then, at the end, we will calculate the tax rate that would be necessary to raise, from this base, enough revenue to fund the proposed system.

Currently, the most prominent of the copying devices are CD recorders--including stand-alone units and, more important, the CD burners commonly sold these days as components of personal computers. In 2001, sales of such devices in the United States

generated revenue at the retail level of \$684 million. We'll assume, conservatively, that in 2004 (the first year in which our proposed system could be implemented), that figure will be the same.²⁷

Less visible than CD burners but likely soon to be equally important are personal video recorders (PVRs). Included in this group are separate machines, like TiVo and Replay, as well as devices that accompany satellite or cable receivers. Although sales of PVRs during the past few years have been nowhere near as furious as analysts originally predicted, they are now rising fast. The most plausible current projections of PVR ownership by American households are those made recently by the Yankee Group. They estimate that, in 2003, 3.8 million U.S. households owned PVRs; in 2004, the number will be 7.8 million; in 2005, 13 million; and in 2006, 19.1 million. Note that the difference between the total number of machines projected to be in use in 2004 and the total number in 2003 is 4 million. PVRs currently cost approximately \$200. Thus, if the Yankee Group is right, retail sales of PVRs will generate in 2004 approximately \$800 million in revenue. In addition, purchasers must pay approximately \$10 per month (\$120 per year) for access to the accompanying services. The owners of the 3.8 million extant machines will thus be paying an additional \$456 million for service. Assuming that sales of new machines during 2004 are spread evenly over the course of the year, buyers of those machines would, during the year, spend on service an additional \$240 million. Grand total: \$1.496 billion.²⁸

The most obvious targets in the second category--media used to store digital recordings--are blank CDs. Approximately 1.7 billion were sold in the United States in 2002, up 30 percent from the previous year. A conservative estimate of 2004 sales would be 2 billion. At roughly 50 cents apiece, that would generate retail sales of \$1 billion.²⁹

In the same category are MP3 players. Their primary function is to store (and then perform) sound recordings. The vast bulk of material housed on them consists of copyrighted songs. At least 1.7 million were sold in 2002, and sales are expected to rise by at least 20 percent a year for the next four years. (Sales of iPods alone reached 216,000 in the last quarter of 2002.) Such devices cost between \$150 and \$500. Assuming, conservatively, a mean price of \$250, retail sales of the devices in 2004 would be \$612 million.³⁰

These are only the currently most popular storage systems. Many other, more esoteric devices are already on the market--and will likely become more widespread in the future. For example, the Hewlett Packard "Digital Entertainment Center de100c," which retails for about \$1000, "offers a 40Gb hard drive that can store more than 750 CDs-worth of music, which can be surfed via remote control either on the device display or through a television menu." As such systems multiply, the corresponding sources of tax revenue would increase sharply. For the time being, however, we will exclude them from our calculus.³¹

The most important of the potential tax targets consists of Internet access services. The most efficient way of gaining access to digital entertainment is through the Internet. In addition, peer-to-peer file sharing--the activity that copyright owners claim

has eroded their revenues most severely--is entirely dependent on the Internet. For both reasons, it seems appropriate to secure a substantial portion of the revenue necessary to run the proposed system from ISPs.

Taxing ISP access has another, practical advantage: it is very difficult for a resident of the United States to gain access to the Internet through a foreign ISP. (It would be possible to do so through a dial-up modem account, but the long-distance telephone charges would be prohibitive.) Thus, American consumers would be unable to avoid a tax imposed on domestic ISPs by obtaining service from foreign providers.

Now comes a critical choice: Should taxes be imposed on both modem-based and broadband accounts or only on the latter? Some numbers may help us in answering. In Table 6.1, Veronis Suhler Stevenson provides estimates of the growth of consumer Internet access accounts in the United States during the past five years.³²

Table 6.1 U.S. Internet Access Accounts, 2000-2004

Millions of households with

	DIAL-UP MODEM ACCESS	CABLE-MODEM ACCESS	DSL ACCESS	WIRLELESS OR SATELLITE ACCESS	TOTAL INTERNET ACCESS
2000	38.7	3.3	1.5	0	43.5
2001	42.5	7.2	3.5	0.2	53.4
2002	39.8	11.3	6.8	0.3	58.2
2003	37.3	14.9	9.0	0.5	61.7
2004	34.8	18.0	10.8	1.4	65.0

So which of these groups should we tax? Arguments in favor of taxing subscriptions of all types are

- The resultant tax rate would of course be lower.
- It's possible to download digital files through any type of ISP account.
- If we taxed only broadband subscriptions, we would discourage people from shifting from dial-up to broadband service, causing inefficient distortions in the ISP market.

Arguments in favor of limiting the tax to broadband services (cable, DSL, wireless, and satellite systems) are³³

- Most methods of obtaining recordings over the Internet are inconvenient without broadband access. Downloading audio files over a dial-up account

is time consuming, and downloading video files is almost prohibitively time consuming. Decent-quality streaming also requires broadband speed. As a result, the large majority of file-sharing is currently done by Internet users with broadband access.

- Limiting the tax to broadband services would enable persons who use the Internet only to send email, buy products, or “surf” the Web for information to opt for dial-up accounts and thereby avoid the tax.

On balance, the latter set of arguments seems stronger, but not overwhelmingly so.

The most plausible projections of broadband subscription revenues in the United States in 2004, along with estimates of total revenues in previous years, are shown in Table 6.2.³⁴

Table 6.2 U.S. Broadband Subscription Revenues, 2000-2004.

	Average Annual Subscription			Total Spending (millions)			
	Cable Modem	DSL	Wireless And Satellite	Cable-Modem	DSL	Wireless And Satellite	Total Broadband
2000	\$488	\$720	--	\$1,612	\$1,080	--	\$ 2,692
2001	\$493	\$618	\$514	\$3,551	\$2,163	\$108	\$ 5,822
2002	\$498	\$600	\$546	\$5,627	\$4,080	\$164	\$ 9,871
2003	\$505	\$602	\$550	\$7,527	\$5,422	\$275	\$13,224
2004	\$508	\$606	\$553	\$9,137	\$6,545	\$774	\$16,456

Note that, in 2004, total consumer spending on all forms of broadband access is expected to be approximately \$16.456 billion.

The final tax target consists of Internet-based services that assist consumers in locating or sharing audio and video recordings. At present, the most obvious members of this class are the decentralized peer-to-peer file-sharing services. Their incomes are not large, but are not trivial either. In 2002, the company that owns Morpheus, for example, reportedly collected \$5.7 million in revenues. Fitting such things into the overall tax

scheme would be tricky for two reasons. First, unlike the suppliers of all of the goods and services considered thus far, they make money not by charging consumers directly but through various advertising and promotional schemes. In this respect, they resemble the network television systems discussed in Chapter 2. Consumers end up paying for the services provided by both, but by buying the advertised products, rather than by paying the companies directly. This feature makes it awkward merely to plug their revenues into the overall “tax base” for the new scheme. Second, a substantial portion of their revenues is derived (indirectly) from consumers outside the United States. Thus, determining the portion of their incomes appropriately subject to taxation in the United States is both important and difficult. Both factors would require careful attention when designing and periodically readjusting the proposed taxation system. For the time being, however, the small amounts of money at stake (compared with the other sources of revenue we are considering) justify bypassing these complexities and excluding from our overall calculations the funds that might be raised from this source.³⁵

Putting these various figures together, the projected total tax base in 2004 would be \$0.684 billion plus \$1.496 billion plus \$1 billion plus \$0.612 billion plus \$16.456 billion, for a total of \$20.248 billion. What tax rate would then be necessary to raise \$2.389 billion in revenue? 11.8 percent.

Because it would be applied to a smaller population, this approach would generate per-person tax burdens significantly larger than an income-tax increase. Hardest hit would be broadband subscribers. (Not directly. Administratively, the most sensible approach would be to impose the tax on the ISPs that provide broadband services. But the ISPs would of course raise their subscription rates to offset the tax.) How much, in the end, would the subscribers be obliged to pay? In 2004, the average monthly broadband subscription fee (weighted by the numbers of customers using the various types of service) will be approximately \$45.43. Assuming that the ISPs passed through to consumers the entire amount of the tax, that average fee would rise by \$5.36 per month (\$64.33 per year), to a total of \$50.79 per month (\$609.48 per year).³⁶

As one might expect, the advantages and disadvantages of this second approach mirror those associated with income taxes. On the positive side, a tax on products and services of the sort described above would likely be more popular than an income tax increase. It would be (and would be perceived as) more voluntary--in the sense that one could choose not to purchase the goods or services subject to the tax. In addition, objections of the form, “I don’t want my tax dollars supporting smut,” would be less salient. The tighter fit under this system among (1) each person’s purchases of entertainment-related equipment and services, (2) his or her consumption of entertainment products, and (3) the magnitude of the tax he or she would pay would strengthen the retort: “Your tax dollars don’t support smut unless you consume smut; they only support the creators of the entertainment products that you yourself watch and listen to.”

On the negative side, this approach would be much more cumbersome and expensive. An administrative agency would be obliged to conduct a new survey annually

of the devices and services that enable people to gain access to digital recordings and to recalibrate accordingly the tax rates. Collecting the tax would also be costly. And the visibility of all of these activities would be a constant irritant to people troubled by the idea of governmental involvement in the production and distribution of entertainment.

Finally, a tax on devices and services would likely give rise to more serious distortions of consumers' behavior than would an income tax. For example, some broadband subscribers who dislike both music and movies (in other words, who pay for cable or DSL subscriptions to have convenient access to ecommerce, email, online databases, and the like, not to download or stream entertainment) would be sufficiently price sensitive that they would cancel their subscriptions rather than pay the higher fees caused by the new tax. Similarly, some individuals and companies who use generic blank CDs to back up their data rather than to record music would, when confronted with a 6-cents-per-disc price jump, buy fewer discs--and thus run greater risks of data loss. These effects are clearly unfortunate.

Distortions of the sorts just described could be reduced somewhat if, instead of taxing all devices and services at the same rate, we employed a technique that economists refer to as "Ramsey pricing" (named after the economist who popularized it). The question that this technique was first developed to answer is: What pricing scheme by a multiproduct monopolist would maximize social welfare subject to a profit constraint? (That question was most commonly asked by administrative agencies, like those discussed in Chapter 5, attempting to regulate in socially responsible ways the prices charged by multiproduct monopolists.) The answer: The markup on the marginal cost of each product should be inversely proportional to the price elasticity of demand for that product. Adapting that approach to the problem before us, we would make the tax rates applicable to the various devices and services used to gain access to recorded entertainment inversely proportional to the elasticity of demand for each. Suppose, for example, that consumers saw portable MP3 players as essential to their lifestyles; even a sharp increase in their price would not materially erode sales. By contrast, consumers were much less attached to personal video recorders (like TiVo or Replay); even a modest increase in their price would cause many consumers to rent DVDs instead. We would then tax the MP3 players heavily and the PVRs lightly. This technique, systematically applied, would indeed reduce the distortionary effect of a tax on devices and services. But the pattern of levies it generated would likely be troublesome for other reasons. Consumers would end up paying much more for things they considered "necessities" and only modestly more for things they considered "luxuries." And, at best, this maneuver could only mitigate the problem of behavior distortion, not eliminate it altogether.³⁷

In short, each of the two major tax options has merits and demerits. If an income tax were (or became) politically viable, it probably would be the better of the two approaches. Until then, we would likely have to rely on a tax on devices and services, despite its imperfections.

Measuring Value

The principle on which this pot of money would be distributed among the registrants of audio and video recordings would be the same one that underlies the current system: consumer sovereignty. Somewhat more specifically, our objective would be to make each artist's share of the pot proportional to the total value that, during a given year, consumers derived from his or her creations.

Three separate considerations justify continued adherence to this criterion. First, it would provide appropriate signals to musicians and filmmakers. Only if they know what consumers desire --and know that the sizes of their own incomes depend upon the extent to which their products satisfy those desires--will they be induced, collectively, to produce an optimal mix of music and movies. Second, it would be fair. At least in the view of most Americans and Western Europeans, distributive justice requires giving each person in a collective enterprise (whether it be a project, an industry, or a society) a share of its fruits proportional to his or her contribution to the venture. Applied in this context, that belief justifies adjusting artists' rewards to match their relative contributions to consumers' enjoyment of entertainment products. Finally, it would avoid relying on the judgments of government officials concerning which entertainment products are meritorious and which are not--a system that would invite censorship and political bias.³⁸

Currently, to determine the value that consumers place upon a given entertainment product, we use the price system. In other words, we use consumers' willingness and ability to pay for access to a given product as an indicator of how much they value that product. Under the proposed alternative compensation system, that familiar tactic would be unavailable. One of the system's central features is that consumers would not pay anything (in cash, anyway) for access to entertainment. How then do we gauge the value to them of particular songs and films?

A good (although, as we will see, not perfect) technique would be to count the frequency with which each song or film was enjoyed. Consumers, we can expect, will gravitate toward the products that give them the most pleasure. By observing what they are listening to and watching, we can get a decent sense of what they value. (In effect, something like a price system is at work here. Consumers are paying with their time for particular products. Put differently, the cost to them of watching a particular film is the associated opportunity cost--the pleasure they could reap from watching a different film or engaging in some other activity.)

Would we need to observe and record every instance in which someone listened to a song or watched a movie? No. Our goal, remember, is to estimate the relative value to consumers in the aggregate of each entertainment product. For that purpose, neither a comprehensive count nor perfect accuracy is essential, just a system for determining, roughly, the relative popularity of registered songs and films.

It would be easy to construct such a system for streamed recordings. Noninteractive Webcasters could be required to provide the Copyright Office records indicating which recordings (identified by their registration numbers) they broadcast at

what times--and approximately how many listeners used their services at various times during the day. (As we saw in Chapter 3, Webcasters are already required to collect such data. The proposed reward system would leave that accounting requirement undisturbed. The only difference is that Webcasters would now not be obliged to pay fees to copyright owners.) Interactive Webcasters--that is, Websites that stream music or movies to individuals "on demand"--would similarly keep track of the number of times they supplied to a consumer each registered recording.³⁹

Rates of CD burning would also be reasonably easy to estimate. Sales data for prerecorded CDs, combined with periodic surveys to determine (1) the frequency with which discs of particular genres get copied (presumably lower for classical music than for hip-hop, for example) and (2) the total number of times discs of each genre typically get played, would enable us to predict with sufficient accuracy the consumption rates of particular sets of recordings. As DVD burning becomes more common, a similar technique would be used to estimate the consumption of movies originally distributed in DVD format.

Unfortunately, counting consumptions of downloaded recordings would be harder. Counting the downloads themselves would be straightforward: Websites that make audio or video files available for download could be required to keep track of the number of times each was copied. Similarly, peer-to-peer file-sharing services could be required to provide data concerning the frequency with which particular recordings (each one bearing a unique registration number in its file name) were transmitted through their systems. (The Napster litigation [discussed in Chapter 3] made clear that the gathering of such data is feasible. KaZaA has already volunteered to collect such information and make it available to an appropriate government agency. All of the other file-sharing services could be required to do so--as a condition of immunization from liability for copyright infringement.)

