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The Journal of Legal Studies, Vol. 18, No. 2. (Jun., 1989), pp. 325-363.

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AN ECONOMIC ANALYSIS OF COPYRIGHT LAW

WILLIAM M. LANDES and RICHARD A. POSNER*

INTELLECTUAL property is a natural field for economic analysis of law,¹ and copyright is an important form of intellectual property. Yet while there are good introductions to the economics of copyright law, and a number of excellent articles on the economics of copying (as distinct from copyright law),² no article examines the field of copyright as a whole, discussing the evolution and major doctrines in the law from an economic standpoint. This article, which is in the spirit of our recent articles on the economics of trademark law, tries to fill this gap—although the field is so vast that our analysis cannot be exhaustive. As in most of our work, we are particularly interested in positive analysis, and specifically in the question to what extent copyright law can be explained as a means for promoting efficient allocation of resources.

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¹ See, for example, our articles *Trademark Law: An Economic Perspective*, 30 *J. Law & Econ.* 265 (1987), and *The Economics of Trademark Law*, 78 *Trademark Rptr.* 267 (1988); and Edmund W. Kitch, *Graham v. John Deere Co.: New Standards for Patents*, 1966 *Sup. Ct. Rev.* 293.

² See, for example, Stanley M. Besen & Sheila Nataraj Kirby, *Private Copying, Appropriability and Optimal Copying Royalties*, *J. Law & Econ.* (in press); William R. Johnson, *The Economics of Copying*, 93 *J. Pol. Econ.* 158 (1985); S. J. Liebowitz, *Copying and Indirect Appropriability: Photocopying Journals*, 93 *J. Pol. Econ.* 945 (1985); S. J. Liebowitz, *Copyright Law, Photography, and Price Discrimination*, *J. Res. Law & Econ.* 181 (1986); S. J. Liebowitz, *Some Puzzling Behavior by Owners of Intellectual Products*, 5 *Contemp. Policy Iss.* 44 (1987); Ian E. Novos & Michael Waldman, *The Effects of Increased Copyright Protection: An Analytical Approach*, 92 *J. Pol. Econ.* 236 (1984); Michael O'Hare, *Copyright: When Is Monopoly Efficient?* 4 *J. Policy Analysis & Mgmt.* 407 (1985). Notable early studies are Arnold Plant, *The Economic Aspects of Copyright in Books*, 1 *Economica* (n.s.) 167 (1934); Arnold Plant, *The New Commerce in Ideas and Intellectual Property* (1953); Robert M. Hurt & Robert N. Schuchman, *The Economic Rationale of Copyright*, 56 *Am. Econ. Rev. Papers & Proc.* 42 (1966).

[*Journal of Legal Studies*, vol. XVIII (June 1989)]

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A distinguishing characteristic of intellectual property is its “public good” aspect. While the cost of creating a work subject to copyright protection—for example, a book, movie, song, ballet, lithograph, map, business directory, or computer software program—is often high, the cost of reproducing the work, whether by the creator or by those to whom he has made it available, is often low. And once copies are available to others, it is often inexpensive for these users to make additional copies. If the copies made by the creator of the work are priced at or close to marginal cost, others may be discouraged from making copies, but the creator’s total revenues may not be sufficient to cover the cost of creating the work. Copyright protection—the right of the copyright’s owner to prevent others from making copies—trades off the costs of limiting access to a work against the benefits of providing incentives to create the work in the first place. Striking the correct balance between access and incentives is the central problem in copyright law. For copyright law to promote economic efficiency, its principal legal doctrines must, at least approximately, maximize the benefits from creating additional works minus both the losses from limiting access and the costs of administering copyright protection.

Section I develops the basic economic model of copyright protection, including an analysis of the optimal degree of that protection. Section II applies the model to the principal doctrines of copyright law. It considers such questions as the originality requirement for copyright protection, the distinction between ideas and expression, the absence of copyright protection for utilitarian works, the protection of derivative works, and issues of fair use.

I. THE BASIC ECONOMICS OF COPYRIGHT

We begin with the factors—including, of course, copyright protection—that determine the number of works created. Then we examine the exploitation of the created work—the number of copies and the price per copy. Last, we incorporate the important features of our discussion into a model of the optimal degree of copyright protection.

A. *Number of Works as a Function of Copyright and Other Factors*

1. General Considerations

The cost of producing a book or other copyrightable work (we start by talking just about books and later branch out to other forms of expression) has two components. The first is the cost of creating the work. We assume that it does not vary with the number of copies produced or sold, since it

consists primarily of the author's time and effort plus the cost to the publisher of soliciting and editing the manuscript and setting it in type. Consistent with copyright usage we call the sum of these costs the "cost of expression."

To simplify the analysis, we ignore any distinction between costs incurred by authors and by publishers, and therefore use the term "author" (or "creator") to mean both author and publisher. In doing this we elide a number of interesting questions involving the relation between author and publisher. For example, do such principles as *droit moral*, entitling authors to reclaim copyright from assignees after a fixed period of years or entitling artists to royalties on resales of their art by initial (or subsequent) purchasers,³ increase or reduce the incentive to create new works? The answer suggested by economic analysis is that, contrary to intuition, such principles reduce the incentive to create by preventing the author or artist from shifting risk to the publisher or dealer. A publisher (say) who must share any future speculative gains with the author will pay the author less for the work, so the risky component of the author's expected remuneration will increase relative to the certain component. If the author is risk averse, he will be worse off as a result. However, we do not explore such matters in this article.

The second component of the cost of producing a work increases with the number of copies produced, for it is the cost of printing, binding, and distributing individual copies. The cost of expression does