The trouble is that the figure we care about is not the total number of times each recording is copied, but the frequency with which each recording is listened to or watched. Three circumstances make it dangerous to try to derive the latter figure from the former. First, many consumers currently use file-sharing systems to try out music. The ubiquity of this practice is suggested by a study conducted during the early years of Napster by a group of AT&T researchers. Of approximately eight thousand MP3 recordings downloaded through the system by students at Oberlin College during a two-month period in 1999, more than 15 percent were listened to only once, more than 50 percent were listened to less than once (meaning that the downloader began playing the song but concluded, even before it was finished, that he or she didn't like it), and more than 10 percent were never listened to at all. Less than 10 percent of the downloaded songs were played more than four times. Casual conversations suggest that this practice is less common today; file-sharers are more adept at locating and downloading only songs they want to keep. But even if the percentage of songs sampled and discarded has dropped considerably, we should be wary of assuming that, just because a recording has been transmitted through a file-sharing system, someone is regularly watching or listening to it.⁴⁰

The second circumstance also pertains more to music than to film. Ideally, we would like to know how often each recording is listened to, not how many people like it barely enough to keep a copy of it in their collections. If consumers store on their hard drives just as many Doobie Brothers songs as Eric Clapton songs, but play the latter ten times as often, we would want to pay Clapton ten times as much. Counting downloads plainly will not enable us to do this. To be sure, the present system for compensating artists suffers from the same distortion. In the new regime, however, the problem would be worse because consumers, undeterred by the high cost of a complete set of Doobie Brothers CDs, are more likely to have the entire collection gathering virtual dust on the virtual shelves of their computers.

The third problem is that a system of counting downloads would make it discouragingly easy for unscrupulous people to “game” the system. In the simplest version of this tactic, artists could program their computers to download their own registered songs or films continuously, deleting each copy as soon as it was saved. Many more complex schemes can be imagined. Originally, I thought that “ballot-stuffing” of this sort could be kept to manageable levels (though of course not eliminated entirely) by disregarding multiple downloads to a single IP number and by penalizing people who were found to have engaged in such deliberate deception. But I have now been persuaded--largely by vigorous online debate of this issue--that such checks would be ineffectual. As Aaron Swartz notes, “MIT has 16.5 million Internet addresses which a clever student could download the song from, racking up billions of downloads without causing an unusual number of copies from any single address. The student could do it completely anonymously, from an innocuous laptop anywhere on the MIT campus and so could avoid any penalties you tried to impose.”⁴¹

In short, if we want to know how frequently people actually consume downloaded recordings, we need some mechanism other than a raw count of the number of copied files. What could we use?

The option that currently seems most promising would be sampling. Both the strengths and the weaknesses of this technique are well illustrated by the business practices of Nielsen Media Research, the dominant supplier to television networks and local stations of data concerning the number of households that watch particular broadcasts--data that both the stations and advertisers, in turn, rely upon when setting advertising license fees. To gather that data, Nielsen pays rotating, medium-sized samples of households, chosen to be representative of the population as a whole, to report what they watch. The methods by which such reports are made vary. The roughly five thousand households that form the national sample use “People Meters”--sophisticated set-top boxes that keep track not only of the channel to which each television is tuned but also of who within each household is watching the television at a given time, and then automatically transmit that information to Nielsen. The roughly five hundred households that form the sample for each of the fifty-five major local markets use a combination of less sophisticated set-top boxes plus paper diaries, in which viewers record by hand their consumption habits. Finally, the households that constitute the samples for the smaller local markets rely exclusively on paper diaries.⁴²

Overall, this system works remarkably well. Most studies have concluded that the Nielsen estimates of viewing habits are fairly accurate. Nevertheless, the system has three characteristics that reduce its precision. First, the members of the sampled households have to do something in order to register their viewing choices. The burden is slight with respect to the People Meters, but substantial with respect to the paper diaries. Awareness of that burden causes several problems. Some households--especially wealthy households relatively insensitive to monetary incentives--selected by Nielsen to participate in the samples refuse to do so. Within households that do agree to participate, some members refuse or neglect to register their viewing choices. Young and minority viewers apparently are especially likely to opt out. Finally, constant reminders that their choices are being recorded gives rise to a "conditioning" effect, in which viewers alter their behavior in order to affect the aggregate ratings. The second troublesome characteristic of the system is that viewers--particularly those dependent on diaries--can misreport what they watch. Sometimes they do so inadvertently. At the end of the week, when they fill out the forms, they remember the popular well-advertised shows they saw and forget the marginal shows. Sometimes they do so semi-deliberately--for example, by "forgetting" to report pornographic or juvenile programs. The third of the limitations of the system is that the size of the samples is too small. They may have been adequate ten or twenty years ago, when viewers' choices were more limited. But as the programming available through cable and satellite systems has become increasingly diverse, the ability of the system to reflect accurately consumers' choices has declined.⁴³

The Nielsen sampling approach could be adapted for use in an alternative compensation system. Specifically, the Copyright Office could randomly select a set of entertainment consumers who were willing to allow the office to monitor what they actually listen to and watch. The imperfections of the Nielsen model could be avoided (or at least mitigated) through the following, related adjustments. First, the process of gathering data concerning consumers' habits could and should be automated. Software--distributed as "plugins" for playback devices or bundled with peer-to-peer file-sharing applications--would automatically record the registration numbers of the songs and films that sample members heard and watched (all the way through) and periodically transmit that information to the office. Sample members thus would experience no inconvenience and would have few opportunities to misreport their choices.

Next, the size of the sample employed by the Copyright Office would have to be vastly larger than the sizes of the samples used by Nielsen. This would be essential to enable reasonably accurate estimates of the frequency with which each member of an enormous array of songs and films were being consumed. It would be feasible because of the low cost of the automated reporting system.

A final, important constraint on the design of a sampling system: to persuade a representative set of households to permit their consumption patterns to be monitored, one would have to provide them credible assurances of privacy. In other words, they would have to be persuaded that the data the Copyright Office gathered concerning the frequency with which they watched particular films or listened to particular songs would be aggregated when determining the amounts of money paid to artists, would be

discarded after each monthly accounting, and would not be made available to any other public or private entity. If, but only if, the Copyright Office could credibly make such a promise, many people would probably be willing to volunteer. After all, the effect of agreeing to participate is that one's favorite artists would get compensated. But the assurances of privacy would be essential. Otherwise, anyone at all uneasy about making their entertainment choices public would refuse to participate. Unless privacy lovers are perfectly representative of the population at large in their tastes in music and film (unlikely), the result would be distortion of the consumption count.⁴⁴

A system of this sort would avoid the bulk of all three of the kinds of distortion that would afflict simple download counts. Would it be perfect? No. It would still be possible for artists, if they were selected for inclusion in the sample, to set their computers to play their own recordings endlessly (while they were at work), thereby artificially inflating estimates of the popularity of their works. But because the system would only count songs that have been played all the way through, the number of such "false positives" would be limited--and the resultant distortion of the consumption estimates would be tolerable. If a significant number of sample members persisted in this practice, the Copyright Office might modify its guidelines to curb it. For example, it might adopt a rule that no more than three "plays" of a given song and no more than one showing of a given movie within a twenty-four-hour period would be counted. (A minor, probably acceptable side effect of this constraint would, of course, be underpayment of the Beatles if some sample members truly did want to listen to "Yellow Submarine" continuously for eight hours a day.)

To sum up, the most plausible way of estimating the relative values to consumers of downloaded registered recordings would be to use a large-scale sampling system that automatically detects and records what persons willing to participate in such a regime are actually watching and listening to, and that aggregates such reports to prevent government officials from learning the consumption choices made by specific participants. The difficulties associated with this issue should not be underestimated. In particular, worries concerning the temptations to "game" the system justifiably loom large in the criticisms that have been made of all compulsory licensing systems. But the sampling approach seems sufficient to avoid the most serious of the known sources of distortion. Two other factors provide additional sources of solace. First, the large majority of consumers would try to make the system work, not to break it. After all, by disguising their true consumption patterns, they would not change the amount they paid in taxes; they would only prevent their favorite artists from getting their fair shares. Second, this task will get easier over time--as people increasingly consume recorded entertainment not by replaying permanent copies of recordings but through interactive streaming, which prevents far fewer logistical challenges.

Systems of the sorts described above would go far toward providing us information concerning the relative value to consumers of entertainment products. However, even a perfect count of consumption patterns would neglect two important factors--which, if possible, we should strive to take into account. The first is differences in the duration of works. Generally speaking, longer recordings provide more value to

consumers than shorter recordings. The former keep people entertained longer than the latter. Viewed from another angle, the former demand from consumers more of their scarce time than the latter; the fact that consumers are willing to pay that price is indicative of the greater value they derive from the former. Various aspects of the laws and business models that currently govern the entertainment industry reflect sensitivity to this variable. A CD containing three twenty-minute recordings costs the same as a CD containing fifteen four-minute recordings. In effect, the copyright owner of the former earns more per song than the copyright owner of the latter. The mechanical royalties paid to the composers of songs (discussed in detail in Chapter 2) also vary with the duration of the resultant recordings. The current rate is 8 cents for recordings up to five minutes in length, and 1.55 cents per minute (or fraction thereof) for longer recordings. Thus, the composer of a song captured in a twenty-minute recording receives from the record company 31 cents for each copy made and distributed, while the composer of a song captured in a four-minute recording receives approximately one quarter of that amount. Pricing practices with respect to video recordings are not so consistent, but duration does matter to some extent. For example, a DVD or tape containing a short children's film or documentary typically costs less to rent or buy than a DVD or tape containing a feature-length film.

An alternative compensation system could and should incorporate this variable even more precisely. If we wished to give it a great deal of weight, we would multiply the number of times each registered work was listened to or watched by its duration when determining the share of the tax revenues to which each registrant was entitled. (Remember that we collected on the registration form the data necessary to make such adjustments.) But that may be going too far. Is a fifteen-minute version of "Stairway to Heaven" really worth three times as much to listeners as a five-minute Beatles song? Polls and studies of consumer behavior, conducted by the Copyright Office, might suggest a more modest multiplier. The main point is that some adjustment for duration would seem warranted.

Would the result be to induce all musicians to make long songs and all producers to create long films? No. The same forces that constrain the length of recordings today--cost pressure and awareness of consumers' tastes and attention spans--would offset the lure of larger per-consumption fees.

The second factor we risk neglecting is variation in the intensity of the pleasure consumers get from different works. For all three of the reasons outlined at the start of this section, we would want, if possible, to pay more to the creators of recordings that give consumers intense satisfaction than to the creators of recordings that please them less.

With respect to music, this variable is likely to be captured reasonably well in our consumption counts. If I like song number 1 a good deal, I am likely to listen to it often. If I like song number 2 less well, I am likely to listen to it less often. A determination of how frequently a given song is heard will thus be a reasonably good guide to the intensity of the pleasure consumers get from it. Even in the context of music, however, this

correlation will be imperfect. Suppose, for example, I play recordings by Roy Hargrove and Branford Marsalis equally often, but the former I use as background music, while the latter engage my full attention. The greater value to me of Marsalis's music will not be captured in a consumption count.

With respect to movies, consumption data will be an even poorer indicator of consumers' experiences. To be sure, if I love a film, I may watch it more than once. But, of the large majority of films that I watch only once, some will give me a great deal of enjoyment, others relatively little. Refining our estimates of the relative value of different films to consumers would require us somehow to take such variations into account. To be sure, the present system does not. I cannot demand a rebate if, upon emerging from a theatre, I feel that the film I just watched was mediocre. Nor do I ordinarily tip the studio after watching what I consider a great film. But that the present system is crude in this respect does not mean that we should accept similar imperfection in the proposed regime.

So, would it be possible to take intensity of enjoyment into account? The most obvious of the possible mechanisms for doing so would be to ask consumers. In other words, a system based on consumption rates could be supplemented (or, conceivably, replaced) by a voting system. Several scholars exploring the possibility of an alternative compensation system for digital entertainment have considered schemes of this general sort. For example, in the spring of 2003, a small group of lawyers, academics, and musicians met at the Banff Centre for the Arts to continue a conversation begun the previous fall at the Blur Workshop on Power at Play in Digital Art and Culture concerning possible ways of compensating artists whose works are downloaded through peer-to-peer technologies. One of the participants, Jamie Love, subsequently reported the fruits of their discussions in a document known as the "Blur/Banff Proposal." Among its principal features is the following suggestion:

To counter the dangers of government control over allocations, or the lack of legitimacy of elites to allocate funds, there was a proposal that listeners themselves could directly or indirectly decide who received funds. Listeners would not avoid the compulsory licensing fee, but they would decide who would receive the money. There were several variations on this theme including proposals that listeners would choose artists directly or intermediaries that supported musicians.

The role of the intermediaries was discussed at length. There were after all, lots of areas where buyers or sellers now choose intermediaries for various tasks. For example, companies who sell stocks choose exchanges to list shares, and the various exchanges compete against each other for the public's trust. The more the exchange is trusted, the more access to investor support.

It was proposed that intermediaries would compete against each other, offering listeners different alternatives for how the money would be distributed. In this model, each intermediary could propose very different systems, and listeners would decide (and continually re-evaluate) where to

put their money, effectively choosing the groups that did the best job in supporting artists. Anything would be possible. For example, an intermediary might propose to:

1. Give all the money to performances of a specific genre of music, such as African music, American jazz, or performances of classical music
2. Ensure that 15 percent of the revenue supported retired blues artists that are down on their luck
3. Allocate all money on the basis of the volume of downloads
4. Allow the listeners to directly allocate fees to specific artists.⁴⁵

A system of this sort would indeed enable us to track more precisely the values that people place upon digital works. Under such a system, for example, Marsalis would get more of my money than Hargrove.

Voting would not merely enable consumers to identify and reward music they really like, it would also enable them to express preferences of other sorts. As some of the examples set forth in the Blur/Banff proposal suggest, consumers might decide to divert flows of money from artists that they like to hear or watch to artists that they deem “deserving”--for example, because they were pioneers in a particular field or because they are especially needy. Among other things, this power might help to offset what the Blur/Banff discussants refer to as “the Britney effect”--the unfortunate tendency, discussed in Chapter 2, for “most of the money [to go] to a handful of famous artists, making them fabulously wealthy while other artists barely eke out an existence.”⁴⁶

Another potential advantage of such a system is identified by Peter Eckersley. A voting mechanism would likely require simple pieces of hardware and software, which in turn could be configured so as to frustrate ballot-stuffing, a phenomenon that, as we have seen, threatens a usage-based system.⁴⁷

These benefits are considerable, but they are offset by some serious worries. The simplest is that it is notoriously difficult to induce people to vote. Many Webcasters, for example, currently ask their listeners to “rate” the songs that are streamed to them; few listeners take the trouble to do so.

A different sort of worry involves the criteria that consumers might employ when casting their votes. “Giv[ing] all the money to performances of a specific genre of music, such as African music” seems unobjectionable, even commendable. But what if consumers used their power to reward musicians they found physically attractive or personable? One of the features of the current entertainment industry that many artists find noxious is the need they feel to present an attractive persona--through music videos, magazine photos and interviews, and so on--in order to sell records or films. A voting system might increase rather than reduce that problem--and thus exacerbate, rather than alleviate, “the Britney effect.” Yet another possibility, identified by Eugene Volokh, is

that consumers would vote, not for the musicians whose music they most liked, but for political causes. I might decide to devote all of my share of the tax revenues to the National Rifle Association, owner of the copyright in “The Second Amendment Blues,” or the Sierra Club, owner of the copyright in “Tree-Sitting Chants.”⁴⁸

Such an outcome would be unfortunate for two separate reasons. First, it would divert money from the entertainment industry to politicians or lobbying organizations--one of the things that opponents of alternative compensation systems most fear. Second, it would introduce static into the signals that we are trying to provide musicians and filmmakers--indications of the kinds of recordings that consumers like to hear and watch. On balance, therefore, it seems that the hazards of voting systems exceed their potential benefits.

Is there any other way in which we could measure more sensitively the intensity of consumers’ likes (and dislikes)? One possibility, suggested by Steve Shavell, would be to observe the ways in which consumers behave when confronted with the same or similar products in other contexts. For example, from the fact that tickets to the opera commonly cost more than tickets to rock concerts, we might infer that opera provides its devotees more intense satisfaction. Similarly, from the fact that Universal Music recently lowered the suggested retail price of all of its CDs--except those in its classical collection--from \$18 to \$12, one might infer that classical music is more valuable to its listeners than music of other genres. And so forth. These inferences would then be used to adjust the payments made to the registrants of recordings that fell into each category--for example, to give registrants of opera more per consumption than the registrants of rock.

At one, very high level, use of this technique seems to make good sense. When deciding how much of the pot to distribute to the registrants of movies and how much to distribute to the registrants of sound recordings, it’s probably wise to look for guidance, at least for the immediate future, to the ways in which consumers in the aggregate have behaved in the recent past. Specifically, we can and should assume that the relative amounts that consumers spent during the past few years on movies and music fairly reflect the difference in the value they derived, in the aggregate, from those very different forms of entertainment. This guideline, in conjunction with the “make-whole” principle on which the system is founded, argues for maintenance of the shares each sector enjoyed before the new technologies began to undercut their markets. Thus, if our rough estimates of the magnitude of the injuries sustained by each group of copyright owners proved accurate, the Copyright Office in 2004 would divide up the pie as follows: \$527 million (\$479 million, adjusted for inflation) to the owners of copyrights in films; \$168 million (\$153 million, adjusted for inflation) to the owners of copyrights in musical compositions; and \$1.214 billion (\$1.104 billion, adjusted for inflation) to the owners of copyrights in sound recordings.

Past this point, however, the technique seems highly problematic for three reasons. First, as the foregoing examples suggest, it would be possible to employ this method only to differentiate *types* of recordings (opera versus rock music; action movies

versus comedies; and so on), not to differentiate individual songs and films. Determining the relevant categories--and then deciding how to classify individual recordings--would be hard, costly, and controversial. (Are Jackie Chan films best described as action movies, comedies, or something else entirely?) Second, the difficulty of making choices of these sorts would create opportunities for government officials to indulge their biases concerning the relative merits of various types of entertainment--one of the primary hazards of an alternative compensation system. Finally, adoption of this approach would forfeit one of the great advantages of an alternative compensation system as compared to a market system. In the former, unlike the latter, the menu of entertainment products made available to the public would reflect fairly the preferences of all consumers of digital entertainment and would not be tilted toward the tastes of the rich, who are able and willing to pay more for their songs and films.

Once again, therefore, it seems that a technique for tracking more carefully the intensity of consumers' desires, though intriguing, has more costs than benefits. We would be better off relying on the imperfect approach outlined above: a simple consumption count, adjusted to take into account differences in the duration of songs and films.

Derivative Works

It is increasingly common these days for audio and video recordings to incorporate portions of other recordings. The proposed system would make it possible to divide the stream of revenue attributable to such a derivative or composite recording among the various contributors to it. How exactly the division should be made should be left to the Copyright Office. But some illustrative cases may be helpful in identifying general principles that could guide the office in formulating detailed guidelines:

Digital Sampling. Rap musicians frequently take snippets of other songs and rework them into new recordings. (For the reasons explored in Chapter 2, when unauthorized this activity is illegal under current copyright law, but is common nevertheless.) Because the bulk of the creative contribution to the final recording comes from the rap musician, it seems appropriate to give him or her the lion's share of the resultant revenue. That intuition is consonant with (and may reflect) a rough-and-ready utilitarian calculus: giving the original creator a small portion of the revenue would increase incentives for creating works suitable for sampling without eroding substantially the incentives to produce rap music. It also seems fair--using as our guide the criterion of distributive justice outlined above. What formula would serve these ends? Because the sampled sounds typically constitute only a small portion of the final recording, distributing revenue in proportion to the relative durations of the old and new material would seem to do the trick. As always, precision is not essential. The approximations solicited in Question 7 of the registration form would be sufficient.

Expurgated films. Chapter 1 described the increasingly common practice of preparing and distributing versions of commercially released films from which violent or sexually explicit material has been deleted--and argued that, though of questionable legality under current copyright law, this activity is socially valuable and should be

encouraged. How should the revenues attributable to the consumption of such expurgated versions be distributed? All of the material in such recordings has been derived from the original copyrighted film. (Thus the registrant would have checked the last box in Question 7.) Under these circumstances, it would seem fair--and would preserve appropriate incentives for filmmaking--to give the bulk of the revenue to the owner of the copyright in the original film. But not all; the expurgator deserves a reward, and we would want to provide incentives for expurgation. A 75 percent/25 percent split would seem roughly right--the exact numbers to be left to the discretion of the Copyright Office.

Mash-ups. What should happen when an artist combines an audio recording, a video recording, and some new material to create a novel work (of the sort described in Chapter 1)? Suppose, to make the problem concrete, that the new material consisted of more than 5 percent of the final recording, so the registrant thereof checked the next-to-last box in Question 7. The same considerations discussed in the preceding example seem germane. The only difference is that the owners of the copyrights in the underlying audio and video recordings would split (roughly) 75 percent of the resultant revenue stream, leaving the remainder to the masher. (Could the owners of the copyrights in the audio and video recordings object? Not if they had registered their works in the system. The implications for “moral rights” of this feature of the model will be reconsidered shortly.)

So far, we have considered only one layer of derivative works. But once such a system were in place, one would expect to see multiple layers--mashups of expurgated films and rap recordings, and so on. Would the system continue to allocate to each contributor to the final work his or her fair share? Yes, but only up to the point past which the administrative costs associated with tracking each contribution and distributing the resultant money made it senseless to do so. Modern computer technology would place that point well down the road. But, again roughly speaking, once the chain of derivative works became long enough that the share attributable to one of the contributors to an early link dipped below 1 percent, he or she would cease receiving any revenue.⁴⁹

Merits and Demerits

Almost (but not quite) everyone would benefit from adoption of this system. The most direct beneficiaries would be consumers. To see how and how much, bear in mind that the average American household currently spends approximately \$470 per year on purchases, rentals, and subscription access to audio and video recordings. In addition, the members of the average household also “pay” a large (although difficult to calculate) amount for access to recordings on radio and television by listening to or watching advertisements they would rather not hear or see. Against this backdrop, consider how, in the first year of its operation, the proposed regime would affect the three major subsets of consumers.⁵⁰

The group that would benefit most dramatically consists of the 30.2 million households that, in 2004, will already have both computers and broadband access. The new tax would increase their subscription fees during the first year by \$64. But in return,

they would now have convenient ad-free access to unlimited amounts of recorded entertainment for no additional charge. Assuming, plausibly, that they formerly spent at least average amounts on music and films, they would be far better off.

The 34.8 million households that, in 2004, will be connected to the Internet but lack broadband subscriptions would have three choices. They could (A) subscribe to a cable-modem or DSL service, which would increase their annual costs for Internet access from approximately \$221 to approximately \$609 per year--a jump of \$388--and thereby reap the full benefits of the new system; (B) rely upon their dial-up modems and obtain, for no additional cost, ad-free recorded entertainment less conveniently and rapidly than they could through broadband service; or (C) simply continue to buy recorded entertainment in the old-fashioned ways. Options A and B would leave them better off; option C would leave them no worse off.⁵¹

The 44.5 million households that, in 2004, will still not be connected to the Internet would probably end up, on balance, in more or less the same position. They too would still be able to gain access to entertainment in the traditional fashions--buying CDs, renting and buying videotapes, listening to commercial radio, watching commercial television, and so on. In that sense, they would not be injured. They might reap an ancillary benefit from the creation of the new regime: for reasons we will consider shortly, the variety of music and movies in public circulation would likely increase. On the other hand, at least some of those new products would probably only be available online--and thus would be beyond their reach. Bottom line: they would be unlikely to suffer net harm and might even gain.

To be sure, some consumers would have to buy new kinds of electronic equipment to take full advantage of this new system. But Americans are already buying personal computers--the most expensive component of an Internet-based entertainment system--at extraordinary rates for reasons entirely unrelated to obtaining music and movies. Most of the other possible components are not especially costly. And consumers who made the shift would no longer need to buy (and repair) the gadgets necessary to handle the old formats: CD players, VCRs, DVD players, and so on.

From the standpoint of consumers, the new regime would have other advantages as well. Because the marginal cost of entertainment would now be close to zero, they could listen to and watch as many songs and films as they wanted. Using the language of economics, the net result would be a substantial diminution in "deadweight loss" and a corresponding increase in "consumer surplus." Using a less technical vocabulary, the result would be a major change in the "feel" of music and film. We would come to experience recorded entertainment of all sorts the way we now experience the material available on the radio and television. It would be always available, and would seem free. The difference is that the quality and variety of that "free" content would rise sharply and would not be larded with advertisements.

Another major change is that, within the portion of the entertainment market governed by the new system, price discrimination would be eliminated. No longer would consumers be separated into classes, differentiated on the basis of their ability and

willingness to pay for recordings. Now, all consumers would pay the same (low) amount--through taxes on electronic products and services--for audio and video recordings. Should we applaud that effect? For obvious reasons, consumers would benefit. But what about society at large? You will recall that the closing sections of Chapter 4 suggested that, on balance, the sorts of refined price-discrimination schemes made possible by effective encryption systems would be inferior, from a social-welfare standpoint, to the combination of monopoly pricing and second-degree price discrimination practiced by record companies and movie studios today. That conclusion is debatable. But there is no question that uniform, marginal-cost pricing would be better, from a social-welfare standpoint, than either of those strategies.

Finally, as compared either to the current state of affairs or to the reform proposals considered in chapters 4 and 5, the proposed regime would have a large additional advantage for consumers: they could do whatever they wanted with the digital recordings they received. Neither technological nor legal impediments would interfere with their ability to modify to their hearts' content the songs or movies that came into their hands. The potential for semiotic democracy--of the sort considered in detail in Chapter 1--would be enormous.

Artists of all sorts would also benefit in two ways from the new system. First, their incomes would be protected from corrosion. Second, they would enjoy greater artistic freedom and financial independence. The latter effect is easiest to see--and probably would be greatest--with respect to musicians. Chapters 1 and 2 showed how and why most performing artists suffer in the current music industry. Until recently, they could only hope for fame and fortune by entering into long-term contracts with the major record companies. The terms of those contracts typically were onerous. The net result was that only a few stars, heavily promoted by their companies, prospered. Recently, a decline in the costs of musical production has encouraged a growing number of artists to break free of those arrangements and set up shop on their own. But the absence of a plausible business model for selling their recordings directly to fans has limited the number of such defections. The proposed regime would expand the opportunities sharply. In the new environment, musicians could create (at modest cost) their own recordings, set up Websites, and offer their wares to the world at large. Consumers would not pay for the recordings directly. Rather, the musicians would receive royalties through the government--the magnitude of which would depend on the popularity of their music.

An important side effect would be a substantial increase in the variety of recordings available to the public. For the reasons sketched in Chapter 2, the range of entertainment products generated by the major suppliers has been declining recently. The number of films released annually in the United States has been stable in recent years, but many observers think that the variety has been diminishing. Similar narrowing has occurred in the music industry. If distribution by the major intermediaries--record companies and studios--is no longer the only way of profitably providing recorded entertainment to consumers, one can expect the set of suppliers and the kinds of things they supply to increase radically.

In addition, the proposed system would help us to reconcile two goals long considered to be in conflict--facilitating cumulative innovation, and ensuring that pioneers are adequately compensated. Situations involving tensions between those two aspirations arise in many economic and cultural contexts. X develops a new form of air brake for trains and patents his or her invention; Y adds a feature to X's invention, producing a substantially superior braking system. X's novel combines an unusual and intriguing plot with mediocre writing; Y, a better writer, creates a second, more readable novel using the same plot. X develops the first user-friendly computer program for managing spreadsheets; Y develops a functionally superior program with a user interface identical to X's. In each of these instances, we wish to provide X sufficient legal rights to encourage potential pioneers in the future to produce analogous breakthroughs and then to make them available to the public--but also to prevent X from exercising those rights in ways that interfere with the ability of others to improve upon their breakthroughs.

The tools that copyright law provides for dealing with situations like this were reviewed in Chapter 2: the "substantial similarity" test; the "derivative works" doctrine; the fair-use doctrine; and the exclusion of copyright protection for "methods of operation." Those tools have three defects. First, they are notoriously vague. For example, as we saw in Chapters 2 and 3, each instance in which an improver like Y claims that his creation should be deemed a "fair use" of X's copyrighted work must be resolved on an ad-hoc basis by a court. This process is expensive and often unpredictable. Second, the doctrines are poorly designed to identify and excuse improvements upon prior works, rather than mere consumptions of prior works. Finally, these doctrines are capable of generating only one of two outcomes with respect to a given controversy. Either Y's work is deemed an infringement of X's work, in which case Y must pay X a freely negotiated fee for the right to use X's creation, and X may, if he or she wishes, refuse to grant permission at any price--or Y's work is not deemed to be an infringement of X's work, in which case Y is free to distribute his or her improvement to the public and X gets no share of the proceeds. The analogous doctrines in patent law--the rules governing "equivalents," "reverse equivalents," and "blocking patents"--are only slightly more supple.⁵²

For these purposes, the proposed compensation system would work better than either copyright or patent law on many dimensions. As the previous section showed, the creators of composite entertainment products (such as rap music, expurgated movies, and "mash-ups") would, in their registration forms, identify the copyrighted works that they had incorporated into their own products and the total duration thereof. Using that data and some formulae, the revenue stream attributable to each composite product would be divided among the various contributors to it in rough proportion to the relative magnitudes of their contributions. The result would be a cheap, predictable, easily administered system in which both pioneers and improvers are appropriately compensated. As entertainment products that build overtly upon other entertainment products become ever more common and important, this advantage of the proposed system would loom ever larger.

So, artists would benefit financially from the new regime, would become less dependent on a few intermediaries to distribute their recordings, and would enjoy much greater freedom to incorporate into their own products other artists' creations. All to the good. But what about those artists whose creations are appropriated without permission--the director whose masterpiece is sanitized; the singer whose signature recording is incorporated into a motion picture whose message the singer considers loathsome; and so on? Under current copyright law, they (or their assignees) would be able to block the preparation of such derivative works. Under the proposed alternative compensation system, they could not. (They'd make money when the modified forms are distributed, but could not block either their creation or their distribution.) For some artists, the prospect of such a loss of control over the manner in which their works are presented to the public is horrifying.⁵³

They might find some solace in two aspects of the system--one legal, the other technological. First, the proposed regime would leave untouched the rules of trademark law that forbid deceiving consumers concerning the sources of goods and services. Thus, for example, it would violate the Lanham Act to distribute to the public an expurgated version of a Spielberg movie without making clear that it differed from the version Spielberg originally created. (To avoid this legal hazard, one would expect expurgators to insert into the initial credits for their movies disclaimers of the general sort: "This film has been modified from its original version. Sexually explicit language and scenes have been deleted. The creator and copyright owner of the original version are not responsible for these changes.") Second, the Copyright Office registry upon which the new regime would be based would be made available to the general public on the Internet. The result is that any consumer could easily ascertain the composition of any registered audio or video recording--what other recordings it incorporated and how much original material had been added to them. Together, these features would reduce to a minimum the danger that a consumer would mistakenly give a composer, performer, or filmmaker either too much or too little credit for a given work.

Nevertheless, it remains true that artists would, under this regime, lose a good deal of the control they exercise under American copyright law over what happens to their works once they enter the public arena--and that some artists would find that loss painful. A blithe response would point out that this (and only this) aspect of the new regime would be voluntary, insofar as the privilege to make derivative works only applies to audio and video recordings registered in accordance with the new scheme. Thus, artists truly appalled at the prospect of losing creative control could simply refuse to register their recordings and would thereby retain the entitlements they currently enjoy under section 106(2) of the Copyright Statute. But that would not be a fair retort. The new system, if it worked, would be far superior to the existing regime as a mechanism for distributing entertainment products. If they wished to make money or to reach large audiences, most artists would likely feel compelled to use it.

A more severe response would be to assert that, in the new digital environment, musicians' and filmmakers' interests in the integrity of every copy of their recordings are no longer (if they ever were) worthy of protection. After all, artists of many other sorts

are obliged to tolerate revisions and reconstructions of their works. An architect, for example, cannot prevent the owner of one of his buildings from making whatever “alterations” to the structure he wishes--or from subsequently reselling the altered structure to someone else. The rights of a cabinetmaker are similarly limited. Both of those examples involve unique works of art. The interest of a musician or filmmaker in blocking the modification and subsequent redistribution of one among millions of duplicates of his creations seems demonstrably weaker. Finally, and perhaps more important, whatever modest weight the right of integrity might have in this context is more than offset by the competing value of semiotic democracy--of enabling the public at large to participate more actively in the construction of their cultural environment.⁵⁴

A reader unconvinced by this argument might find congenial an ingenious approach suggested by Jamie Boyle. If we wished to preserve some degree of protection for moral rights under the new regime, we might create a separate track within the system for artists reluctant to expose their works to mash-ups, sampling, parodies, and so on. By checking a box on the registration form, registrants could retain the entitlements they currently enjoy to control the preparation of derivative works (entitlements qualified, of course, by the fair-use doctrine). Electing this option would have a price; by checking the box, registrants would agree to be paid only, say, two thirds of the amount to which they would otherwise be entitled under the system. The foregone funds both would discourage artists from taking this tack cavalierly and would roughly compensate the artists who did not choose this option for the diminution in the stock of materials upon which they could draw in the future.

Who else might have cause for complaint? The manufacturers, distributors, and retailers of the containers currently used to store audio and video recordings plainly would. The largest cost savings in the proposed system result from cutting them out. It's thus not surprising that their businesses would be undermined. One could expect Tower Records and Blockbuster to close more stores, and CD and DVD makers to cut back their operations.

The big players in the existing system--the record companies and studios--would not be injured initially. On the contrary, for a few years at least, the proposed regime would help them by replacing the revenues they lose to Internet activities with money transmitted through the Copyright Office. Their longer-term fate, however, would be more in doubt. Marketing and promotion would remain crucial functions in the brave new world. Because the income of a copyright owner would, as before, depend upon the popularity of his or her creations, stimulating consumer demand for a particular song or film would continue to be important. In one scenario, the record companies and studios could capitalize on their marketing experience and power to remain vital and profitable in the new environment. In another scenario, however, they would be outperformed by newer, leaner enterprises, better able to develop and exploit the different kinds of marketing tactics enabled by the Internet. It would all depend upon the flexibility of the existing companies.

What about the manufacturers of consumer electronics and the suppliers of broadband access? Under the second of the two taxation options discussed above, their products would be subject to substantial taxes. Wouldn't that undermine their businesses? Perhaps. But the levies would not be exorbitant--far less, for example, than are imposed on alcohol, cigarettes, and gasoline. More important, the new system would make their products far more valuable to consumers and would thus increase demand for them. Finally, The creation of an alternative compensation system would also eliminate the need for rules--like the CBDTPA and the "broadcast flag" system discussed in Chapter 4--that restrict their freedom in designing their systems. Thus, on balance, they would be better, not worse off.

Finally, society at large would benefit in various ways from the shift to such a regime. The most obvious is that total transaction costs would decrease. There is substantially less law in this model than in any of the models considered in previous chapters. Many of the doctrinal questions that stimulate litigation under the current system--and that would persist in the regimes described in Chapters 4 and 5--would be irrelevant. Should the creation of a temporary buffer accompanying the streaming of an audio or video recording be considered a "public performance," a "reproduction," both, or neither? Should Launch.com be considered an "interactive" or "noninteractive" Webcaster? Millions of dollars currently turn on the answers to such questions. In the proposed system, they would be irrelevant. The results: fewer disputes, fewer lawyers, less social waste. The costs of enforcing rules would also drop sharply. As we saw in Chapter 3, the resources devoted by content providers and society at large to policing violations of copyright law have been rising fast in the past decade. Under the proposed model, they would largely disappear. Nor would content providers bear the costs of developing and deploying encryption systems. To be sure, the proposed regime would not be free. We have estimated, conservatively, that administrative costs during the start-up period would absorb 20 percent of the new tax revenues. But compared with the costs associated with all of the plausible alternatives, that drain would be modest.⁵⁵

At least as important as these economic advantages of the proposed regime would be elimination of the widespread lawbreaking fostered by the current regime. In the spring of 2003, approximately thirty-five million Americans were downloading digital entertainment from the Internet without permission. After the RIAA began its highly publicized campaign to locate and sue individual downloaders, that number dropped sharply. But by the end of the year, at least eighteen million Americans were still engaged in the activity. A side effect (or perhaps the primary purpose) of that campaign has been to increase sharply the percentage of the population that acknowledges the illegality of this behavior. Yet millions continue to do it. That so many people are knowingly violating the law is culturally unhealthy. The reforms outlined in Chapters 4 and 5 would reduce the number of violators considerably, but many people would continue to evade the enhanced legal and technological defenses of copyrights. Even the most optimistic advocates of those reforms concede that they would generate situations analogous to our current efforts to suppress the use of "recreational" drugs. The proposed regime would enable us to avoid this unfortunate state of affairs altogether.

Downloading, copying, and performing audio and video recordings would be lawful--indeed, encouraged by the owners of the copyrights in those materials.⁵⁶

So far, the proposed system looks pretty good. To be sure, we have already discussed two substantial problems to which it would give rise. First, under both of the two plausible taxation options, the fit between the set of people who benefit from the new regime and the set of people who would pay for it would not be perfect--and that misalignment would cause some degree of unfairness and some distortion of consumers' choices. Second, unless tempered with the no-derivative-works option discussed above, it would undermine artists' control over the manner in which their creations are presented to the public. But, with these reservations, the system has many substantial attractions. We're not quite done, however. Two other aspects of the proposal create serious cause for concern.

The more obvious is that the proposed regime would confer on a government agency--most likely, the Copyright Office--a substantial amount of discretionary power. For the reasons explained above, the office would have no control over which artists within each entertainment category received which shares of the pot of revenue allocated to their genre. But the office would determine the total amount of money paid in royalties and the portions given to each type of copyright owner. Moreover, the office would make those determinations on the basis of an unavoidably vague criterion: sustaining a vibrant and flourishing entertainment culture.

To give any institution that much power is problematic. To be sure, we often do it. For example, the National Institutes of Health, the National Science Foundation, the Federal Communications Commission, the Food and Drug Administration, and the Securities and Exchange Commission all enjoy as much or more discretionary authority and shape equally important aspects of our collective lives. But it's nevertheless always cause for concern.

It's especially problematic to give this much power to a government agency that would be subject to strong pressure from representatives of the groups who stand to be affected by its decisions. The RIAA and MPAA are extraordinarily effective lobbying organizations, capable for example of recently persuading Congress to adopt the Copyright Term Extension Act, a statute widely believed to be economically misguided. Wouldn't they be able to turn this new system to their advantage?⁵⁷

This danger is real, but is at least mitigated by two factors. First, the procedural precautions and the appellate mechanism discussed in Chapter 5 would reduce somewhat the vulnerability of the Copyright Office. Second, as was suggested above, the economic power of the primary extant intermediaries (the record companies and studios) may diminish under the new regime. Rather than confronting a tension between a concentrated and well-funded interest group and a dispersed community of consumers, the Copyright Office would, reasonably soon, be called upon to balance the needs of consumers against the needs of a similarly dispersed community of artists. Striking that balance would be difficult, and the office's judgment would not be tightly constrained by the criteria and

methodology we have outlined. But at least the office's judgment would be less likely to be distorted by an imbalance in the power of the various constituencies it serves.

The final disadvantage is that a system of the sort outlined in this chapter--a tax-and-royalty regime instituted only in the United States--would leak across national boundaries. French musicians and filmmakers who registered their recordings with the American Copyright Office would be compensated, out of tax funds collected from American consumers, when those recordings were heard and watched by American consumers. But American musicians and filmmakers would receive nothing when their recordings were heard or watched by French citizens. This effect would likely make American taxpayers justifiably resentful. To be sure, American creators under such a regime would not be significantly worse off than they are at present. In the new world, as in the existing one, it would be illegal, under French copyright law, for French citizens to download American songs and films from the Internet without permission. In the new world, as in the present one, many French consumers would ignore the pertinent legal prohibitions and would fill their hard drives with American entertainment. So the new system would not hurt American producers. But it would also do nothing to strengthen their positions vis-à-vis "foreign pirates." In this respect, it would be less desirable than the set of legal and technological defenses outlined in Chapter 4, which would have the effect of limiting the availability of unauthorized audio and video recordings in other countries as well as in the United States.

To sum up, the advantages of the system include:

- For consumers--large cost savings, more convenient access to more diverse programming uncontaminated by advertisements, freedom from price discrimination, and greater opportunities to participate in the creative process;
- For artists--a reliable source of income, greater freedom in selecting the intermediaries to distribute their work, and expanded opportunities to draw upon existing recordings when making new ones;
- For the manufacturers of electronic equipment--increased demand for their products and the elimination of constraints upon the design of their devices;
- For society at large--a sharp reduction in the costs associated with enforcing copyright law plus elimination of the culturally unhealthy practice of widespread lawbreaking.

Its disadvantages include:

- Cross-subsidies and associated distortions of consumers' behavior;

- Erosion of artists’ ability to control the public presentations of their works (unless the system contains a second track for artists hostile to the reconfiguration of their creations);
- The hazards of administrative discretion and “rent-seeking”;
- Leakage across national boundaries.

Overall, though not perfect, this seems the best of the models we have considered in this book.

The Life Cycle of the System

As we’ve seen, many things would have to happen to get this system off the ground. The Copyright Office would have to be revamped. The registration system would have to be designed and implemented. Congress would have to authorize new taxes. If Congress opted for a tax on devices and services, rather than an increase in the income tax, the Copyright Office would have to conduct extensive hearings to develop data much more detailed and reliable than I have been able to offer here concerning the size and shape of the tax base and the amount of money necessary to offset the injuries that would be sustained by copyright owners as a result of being deprived of their traditional sources of revenue. Once all these pieces were in place, the federal copyright statute would have to be amended to permit consumers to engage in a host of activities that are currently illegal.

What, more specifically, would the necessary revisions of the copyright statute encompass? You will recall, from Chapter 2, that section 106 currently grants the owners of copyrights in musical compositions, sound recordings, and motion pictures an extensive set of exclusive rights. Sections 107 through 118 balance that grant with many exceptions and limitations. Once the regime described in this chapter were operational, Congress could and should add a new provision to the list of exceptions. The new provision (call it section 107A) would permit the following:

Reproduction of a musical composition, sound recording, or motion picture for noncommercial purposes (that is, consumption, not resale);

Preparation of a derivative work of a sound recording or motion picture registered pursuant to the new scheme, provided that the derivative work is also so registered before it is made available to the public;⁵⁸

Distribution of a sound recording (including a musical composition embodied therein) or motion picture via the Internet;

Public performance of a sound recording (including a musical composition embodied therein) via a digital audio transmission;

Public performance of a motion picture via a digital video transmission.

These “safe harbors” correspond, as one might expect, to the methods of accessing and enjoying digital entertainment that the counting and sampling systems described above are designed to track and that determine how the new tax revenues are to be distributed.

A crucial ancillary issue: What would be the role, if any, for digital rights management in this new environment? That issue has three dimensions. First, would a copyright owner be permitted to register an audio or video recording formatted so as to limit the ways or number of times in which it could be copied or altered (such as the sound recordings distributed by Apple through its iTunes Music Store) and then collect money from the government when those recordings were reproduced or performed in ways permitted by the copy-protection system (such as streamed by a Webcaster)? Second, would a copyright owner be permitted to register an unencrypted version of a particular recording but also to distribute to the public, presumably for fees, encrypted versions of the same recording? Third, if a copyright owner opted out of the system entirely, releasing only an encrypted version of his or her recording, would he or she be able to invoke the protections of section 1201 of the Digital Millennium Copyright Act to discourage consumers from “hacking” the encryption system? The answer to none of these questions is obvious; with respect to each, reasonable arguments could be made on both sides. On balance, however, the best answers seem to be the following.

On the first issue, no. One of the main aspirations of the new regime is to foster semiotic democracy and more broadly to free consumers and artists to reproduce, modify, and redistribute recordings. Permitting copyright owners to impose partial restraints on their creations would limit our achievement of that end.

With respect to the second issue, it would seem sensible, at least until the new regime had proven its effectiveness, to permit copyright owners to adopt such a hybrid marketing strategy--for example, to sell copy-protected CDs while simultaneously registering and distributing for free via the Internet unencrypted MP3 versions of the same songs. Certainly, the preservation of this option would help reduce copyright owners' hostility to the adoption of the regime.

For much the same reason, it would seem unnecessary--at least at first--to withdraw audio and video recordings from the protection of the DMCA. Let skeptical musicians and filmmakers continue to use technological self-help measures to restrict access to their creations--and let them continue to call upon the aid of the legal system to protect those measures from hackers. If the new regime is as efficient as we have argued, the skeptics will soon discover that it is simpler, cheaper, and more profitable to register their recordings with the Copyright Office and rely upon distribution of royalties from the government for their source of income.

Those, then, are the primary statutory adjustments that would be necessary to launch the new regime. Unfortunately, that's not the end of the story. Adoption of the proposed section 107A would necessitate amendment of two treaties to which the United

States is a signatory: the Berne Convention and the Agreement on Trade-Related Aspects of Intellectual Property Rights (commonly known as TRIPS). Article 2 of the former extends copyright protection to all “literary and artistic works,” including “musical compositions” and “cinematographic works.” Articles 9, 11, and 12 grant to the “authors” of such works the power to control their “reproduction,” “public performance,” and “alteration.” Article 9 of the TRIPS Agreement, in turn, requires member countries to “comply with Articles 1 through 21 of the Berne Convention.”⁵⁹

Unless modified, these treaty provisions would seem to forbid the curtailment of copyright law necessitated by the proposed regime. With respect to recordings of musical compositions, Article 13 of the Berne Convention allows signatory nations some flexibility: “Each country of the Union may impose for itself reservations and conditions on the exclusive right granted to the author of a musical work, ... but all such reservations and conditions ... shall not ... be prejudicial to the rights of these authors to obtain equitable remuneration which, in the absence of agreement, shall be fixed by competent authority.” It is conceivable that this escape hatch might be sufficient to authorize, vis-à-vis music, the displacement of copyright law with the new reward system. But no such discretion is permitted with respect to cinematographic works. The bottom line: before implementing the proposed regime, the United States would have to obtain a modification of the Berne Convention.

What about domestic law? Would the United States Constitution interfere in any way with the creation of such a regime? It is conceivable that the holder of the copyright in a musical work, sound recording, or motion picture might challenge the proposed abrogation of his statutory entitlements as a “taking” of “property” without “just compensation” in violation of the Fifth Amendment. But such a claim would almost certainly fail. The Fifth Amendment is indeed applicable; intellectual-property rights--including copyrights--are shielded by the Constitution against uncompensated expropriation. But the expropriation effected by the new regime would not be uncompensated. On the contrary, the proposed system is explicitly designed to protect creators, as a class, against injury.

That may well be true, our hypothetical challenger might respond, but not every individual copyright owner would come out equally well under the new regime as he or she would under an unmodified copyright system. Doesn't a particular owner disadvantaged by the transition have a constitutional claim? The courts would likely reject such an argument, relying for precedential support on the failure of an analogous constitutional challenge, during the early twentieth century, to state statutes displacing the increasingly creaky tort system for compensating the victims of industrial accidents with the more efficient administrative mechanism of workmen's compensation.⁶⁰

So much for the establishment of the regime. Once in place, it would begin, quickly, to evolve. The advantages--in terms of cost and convenience--of obtaining audio and video recordings over the Internet would entice growing numbers of consumers to buy the equipment and subscribe to the services necessary to participate in the system and simultaneously to reduce their expenditures on CDs, videotapes, and DVDs. The

resultant reduction of the revenues flowing to copyright owners through traditional channels would, in turn, compel the Copyright Office to increase the volume of royalty payments. Would taxes rise? In the aggregate, certainly. If the method by which the money was raised were an income tax, then the increase in aggregate taxes over time (almost certainly at a rate faster than the growth of the population) would also generate an increase in per-capita taxes. The figure mentioned earlier--\$27 per household, on average--would obtain only during the first year. The number would be larger in each subsequent year, until such time as virtually all audio and video recordings were distributed under the auspices of the new regime.

How high might the taxes go up? Would there ever come a point at which consumers would be paying more, on average, in taxes for access to entertainment than they currently pay under a market-based system? No. The new regime would be substantially more efficient than the present one for several independent reasons. First, it would eliminate the many costs associated with manufacturing and distributing containers (CDs, DVDs, and so on). Second, for the reasons sketched in Chapter 1 and emphasized by May and Singer in their analysis of Internet distribution, the overhead costs and marketing expenses of the major intermediaries would diminish under the proposed regime--in ways that the Copyright Office could and would take into account when making its annual adjustments of royalty and tax rates. Third and finally, the legal costs and R&D expenditures currently borne by copyright owners would decline sharply. (One would expect, for example, the litigation departments of the RIAA and MPAA to shrink rapidly and the budgets for projects like SDMI and P2P spoofing and interdiction virtually to disappear.) Again, those savings would be reflected in the annual accountings conducted by the Copyright Office and thus would mitigate tax increases.⁶¹

A reprise of the calculations outlined earlier in this chapter lends credence to that blanket prediction. Assume that, instead of displacing 20 percent of the distribution systems currently employed in the record industry and 5 percent of the analogous systems in the film industry, the new regime displaced 100 percent of both. Ignore, for the time being, the potential savings, just mentioned, in overhead, marketing, legal expenses, and encryption. Finally, assume, conservatively, no increase in the size of the population over which the taxes would be spread. How much would the average household have to pay in income taxes in order to run the expanded system? Approximately \$254 per year--roughly half of the amount they are currently paying. Note that this is a worst-case scenario; almost certainly, for the reasons just outlined, the number would be lower.⁶²

What if the money were raised, not through an income tax, but through a tax on devices and services? Again, the aggregate tax burden would of course rise over time. But the rate of increase would be partially offset by growth in the number of households purchasing the equipment and services necessary to take advantage of the new system. Indeed, on the assumption that the new regime would fully displace the old one only when close to 100 percent of American households had broadband access, the average tax burden per household under this approach would actually be lower than under the income-tax approach (simply because the total number of households in the United States is larger than the number that pay federal income taxes). Specifically, using the worst-

case assumptions set forth, each household would pay, on average, \$202 per year--or \$16.84 per month--in combined taxes on their Internet subscriptions and purchases of various entertainment-related devices. (Unlike the income tax, these levies would not be imposed on a progressive basis. In other words, poor households would pay approximately the same amounts as wealthy households.)⁶³

If successful, the system might expand over time to cover other forms of digital entertainment. The distribution of electronic books, for example, could easily be brought within its ambit. The electronic-games industry is a bit different, but might be folded into the system with some adjustments. These additions would require a further increase in tax rates, of course, but the benefits of the regime would expand correspondingly.

One change in the structure of the system may be forced by technological advances. At some point in the near future, Americans may cease to gain access to the Internet through individualized ISP accounts. Some other business model may emerge to enable consumers to take advantage of the rapidly developing technologies for connecting to the Internet through wireless networks. If so, running the system through taxes on devices and services--the most important of which are broadband subscriptions--would no longer be feasible. At that point, Congress would have no choice but to change to an income tax. Such a shift would be fair, insofar as, by then, the large majority of taxpayers would be beneficiaries of the regime. For the reasons sketched above, it would reduce administrative costs. And, by then, it might even be politically acceptable.

Finally, the success of the system might prompt countries other than the United States to institute similar systems. Each would impose taxes on its own residents' ISP subscriptions and purchases of electronic equipment. Each would establish a registration system, permitting copyright owners from every country to register audio and video recordings. (Ultimately, these separate national offices might be superseded or supplemented by a global registry for digital works.) Using schemes like those already outlined, each country would estimate the relative frequency with which those recordings were consumed by its residents--and would then distribute its tax revenues accordingly, to both domestic and foreign registrants. An interlocking set of national regimes of this sort would cure the third of the three major disadvantages of a tax-and-royalty system noted in the previous section--namely its tendency to leak across national boundaries. All of the national regimes would continue to leak, of course. But the leaks would occur in both directions--and would fairly reflect the extent to which consumers within one country were relying for their entertainment on works created by artists in other countries.

Coda: An Entertainment Coop

There are many advantages to a governmentally administered alternative compensation system of the sort outlined in this chapter. But what if no government were willing, at least initially, to institute such a system? Could it be created without state aid? In other words, could a voluntary analogue to such a regime be constructed in the shadow

of current copyright law? Yes. If successful, such an enterprise could serve as a demonstration project--reassuring skeptical legislators of the feasibility of a more comprehensive, compulsory, tax-based regime. Alternatively, if successful enough, it might survive indefinitely without governmental aid. This final section sketches such a system, then considers its strengths and limitations.

The registration process for obtaining a unique identification number for a digital version of an audio or video recording would be virtually identical. The form the copyright owner filled out and the process of filing it would be the same. The registration process would differ in only two respects. First, instead of the Copyright Office, the registrar would be a private organization--which (for reasons to be explored shortly) we will call The Entertainment Coop. Second, the registration form would include one additional line: "By registering this work, I authorize all members of The Entertainment Coop to reproduce it for noncommercial purposes, to distribute it to other members, to modify it, to distribute to other members copies of the modified version, and to perform it publicly to other members via a digital audio or video transmission--so long as I am compensated in accordance with the rules and regulations of the coop." In other words, through a license agreement, the registrant would effect the same suspension of copyright law that, in the compulsory regime, would be achieved through law.⁶⁴

By contrast, the source of the funds necessary to run the system would be different. Instead of taxes, the money would come from subscription fees. In other words, if and only if an individual consumer wished to participate in the system, he or she would pay a flat monthly sum. How much? Initially, it would be quite low. As the array of works available through the system increased, the fee would gradually rise--until the monthly payments roughly matched the levels of taxation discussed earlier in this chapter.

The simplest way to collect such fees would be for the coop to enter into partnerships with Internet Service Providers. The ISPs would, in turn, offer their customers two plans: a regular subscription, and a premium subscription that would carry with it membership in the coop. The difference between the prices charged for the two plans would be the current subscription fee for the coop, plus a small margin to induce the ISP to participate. (An especially important subset of ISPs for this purpose would be college and university networks.) Each premium subscriber would receive a password, which would provide him or her access to the various channels (described below) through which registered entertainment products would be made available. The passwords would be changed frequently to reduce unauthorized access to those channels.

Like the Copyright Office under a compulsory alternative compensation system, the Entertainment Coop would maintain a publicly available directory of all registered recordings and their corresponding registration numbers. But the coop could and should also provide its members several additional services. First, the coop would maintain on its servers--or, more plausibly, on a variety of servers run by other organizations licensed by the coop--copies of all registered recordings (in a variety of formats), which members could download to their own computers upon submitting their passwords. Next, the coop

would license Webcasters to stream registered recordings to coop members. Some of those streams would be noninteractive--like the History Channel or the collection of Webcasters currently housed under the umbrella of Live365.com. Some would be interactive, providing streams of audio and video recordings to users on demand. Many of those services would be free. For access to others (especially interactive ones), members would likely have to pay a fee--but a small one, because the services themselves would not be paying the coop for the content they would be distributing. Finally, the coop would provide its members a variety of informational services--discussion boards, reviews of recently registered films and music, devices (like Gigabeat or MusicMatch, discussed in Chapter 1) that would assist members in finding recordings or services likely to match their tastes or needs.

The management of some of these services would be top-down. For example, a “disc jockey” interested in Webcasting progressive jazz would obtain from the coop a license to use any of the recordings in the coop registry. (The “price” of that license, as indicated above, would be merely a commitment to limit access to the Webcast to coop members.) The “disc jockey” would then select the sequence of cuts, perhaps add some commentary and some recorded interviews with musicians, and begin streaming.⁶⁵

But other services could and should be organized on a bottom-up basis. For example, the selection of recordings included in some of the noninteractive Webcasts would be made, collaboratively, by their respective listeners or viewers--in other words, by subsets of the coop members. The best model for the mechanism that would make this possible is the pioneering Website “Slashdot.” Yochai Benkler summarizes as follows the pertinent aspects of the system:

Billed as “News for Nerds,” Slashdot primarily consists of users commenting on initial submissions that cover a variety of technology-related topics. The submissions are typically a link to an off-site story, coupled with some initial commentary from the person who submits the piece. Users follow up the initial submission with comments that often number in the hundreds....

Slashdot implements an automated system to select moderators from the pool of users. Moderators are selected according to several criteria: They must be logged in (not anonymous), they must be regular users (average users, not one-time page loaders or compulsive users), they must have been using the site for a while (this defeats people who try to sign up just to moderate), they must be willing, and they must have positive “karma.” Karma is a number assigned to a user that primarily reflects whether the user has posted good or bad comments (according to ratings from other moderators). If a user meets these criteria, the program assigns the user moderator status and the user gets five “influence points” to review comments. The moderator rates a comment of his choice using a drop-down list with words such as “flamebait” and “informative.” A positive word increases the rating of a comment one point and a negative

word decreases the rating one point. Each time a moderator rates a comment, it costs the moderator one influence point, so the moderator can only rate five comments for each moderating period, which lasts for three days. If the user does not use the influence points within the period, they expire. The moderation setup is designed to give many users a small amount of power--thus decreasing the effect of rogue users or users with poor judgment. The site also implements some automated “troll filters,” which prevent users from sabotaging the system. The troll filters prevent users from posting more than once every sixty seconds, prevent identical posts, and will ban a user for twenty-four hours if the user has been moderated down several times within a short time frame.

The system is powerful and popular. Tens of thousands of people serve as volunteer editors. Hundreds of thousands read the posted stories and comments. Its rating and filtering system is widely recognized as a success.⁶⁶

As Todd Larson suggests, a system of this general sort could be adapted for use in the Webcasting context. A group of coop members interested in a particular genre--say, samba or “alternative country”--could form a group dedicated to managing a noninteractive stream of music of that sort. Each member could submit recordings. Using a variant of the Slashdot mechanism and software, other group members would rate submitted recordings--and rate their fellow members’ evaluations. Members’ rating power would rise or fall depending on the extent to which their judgments found favor with their compatriots. Whether--or how often--recordings were included in the Webcast would then be determined by their weighted ratings. Any coop member, not just the participants in the club, could listen to the stream. Similar techniques might be employed to generate and sort reviews of newly registered recordings and Gigabeat-style guides for members seeking to expand their entertainment horizons.⁶⁷

The mechanisms that the coop would use to measure the relative frequency with which registered recordings were consumed by its members would closely resemble the mechanisms that the Copyright Office would employ in a compulsory system. Suppose, for example, that Joshua Redman submitted his next set of jazz recordings. He would receive a unique registration number for each track. The operators of each of the Websites where the recordings were posted would then periodically report the number of times they had been downloaded. More important, software distributed for free to all coop members would periodically “call the mothership” to report the number of times the downloaded tracks--and all other registered recordings--had been listened to (from beginning to end). Similarly, Webcasters operated or licensed by the coop would report the number of times each track was streamed and the approximate size of the audience for that stream.

The simplest way of disbursing the funds collected through the system would be to employ exactly the same usage-based approach described earlier as the most attractive mechanism for distributing tax revenues. But the voluntary character of the coop might

make more palatable some of the voting mechanisms discussed (and criticized) previously in this chapter. For example, one could imagine organizing the system so that a portion of the funds (how large a portion will be considered shortly) was distributed on the basis of relative consumption data, while the remainder was distributed on some other basis.

It would probably make most sense to organize the system as a nonprofit corporation. Its charter would set forth the design features described above. It would be administered by a traditional board of directors. In practice, however, the organization could and should function as a special kind of cooperative society. To see how and why requires some background.

There are two main kinds of cooperative enterprises. Producer cooperatives consist of firms owned and operated by the people who supply the labor or the raw materials for the products that the firm sells. The profits of such an enterprise are typically shared among its members. The most famous of these consist of the enterprises clustered in Mondragon, Spain, but others (such as traditional law firms) are scattered through modern capitalist economies. Consumer cooperatives consist of clusters of people who regularly buy a particular type of goods (such as groceries or hiking equipment) who band together to buy the goods in bulk (thereby getting better prices) and more generally to “defend and promote consumers’ interests.” Typically, they redistribute to their members (in the form of “dividends”) the amount by which the members’ contributions exceed the costs of the enterprise. Consumer cooperatives come in various shapes and sizes, but the ones that flourished in the United States in the 1960s and 1970s had an additional feature: the coop members, typically working together as volunteers, assumed many of the functions ordinarily performed by employees of retailers--selecting products, negotiating with suppliers, packaging products, stacking shelves, and serving as cashiers. Crucial to the success of most enterprises of both sorts is a spirit of cooperation, of common commitment to an enterprise (and sometimes a cause). In addition, most enterprises of both sorts are to some extent steered by their members--meaning that some of their rules and decisions are determined by their members, voting either directly or through representatives.⁶⁸

Our proposed Entertainment Coop would incorporate some (though not all) features of traditional cooperatives of both types. The suppliers of the registered recordings would not own the enterprise, but, like the contributors to a producer cooperative, they would share its profits. Partly as a result, one could expect them to strive to nourish the enterprise--by encouraging their fans to participate, by exhorting other artists to sign up (thus helping to produce a critical mass of recordings), by providing interviews or other material for the ancillary informational services, and so on. Like the members of (American-style) consumer cooperatives, the members of the Entertainment Coop would help to shape and distribute its products--by participating, as volunteers, in Slashdot-style rating systems that would help determine what recordings were delivered to other members. An increasing percentage of the participants in the enterprise would perform both roles: they would combine material drawn from the stock of registered recordings with their own material to generate derivative works, which they

in turn would register. Thus, over time, the distinction between contributors and consumers would blur.

Would the Entertainment Coop, like some traditional cooperatives, be run democratically? In other words, would its contributors or members have any say in its policies? Among the reasons for structuring the organization so as to provide them that opportunity is that it would reinforce its participatory, communitarian ethos--likely one of its main attractions. But there are hazards along this path. For example, contributors might be inclined to exercise their voting power so as to limit expenditures on the kinds of services described above and thus maximize the percentage of the organization's revenues that ended up in their own pockets. (Producer cooperatives are notoriously vulnerable to this particular disease.) Thus, if democratic procedures were incorporated into the organization, checks and balances and "constitutional" constraints analogous to those that stabilize the American system of representative government should also probably be included. For example, one might embed in the charter of the organization a provision, immune to revision through the votes of the members, that two thirds of the coop's profits must be distributed on the basis of the relative popularity of the registered recordings. One might further specify that, with respect to the distribution of the remaining one third, deviation from the relative-popularity criterion would occur only upon the affirmative consent of majorities both of the contributors and of the consumer members.⁶⁹

A voluntary organization of the sort just sketched would have many of the advantages of a compulsory, tax-based alternative compensation system. In addition, it would be a good deal less controversial--precisely because it would be voluntary. Who could persuasively object to the formation of a new funding and distribution agency, whose success or failure would depend entirely upon whether individual artists and consumers thought it superior to the existing agencies?

Such an organization would, however, be less good than a compulsory regime in two ways. First, it would leak. Sooner or later, despite the password protections on the coop-affiliated Websites and streams, the files made available to coop members would find their way into peer-to-peer systems unaffiliated with the coop and accessible to the world at large. When the files were shared in that environment (illegally), the artists would not receive any compensation. Knowing this, why would artists be willing to participate in the system? In part because they would be no worse off that they are under the present regime--in which "ripped" versions of their recordings are already available on the peer-to-peer networks. In part, because they would gain a new stream of revenue--the volume of which would gradually increase as the number of subscribers rose. And in part, because they would gain thereby the right to make creative use of the digital products submitted to the coop by other artists. Nevertheless, in this respect, a voluntary regime would plainly be worse than a compulsory, tax-based regime, which would not be subject to any "leakage."

Second, it would be both crucial and difficult, as was suggested parenthetically above, to persuade enough musicians and filmmakers to sign up for the system in order to

provide a sufficiently large stock of recordings to attract consumers. After all, the coop would have to compete with the a-la-carte for-profit distribution services, such as the iTunes Music Store and the new Napster, each of which can already offer consumers several hundred thousand recordings. To be sure, the coop would have other advantages. Unburdened by the transaction costs associated with micropayments, its prices would be lower than those of the commercial sites. And many consumers would likely be attracted by the image of an organization that promised to distribute to its contributors all of the amount by which its revenues exceeded its operating costs. But these attractions would only go so far. In the end, the coop could survive only if very large numbers of artists signed on.

How might that be achieved? One strategy would be for a consortium of public and private actors to prime the pump. As it happens, in Brazil, something of that sort is already occurring. A group of scholars and musicians, led by Ronaldo Lemos and Joaquim Falcao, with the crucial support of Gilberto Gil, the Brazilian minister of culture, has begun to build a digital library of Brazilian music, to be called Canto Livre. To date, the organizers have focused most of their attention on gathering recordings sufficiently old that the copyrights in them have expired. (In Brazil, old music enjoys greater respect and popularity than it does in the United States.) With respect to that material, no one needs to be compensated when copies are deposited in the library and made available to the world. Soon, however, they will begin to offer the owners of the copyrights in more recent recordings fees in return for contributing their creations to the pot. Where will the money necessary to provide those incentives and then run the system come from? Initially, from a government agency (Financiadora de Estudos e Projetos, the Brazilian equivalent of the National Science Foundation) and from private and state-owned corporations, whose generosity has been stimulated by commitments from the national government to afford them partially offsetting tax exemptions. But Minister Gil has made clear that, soon, the library must stand on its own feet, financially. How might it do so? Through the formation of a voluntary, subscription-based entertainment coop of the sort outlined in this section. Efforts to launch such a venture have already begun.⁷⁰

We thus end where we began--not in the United States, the jurisdiction that has occupied our attention for most of this journey, but in Brazil. In 2000, the popularity of the Napster system in that country was an indicator of the character and severity of the crisis about to overwhelm the music and film industries. In 2004, cultural and political conditions there may provide us, fortuitously, an opportunity to test one of the most promising solutions to that crisis. Stay tuned.

Notes

1. Classic presentations of this argument can be found in Jeremy Bentham, A Manual of Political Economy (New York: G.P. Putnam, 1839); John Stuart Mill, Principles of Political Economy 5th ed. (London: Longmans, Green & Co., 1909), 932-33; A.C. Pigou, The Economics of Welfare, 2d ed. (London: Macmillan & Co., 1924); and J. G. Head, "Public Goods and Public Policy," Public Finance 17 (1962): 197-221. Ronald Coase once argued that the parable of the lighthouse was misleading--that private parties had been able to construct lighthouses and operate them at a profit without state aid. See "The Lighthouse in Economics," Journal of Law and Economics 17 (1974): 357-76. It turns out, however, that Coase misinterpreted the relevant history. See David E. Van Zandt, "The Lessons of the Lighthouse: 'Government' or 'Private' Provision of Goods," Journal of Legal Studies 22 (1993): 47-72; and Steven Shavell, "The History of Lighthouses as Public Goods" (unpublished paper, February 1996).

2. See Paul A. David, "Intellectual Property Institutions and the Panda's Thumb: Patents, Copyrights, and Trade Secrets in Economic Theory and History," in Mitchel B. Wallerstein, Mary Ellen Moge, and Roberta A. Schoen, eds, Global Dimensions of Intellectual Property Rights in Science and Technology (Washington: National Academy Press, 1993), 19, 27; and John M. Golden, "Biotechnology, Technology Policy, and Patentability: Natural Products and Invention in the American System," Emory Law Journal 50 (2001): 101-189.

3. The British example is described in Dava Sobel and William J. H. Andrewes, The Illustrated Longitude (New York: Walker, 1998): 63-73. The Soviet and Chinese systems are described in Haifeng Huang, "Reward System as an Alternative to Patent System: A Comparative Study of Chinese Experience" (unpublished paper 2003). The treatment in the United States of inventions relating to atomic energy is described in Stefan A. Riesenfeld, "Patent Protection and Atomic Energy Legislation," California Law Review 46 (1958): 40-68. On Madison's initial proposal that the new American nation use governmental rewards rather than patents to foster innovation, see Edward C. Walterscheid, "To Promote The Progress of Science and Useful Arts: The Background And Origin of the Intellectual Property Clause of the United States Constitution," Journal of Intellectual Property Law 2 (1994): 1-56. The principal subsequent proposals for more extensive use of a reward system are: Robert Andrew Macfie, The Patent Question under Free Trade: A Solution of Difficulties by Abolishing or Shortening the Inventors' Monopoly, and Instituting National Recompenses, 2d ed. (London: W.J. Johnson, 1863); Robert Andrew Macfie, The Patent Question in 1875: The Lord Chancellor's Bill, and the Exigencies of Foreign Competition (London: Longmans, Green & Co., 1875); Michael Polanyi, "Patent Reform," Review of Economic Studies 11 (1944): 61-76; Michael Kremer, "Patent Buy-Outs: A Mechanism for Encouraging Innovation," NBER Working Paper No. 6304 (1997), <http://www.nber.org/papers/w6304>; Steve Calandrillo, "An Economic Analysis of Property Rights: Justifications and Problems of Exclusive Rights, Incentives to Generate Information, and the Alternative of a Government-Run

Reward System,” Fordham Intellectual Property, Media and Entertainment Law Journal 9 (1998): 301-360; and Steven Shavell and Tanguy van Ypersele, “Rewards versus Intellectual Property Rights,” Journal of Law and Economics 44 (2001): 525-47. Details of several of these recommendations will be considered later in this chapter.

4. The state boat-hull protection statutes were declared preempted by patent law in Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989). The resultant gap in the protections enjoyed by novel vessel designs has now been filled (in a different way) by 17 U.S.C. §§1301-1332.

5. On the defects of strategies one through three, see Mill, Principles of Political Economy, 933. On the defects of strategy four, see Kenneth J. Arrow, “Economic Welfare and the Allocation of Resources for Invention,” in The Rate and Direction of Inventive Activity: Economic and Social Factors, Report of National Bureau of Economic Research, Special Conference Series 13 (Princeton: Princeton University Press, 1962), 609-25. On the defects of strategy five, see Robert G. Bone, “A New Look at Trade Secret Law: Doctrine in Search of Justification,” California Law Review 86 (1998): 241-313. For an effort to assess the merits of the five strategies in different contexts, see Nancy Gallini and Suzanne Scotchmer, “Intellectual Property: When Is It the Best Incentive System?,” in Adam Jaffe, Josh Lerner, and Scott Stern, eds., Innovation Policy and the Economy 2 (Cambridge MIT Press 2002), 51-77.

6. See Declan McCullagh, “RFID Tags: Big Brother in Small Packages,” CNET News.com, January 13, 2003, <http://news.com.com/2010-1069-980325.html>.

7. A mechanism for making explicit one’s intention to devote a recording to the public domain is available at <http://www.creativecommons.org>.

8. Remember, from Chapter 2, that one acquires a copyright nowadays merely by expressing in a tangible medium of expression a work having a minimal degree of originality. Registration of one’s work with the Copyright Office is not a prerequisite--although one must do so before bringing suit against a copyist. Thus, the process of seeking an ordinary copyright registration from the Copyright Office and the process of registering one’s work for the purposes of the compensation system described in this chapter could and probably should be independent of one another. A creator could do one without the other or one before the other. It would probably be simplest, however, to enable and encourage creators to do both simultaneously.

9. There are some potential complications. If a rap artist takes a small slice from another registered recording (say, a five-second bass riff) and then plays it twenty times in the background of his own recording, should he report inclusion of five seconds or one hundred seconds of material? If a filmmaker takes a thirty-second slice from another registered film but removes the audio track and adds a new one, should he report inclusion of thirty seconds of material or something less? Decent arguments could be made for either result in both cases. Rules governing these (and many other unanticipated complications) could and should be developed by the Copyright Office. My own preliminary answers would be: providing appropriate stimuli and rewards for creativity

would be best served by treating the first case as the incorporation of five seconds of material and the second case as the incorporation of thirty seconds of material.

10. Shavell and van Ypersele, "Rewards versus Intellectual Property Rights," 530.

11. Arnold Plant, "The Economic Theory Concerning Patents for Inventions," 1 Economica 30 (1934): 30-51; Glynn S. Lunney, Jr., "Reexamining Copyright's Incentive-Access Paradigm," Vanderbilt Law Review 49 (1996): 483-656.

12. The quotation from MacFie may be found in The Patent Question under Free Trade, 41. For the struggles of natural-law theorists to solve the problem of "proportionality," see Robert Nozick, Anarchy, State, and Utopia (New York: Basic Books, 1974), 175; Alan Ryan, Property and Political Theory (Oxford: Blackwell, 1984), 32-35; Wendy J. Gordon, "A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property," Yale Law Journal 102 (1993): 1533, 1565-70; R. Anthony Reese, "Reflections on the Intellectual Commons: Two Perspectives on Copyright Duration and Reversion," Stanford Law Review 47 (1995): 707, 710-12; and Alfred Yen, "Restoring the Natural Law: Copyright as Labor and Possession," Ohio State Law Journal 51 (1990): 517, 546-57.

13. Fritz Machlup, "An Economic Review of the Patent System," Study No. 15 of Subcomm. on Patents, Trademarks, and Copyrights of the Senate Comm. on the Judiciary, 85th Cong. 2d Sess. (1958), 80.

14. See RIAA, 2003 Yearend Statistics, <http://www.riaa.com/news/newsletter/pdf/2003yearEnd.pdf>. For the portion of total retail sales earned by the record companies, see the Appendix.

15. See Neil Netanel, "Impose a Noncommercial Use Levy To Allow Free Peer-to-Peer File Sharing," Harvard Journal of Law & Technology 17 (2003): 1, 48; Stan Liebowitz, "Will MP3 Downloads Annihilate the Record Industry? The Evidence So Far," in Advances in the Study of Entrepreneurship, Innovation, and Economic Growth, ed. Gary Libecap (Greenwich, CT: JAI Press, 2003), http://www.pub.utdallas.edu/liebowit/knowledge_goods/records.pdf; and Stan Liebowitz, "Policing Pirates in the Networked Age," Cato Policy Analysis No. 438 (May 15, 2002), <http://www.cato.org/pubs/pas/pa438.pdf>. Recently, a continued decline in CD sales prompted Liebowitz to revise his estimates. See Drew Clark, "Research Alters Expert's View on Impact of File Sharing," National Journal's Technology Daily, January 31, 2003. He now predicts that file sharing "eventually could cost the recording industry up to 25 percent of its revenues." He has not, however, suggested that an injury of that magnitude is imminent. The data concerning the decline in album sales (CDs, cassettes, LP albums, and Audio DVDs) between 2000 and 2003 were derived from the RIAA, 2003 Yearend Statistics. Explanations for that decline other than the corrosive effect of unauthorized copying and distribution are presented in Liebowitz, "Will MP3 Downloads Annihilate the Record Industry?," 18-26.

16. For documentation of the estimate that 15 percent of the record companies revenues go toward manufacturing costs, see the Appendix. For May and Singer's projections, see "Unchained Melody," The McKinsey Quarterly, 2001, Number 1, 128, 130.

17. The figure set forth in the text (\$691 million as the total amount of American phono-mechanical license fees in 2000) is derived from National Music Publishers Association (NMPA), Eleventh Annual International Income Survey--2000, 7-8, Table 1, available at <http://www.nmpa.org/nmpa/survey11/NMPA2002Survey11thEdition.pdf>. (The appendix to that report (p. 37) indicates that that amount of money was actually "paid to copyright owners of musical compositions." Presumably, therefore, it excluded the fee of between 5 percent and 5.75 percent charged by the Harry Fox Agency for processing those payments. See <http://www.harryfox.com/hfacommission.html>.) Roughly the same number is generated by multiplying the gross revenues of the music companies (\$7.35 billion) by 8 percent (the portion of those revenues that the Appendix estimates are typically paid to the assignees of the composers): \$588 million. That these two numbers are reasonably close provides some independent support for the analysis in the Appendix. The first of the two figures--because it is supplied by the recipient of the funds--is undoubtedly the more accurate of the two, so we will use it when estimating the injuries that the publishers might sustain as a result of the establishment of the proposed regime.

18. See NMPA Report, 7, Table 1.

19. The data concerning retail sales and rentals of videotapes and DVDs come from Alexander and Associates, "Video Flash: Historical Data," <http://www.alexassoc.com/video/videoflash/history02.shtml>. A slightly lower estimate can be found in Veronis Suhler Stevenson, Communications Industry Forecast, 17th ed. (Media Merchant Bank, July 2003). Veronis Suhler Stevenson also provides the following projections of the growth of this figure through the present: \$21.063 billion in 2000; \$23.008 billion in 2001; \$24.424 billion in 2002; \$27.503 billion in 2003; and \$29.882 billion in 2004. The estimate of \$7.8 billion as the portion of the retail revenues that, in 2000, went to the studios is derived from Harold L. Vogel, Entertainment Industry Economics: A Guide for Financial Analysis, 5th ed. (Cambridge, MA: Cambridge University Press, 2001), 62 (Table 2.8). Vogel's estimate is reasonably consistent with Compaine and Gomery's contention that approximately 40 percent of home-video revenues ends up in the hands of the studios. Benjamin M. Compaine and Douglas Gomery, Who Owns the Media? Competition and Concentration in the Mass Media Entertainment Industry, 3rd ed. (Mahwah, NJ: Lawrence Erlbaum Associates, 2000), 412.

20. The first figure is provided by Veronis Suhler Stevenson, Communications Industry Forecast, 219, which goes on to estimate and predict premium-channel revenues for 2001 as \$7.971 billion; for 2002 as \$8.588 billion; for 2003 as \$9.143 billion; for 2004, as \$9.579 billion; for 2005 as \$10.283 billion; and for 2006, as \$11.040 billion.

The rough division of the spoils is reported in Compaine and Gomery, Who Owns the Media?, 408-09.

21. A rough estimate of this figure may be found in Compaine and Gomery, Who Owns the Media?, 408-09. A more precise estimate, from which we derive the number used in the text, is provided by Veronis Suhler Stevenson, Communications Industry Forecast, 224. Total payments in 2001 were \$1.828 billion, and in 2002, were \$2.1 billion. Veronis Suhler Stevenson predicts that the market will continue to grow, but that its increase will be curbed to some extent by the expansion of video-on-demand. Specifically, it projects total payments of \$2.18 billion in 2003, \$2.257 billion in 2004, \$2.328 billion in 2005, and \$2.44 billion in 2006. The estimates offered in the text of the percentages of premium-channel and pay-per-view revenues that eventually go to the studios are awfully slippery, but fortunately, we have some corroboration. Harold Vogel reports that, in 2000, the studios collected from all “pay cable” sources--presumably including both premium channels and pay-per-view services -\$1.6 billion (Entertainment Industry Economics, 62, Table 2.8). Our own estimates produce a total of \$1.818 billion. Because that figure is more conservative (i.e., higher) we will use it for the purposes of these calculations.

22. See M. William Krasilovsky and Sidney Shemel, This Business of Music, 8th ed. (New York: Billboard Books, 2000), 151, 153 (reporting the 16 percent overhead figure); Barry M. Massarsky, “The Operating Dynamics Behind ASCAP, BMI and SESAC,” Coalition for Networked Information (July 3, 2002), <http://www.cni.org/docs/ima.ip-workshop/Massarsky.html> (reporting ASCAP’s overhead charge as 18 percent); and Robert P. Merges, “Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations,” California Law Review 84 (1996): 1293. The Department of Labor reports that inflation, measured by the Consumer Price Index, was 2.8 percent between 2000 and 2001, 1.6 percent between 2001 and 2002; and 1.3 percent in the first half of 2003. See <http://www.bls.gov/cpi/cpid01av.pdf>; <http://www.bls.gov/cpi/cpid02av.pdf>; and <http://www.bls.gov/cpi/cpid03fv.pdf>. For estimating inflation through the end of 2004, we’ll assume that the CPI again rises 1.3 percent during the second half of 2003 and during the first and second halves of 2004. Total inflation for the period 2000-2004 would thus be 9.98 percent.

23. See National Aeronautics and Space Administration, President’s FY2004 Budget Request, http://www.nasa.gov/pdf/2167main_04budget_sum_030227.pdf; National Science Foundation, FY2005 Budget Request, <http://www.nsf.gov/home/budget/start.htm>; James Glanz, “Loss of the Shuttle,” New York Times, Section A, Page 1; Column 1, Scott Nance, “Lawmaker Calls for More Aerospace Research,” Defense Week, February 18, 2003.

24. For the data on the total number of households that file tax returns, see Peter Orszag and Matthew Hall, “Nonfilers and Filers with Modest Tax Liability,” <http://www.taxpolicycenter.org/research/Topic.cfm?PubID=1000548> (the total number of “tax units” minus the total number of “nonfilers” minus nontaxable filers is 87,284,000).

25. For a general analysis of the distortionary effects of income taxation, see Joseph E. Stiglitz, Economics of the Public Sector, 3rd ed. (New York: Norton, 2000), 535-48. The magnitude of those effects is controversial. For a survey (and reassessment) of the literature that regards them as modest, see Arthur Snow and Ronald S. Warren, Jr., "The Marginal Welfare Cost of Public Funds: Theory and Estimates," Journal of Public Economics 61 (1996): 289. For a sharply different view, contending that, when one takes into account the effect of a tax on "education, occupational choice, effort, location, and all of the other aspects of behavior that affect the short-run and long-run productivity and income of the individual," deadweight losses may exceed in magnitude the amount of revenue raised by the tax itself, see Martin Feldstein, "How Big Should Government Be?," National Tax Journal 50 (1997): 197, 208-12. Louis Kaplow's demonstration that the distortionary effect, whether large or small, will not arise if the proceeds of the tax are devoted to the production of a public good, the benefits of which match the incidence of the tax itself, is set forth in "The Optimal Supply of Public Goods and the Distortionary Cost of Taxation," National Tax Journal 49 (1996): 513-33; "A Note on the Optimal Supply of Public Goods and the Distortionary Cost of Taxation," National Tax Journal 51 (1998): 117-25; and "On the (Ir)Relevance of Distribution and Labor Supply Distortion to Public Goods Provision and Regulation" (Working Paper 2004). The intuition that underlies Kaplow's formal argument is especially plausible in this particular context. For reasons explored more fully later in this chapter, under the proposed alternative compensation system most households would save through decreased expenditures on recorded entertainment more money than they would spend on increased taxes. In other words, the typical household would suffer no net diminution in its capacity to purchase goods and services. Thus, one would not expect its members to substitute leisure for work. (Unless, of course, the increased availability of good music and films made leisure relatively more attractive--but a substitution effect arising out of that circumstance should not necessarily be regarded as regrettable.)

The proposition that the benefits of the system considered in this chapter would vary with income might seem to be undermined by the recent Pew survey, which indicates that people with lower incomes are more likely than people with higher incomes to download music from the Internet. See Mary Madden and Amanda Lenhart, "Pew Internet Project Data Memo," Pew Internet & American Life Project (July 2003): 5, http://www.pewinternet.org/reports/pdfs/PIP_Copyright_Memo.pdf. However, that correlation probably has much to do with the fact that the activity in question is currently illegal--an hypothesis supported by the fact that downloading activity decreases with education level as well. If gaining access to entertainment over the Internet were legalized (as it would be under the new regime), the correlation suggested in the text would likely take hold.

26. See Netanel, "Impose a Noncommercial Use Levy." Netanel's article develops much more thoroughly ideas first suggested in Glynn S. Lunney Jr., "The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act," Virginia Law Review 87 (2001): 813, 851-58, 910-18; Raymond Shih Ray Ku, "The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology," University of Chicago Law Review 69(2002): 263, 312-15; and

one of my own essays: “Digital Music: Problems and Possibilities” (2000), http://www.law.harvard.edu/Academic_Affairs/coursepages/tfisher/Music.html.

27. Devin Leonard, “This Is War,” Fortune, May 27, 2002, 83; Newsline, Billboard, August 17, 2002, 73. Information concerning stand-alone versions can be found at http://www.ce.org/publications/books_references/digital_america/audio/digital_recording.asp. Germany recently imposed a tax of 7.50 euros (approximately \$7.30) on all PC-integrated CD burners. The taxes imposed under the scheme outlined in this chapter would likely be higher. But taxation of such devices is certainly not unprecedented.

28. Aditya Kishore, “The Death of the 30-Second Commercial,” The Yankee Group: Media & Entertainment Strategies (August 2003), 6. For a summary and criticism of the earlier, more optimistic projections, see Phillip Swann, “Special Report: Is Bernoff ‘Way Off’?,” TVPredictions.com, <http://www.tvpredictions.com/news2.html>. For more conservative projections, see Veronis Suhler Stevenson, Communications Industry Forecast, 274. The estimates of the costs of purchasing a PVR and of the associated service were derived from the advertised prices for TiVo units. See <http://www.tivo.com/2.0.asp>.

29. See Phil Kloer, “Say You Want a Revolution?,” Atlanta Journal-Constitution, August 3, 2003, 1M; and Lawrence B. Johnson, “Will Recordable DVDs Replace CD-ROMs?,” USA Today, November 12, 2002. Cf. Mark Landler, “The Media Business: For Music Industry, U.S. Is Only the Tip of an Iceberg,” New York Times, September 26, 2003, A1 (placing the figure at 1.8 billion).

30. See Paul Bond, “Economics Can’t Keep Electronics from Selling Well,” The Hollywood Reporter, January 13, 2003; Kirk Ladendorf, “Back on Its Feet, SigmaTel Is Aiming High,” Austin American Statesman, January 13, 2003 (reporting a much higher estimate of 2002 sales--almost 8 million units); Henry Norr, “Rays of Hope for Technology,” San Francisco Chronicle, January 16, 2003; and Amy Tsao, “Can Electronics Retailers Reconnect?,” Business Week Online, January 22, 2003.

31. Phil Hardy, “New Products and Technologies Bring Online Music from the Computer to the Livingroom,” Music & Copyright, December 25, 2002.

32. Veronis Suhler Stevenson, Communications Industry Forecast, 306-07. Similar estimates may be found in U.S. Department of Commerce, A Nation Online: How Americans Are Expanding Their Use of the Internet, National Telecommunications and Information Administration & Economics & Statistics Administration (February 2002), <http://www.ntia.doc.gov/ntiahome/dn/anationonline2.pdf>.

33. A subtle issue: Are wireless and satellite services fairly described as “broadband”? Probably. Even the satellite systems (the slower of the two) provide roughly twenty times the speed of dial-up modems. Although that’s substantially slower than a cable or DSL connection, it seems fair to classify it as “broad.” See <https://www.ibuybroadband.com/ibb2/knowledge.asp>.

34. Veronis Suhler Stevenson, Communications Industry Forecast, 306-07.

35. The estimate of Streamcast Networks' revenues during 2002 comes from "StreamCast Dream of Lucky Three (and a Move to LA)," The Online Reporter, May 3-9, 2003, <http://www.onlinereporter.com/torbackissues/TOR346.htm>.

36. Let's return now to the choice we considered a few pages ago: Should people who gain access to the Internet through dial-up modems be obliged to share in the tax burden? If we took the other fork in the road and decided yes, then the total tax base would increase by \$7.699 billion--to a total of \$27.947 billion. That substantial adjustment would, in turn, enable us to lower the tax rate to 8.5 percent. Under this regime, each broadband subscriber would pay \$3.88 per month in taxes (instead of \$5.36) and persons with dial-up modem accounts would pay \$1.57 per month in taxes.

37. See Stiglitz, Economics of the Public Sector, 563-66; William J. Baumol, "Ramsey Pricing," in John Eatwell, Murray Milgate, and Peter Newman, The New Palgrave: A Dictionary of Economics (London: Macmillan, 1987), Vol. 4, 49-51.

38. For studies of Americans' and Europeans' conceptions of distributive justice, see J. Stacy Adams and Sara Freedman, "Equity Theory Revisited: Comments and Annotated Bibliography," in Advances in Experimental Social Psychology 9 (Leonard Berkowitz and Elaine Walster eds., New York: Academic Press, 1976), 43, 47-49.

39. It would likely be most efficient if all parties obliged to gather and report this data used the same software to do so. One way to achieve such standardization would be for the Copyright Office to require all participants in the system to use a specific program. Though attractive on some levels, such a solution would forfeit the efficiencies associated with private software development (whether proprietary or open-source.) On balance, therefore, a compromise on this issue seems best: the Copyright Office would develop a standard data-collection program--or, more likely, would commission a private firm to develop such a program--and would make it available, for free, to all participants in the Webcasting industry. But the office would also permit Webcasters to use other programs, provided that they were capable of transmitting the required information in a specified format. Such a system would not block innovation but would preserve consistency.

40. The data was kindly provided by Steve Crandall, one of the members of the AT&T team (now with Omenti Research).

41. For discussions of the danger that such a system would be "gamed," see S. J. Liebowitz, "Alternative Copyright Systems: The Problems with a Compulsory License," draft of August 31, 2003, <http://www.utdallas.edu/liebowit/intprop/complpff.pdf>; Aaron Swartz, "Privacy, Accuracy, Security: Pick Two," <http://www.aaronsw.com/weblog/001016>; and Eugene Volokh, "Download Tax," http://volokh.com/2003_09_07_volokh_archive.html#106314198323180349. Their worries are lent credence by the extent to which artists on the old MP3.com site strove to "game" that system. See Janelle Brown, "Whoring for Downloads," Salon.com,

42. For descriptions of the Nielsen system, see Suzanne Vranica and Charles Goldsmith, "Nielsen Adapts Its Methods as TV Evolves," Wall Street Journal, September 29, 2003, B1; James C. Raymondo, "Confessions of a Nielsen Household," American Demographics, March 1997, 21-24; and J. Ronald Milavsky, "How Good Is the A.C. Nielsen People-Meter System? A View of the Report by the Committee on Nationwide Television Audience Measurement," Public Opinion Quarterly 56 (1992): 102-115.

43. For a survey of studies documenting the overall accuracy of the system, see Hugh Malcolm Beville Jr., Audience Ratings: Radio, Television, Cable (1988), Appendix D. For analyses of the imperfections of the system, see Beville, Audience Ratings, 232-33; Michelle Greppi, "Diaries and Youth an Unreliable Combo," Electronic Media, September 23, 2002, <http://www.tvweek.com/topstories/092302diaries.html>; Robert J. Kent, "Second-by-Second Looks at the Television Commercial Audience," Journal of Advertising Research 42, No. 1 (2002), 71; Bill Carter, "NBC Faults Nielsen for Reduction in Viewers," New York Times, November 11, 2003, C1; Vranica and Goldsmith, "Nielsen Adapts"; and Erwin Ephron, "Why We Cannot Afford to Measure Viewers: The Case for VPVH (Viewers-Per-Viewing-Households) Modeling," Canadian Advertising Research Foundation (CARF) Newsletter #247, January 2001.

44. A variation on this theme that would be easier to administer but less effective in measuring actual consumption patterns would be to "sample," not listeners' and viewers' actual consumption patterns, but the contents of their hard drives. Software closely analogous to the programs now widely used by the file-sharing services would periodically report to the Copyright Office what registered recordings were stored on the computers of people who agreed to participate in such surveys. Assurances of privacy would be equally important under this regime. For the same reason, it would be crucial that the software only identified and reported registered recordings, not other material located on the participant's hard drives. A system of this sort would be reasonably effective in curbing the first and third of the kinds of distortion outlined above. It would do nothing to eliminate the second--but, then again, it would be no worse in this regard than the present system for distributing music. The main advantage of such a regime is that it would be relatively easy to implement and run.

45. James Love, "Artists Want to be Paid: The Blur/Banff Proposal," http://www.nsu.newschool.edu/blur/blur02/user_love.html7.

46. James Love, "Artists Want to be Paid,"7.

47. Peter Eckersley, "Virtual Markets for Virtual Goods: An Alternative Conception of Digital Copyright," <http://www.cs.mu.oz.au/pde/writing/index.html>, 12.

48. Volokh's example (designed to discredit a somewhat different system) appears in Volokh, "Download Tax."

49. A loosely analogous cut-off applied to shares in Native American land holdings was declared unconstitutional by the Supreme Court in Hodel v. Irving, 481 U.S. 704 (1987). Constitutional difficulty would not likely arise in this context, however, for reasons we will explore later in this chapter.

50. The estimate set forth in the text of the amount that the average household spends per year for access to recorded In 2000, the total retail value of sound recordings (including singles) sold in the United States was \$14.042 billion; \$21.856 billion was spent on video rentals and sales; \$7.314 billion was spent on premium cable subscriptions; and \$1.426 billion was spent on pay-per-view television, for a grand total of \$44.638 billion. The average expenditure of each of the 105,480,101 households was thus \$423. In 2003, the total retail value of sound recordings sold in the United States was \$11.428 billion; \$27.503 billion was spent on video rentals and sales; \$9.143 billion was spent on premium cable subscriptions; and \$2.18 billion was spent on pay-per-view television, for a grand total of \$50.254 billion. The average expenditure of each of the 108,424,184 households was thus \$463. In 2004, the number will surely be higher. (The continuing decline in total retail spending on sound recordings.) A conservative estimate of average per-household expenditures is thus \$470. The sources for this data are Households and Families: 2000, Census 2000 brief, “2002 American Community Survey Profile,” Table 1: General Demographic Characteristics, <http://www.census.gov/acs/www/Products/Profiles/Single/2002/ACS/Tabular/010/01000US1.htm>; and the materials cited in notes 19.21. The amount that Americans “spend” to gain access to recorded entertainment intermingled with commercial advertising is suggested by the following figures: In 2004, each American will devote, on average, 1,521 hours watching broadcast or cable television (excluding premium channels) and another 995 hours listening to the radio. The overwhelming majority of the programming delivered through those channels consists of ad-supported, commercial material. Roughly ten minutes of each of those hours is devoted to advertisements. Thus, each American is exposed, on average, to 419 hours of advertisements per year. To be sure, they are able to avoid some of those ads--by leaving the room for a snack, by muting the television and engaging in conversation, by changing radio stations, etc. But even PVR users (many of whom buy their machines precisely to enable them to avoid advertisements) end up watching 45 percent of the ads embedded in the programs they record. Assuming then, conservatively, that the population as a whole watches 50 percent of the ads in the programming delivered to them, each person devotes, on average, 209 hours per year--the equivalent of twenty-six eight-hour days--to ad watching. For the data underlying these estimates, see U.S. Census Bureau, Statistical Abstract of the United States: 2002, No. 1102: “Media Usage and Consumer Spending: 1996-2005,” <http://www.census.gov/prod/2003pubs/02statab/infocom.pdf>; and Kishore, “The Death of the 30-Second Commercial,” 3, 7.

51. Would option C truly leave them no worse off? As the new system took hold, we would expect to see the retailers and lessors specializing in entertainment in the traditional formats (like Tower Records and Blockbuster) closing their doors at an accelerating rate. See Vanessa E. Jones, “They’re Tuned in to Customers’ Needs,” Boston Globe, November 19, 2003, C12. However, large-scale intermediaries like

Amazon.com and Netflix, which deliver such products through the mail system, would likely survive and perhaps expand. So the adverse impact on consumers who stuck with the traditional formats would probably be modest at most.

52. On the defects of the fair-use doctrine, see William Fisher, "Reconstructing the Fair Use Doctrine," Harvard Law Review 101 (1988): 1659, 1667-95. On the clumsiness of other aspects of copyright law in dealing with improvements and the mild superiority of the analogous aspects of patent law, see Mark Lemley, "The Economics of Improvement in Intellectual Property Law," Texas Law Review 75 (1997): 989.

53. Filmmakers are especially likely to balk at this aspect of the proposed regime. In November of 2003, I discussed the proposed system in a meeting at Warner Bros. Entertainment, attended by lawyers for six of the seven major film studios. The attendees were troubled by many aspects of the plan--but the extent to which it corroded the right of copyright owners to control the content of their works seemed to gall them the most.

54. On the limitations on architects' rights, see Nimmer on Copyright §2.20.

55. For exploration of some of these complexities, see R. Anthony Reese, "Copyright and Internet Music Transmissions: Existing Law, Major Controversies, Possible Solutions," University of Miami Law Review 55 (2001): 237; and Hillel Parness, "Internet Radio: As RIAA and DiMA Prepare to Do Battle Over 'Interactivity,' Questions Resurface About ISP Liability," Cyberspace Lawyer 6 (2001): 2.

56. The numbers set forth in the text were derived from the most recent report on downloading activity: Pew Internet & American Life Project, "Sharp Decline in Music File Swapping: Data Memo from PIP and comScore Media Metrix," January 4, 2004, <http://www.pewinternet.org/reports/toc.asp?Report=109>.

57. For illustrations and analyses of the lobbying power of the major record companies and film studios, see Jessica D. Litman, "Copyright, Compromise, and Legislative History," Cornell Law Review 72 (1987): 857; Robert P. Merges, "One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000," California Law Review 88 (2000): 2187, 2233-39; and William F. Patry, "Copyright and the Legislative Process: A Personal Perspective," Cardozo Arts & Entertainment Law Journal 14 (1996): 139.

58. Because this privilege would be limited to recordings that are registered pursuant to the new scheme, it would be possible to avoid the issue in section 107A--and instead deal with the matter through contract. In other words, the right to control the preparation of derivative works embodied in section 106(2) of the statute could be left unqualified, but copyright owners could be obliged, when registering recordings, to waive their rights in this respect. It seems more forthright, however, to make this aspect of the new regime explicit in the authorizing statute.

59. For the texts of the treaties, see http://www.wto.org/english/docs_e/legal_e/legal_e.htm#TRIPs; and <http://www.law.cornell.edu/treaties/berne/overview.html>.

60. See New York Cent. R.R. Co. v. White, 243 U.S. 188 (1917); Theodore F. Haas, “On Reintegrating Workers’ Compensation and Employers’ Liability,” Georgia Law Review 21 (1987): 843. But cf. Martha S. Davis, “Worker’s Compensation Systems and the Takings Problem,” South Dakota Law Review 38 (1993): 234 (suggesting that the case might be decided differently today).

61. See Brett May and Marc Singer, “Unchained Melody,” The McKinsey Quarterly, 2001, Number 1, 128, http://mckinseyquarterly.com/article_page.asp?ar=978&L2=17&L3=66 (registration required).

62. This figure was derived as follows: Using (conservatively) figures from the year 2000, the recording industry would suffer a decline in revenues of \$7.35 billion, partially offset by a savings in manufacturing costs of \$1.103 billion and in phono-mechanical license fees (plus commissions to the Harry Fox Agency) of \$726 million, for a total loss of \$5.521 billion. The music publishers would suffer a decline in phono-mechanical license fees of \$691 million and (assuming, again conservatively, that the entire radio industry collapsed in the face of competition from Webcasters) of \$292 million in public-performance fees--for a total of \$983 million. The movie studios would experience the elimination of their revenues from domestic videotape and DVD sales and rentals (\$7.8 billion), cable and satellite services (\$1.219 billion), and pay-per-view movies (\$570 million)--for a total loss of \$9.589 billion. The grand total: \$16.093 billion. (The bases for all of these estimates are set forth on pages 210-212 and the accompanying footnotes. To repeat, most of these numbers are “soft,” but most also are based on conservative assumptions.) Adjusting for inflation (which we’ve estimated at 9.98 percent between 2000 and 2004), this would be the equivalent of \$17.699 billion in 2004 dollars. Finally, if we assumed (once again, conservatively) that 20 percent of funds raised would be diverted to administrative costs, we would need \$22.124 billion to fund the system fully. Spread over the existing group of taxpayers (87 million households), this would generate an average tax burden of \$254 per household.

63. This figure is derived by dividing the total tax burden of \$22.124 billion by 109,508,425 households. (For the source of the latter figure, see Chapter 1, note 6.)

64. If the copyrights in the musical compositions performed in an audio recording were owned by persons or firms other than the registrant, then the registrant would have to obtain their permission to enter into such an agreement – presumably, by agreeing to share with them the revenues that he or she earned from the coop. Otherwise, for the reasons explained in Chapter 2, they would have a plausible claim against the coop for contributory copyright infringement.

65. Where would disk jockeys get the money necessary to launch and maintain such ventures? They might not need any at all. After all, they would not be paying any

license fees, and their hardware costs would be modest. Thus, like the operators of many of the stations on Live365.com, they might do it for free. Alternatively, as suggested in the text, they could charge users modest fees. Finally, they might rely upon advertising revenues.

66. The Slashdot system itself may be found at <http://slashdot.org/>. Benkler's analysis comes from "Coase's Penguin, or Linux and the Nature of the Firm," Yale Law Journal 112 (2002): 369, 393-96.

67. Todd Larson's detailed development of this idea in the context of Webcasting may be found at "CommuniCast: Developing a Community-Programmed Webcasting Service" (May 10, 2003), <http://cyber.law.harvard.edu/home/2004-01>.

68. On the strengths and weaknesses of producer cooperatives, see Avner Ben-Ner, "Producer Cooperatives: Why Do They Exist in Capitalist Economies?," in Walter W. Powell, ed., The Non-Profit Sector: A Research Handbook (New Haven: Yale University Press, 1987), 434-46; Avner Ben-Ner, "Empirical Observations on Worker Owner and Capitalist Firms," International Journal of Industrial Organization 6 (1988): 7; Henry Hansmann, "When Does Worker Ownership Work? ESOPs, Law Firms, Codetermination, and Economic Democracy," Yale Law Journal 99 (1990): 1749; Henry M. Levin, "Employment and Productivity of Producer Cooperatives," in Robert Jackall and Henry Levin, eds., Worker Cooperatives in America (Berkeley, CA: University of California Press, 1984), 16-31; W. Bentley MacLeod, "Equity, Efficiency, and Incentive in Cooperative Teams," Advances in the Economic Analysis of Participatory and Labor-Managed Firms 3 (1988): 5; Marco Marini, "Stable Producer Cooperatives in Competitive Markets," Advances in the Economic Analysis of Participatory and Labor-Managed Firms 6 (1998): 213; and Joyce Rothschild and J. Allen Whitt, The Cooperative Workplace (Cambridge: Cambridge University Press, 1986). On the history and structure of consumer cooperatives, see International Joint Project on Co-operative Democracy, Making Membership Meaningful: Participatory Democracy in Co-operatives (Saskatoon: Centre for the Study of Cooperatives, University of Saskatchewan, 1995); Robert Neptune, California's Uncommon Markets: The Story of Consumers Cooperatives, 1935-1976 (Richmond, CA: Associated Cooperatives, 1977); Co-operatives and Consumer Power Towards the Year 2000 (London: Co-operative Press, 1993); and the Website for the European Community of Consumer Cooperatives, <http://www.eurocoop.org/cooperatives/en/default.asp>.

69. On the tendency of the members of producer cooperatives to underinvest in improvements to the enterprise, see Rothschild and Whitt, The Cooperative Workplace, 161.

70. The progress of the Canto Livre project and the development of the associated alternative-compensation system can be observed on the following Website: www.diretorio.fgv.br/cts.
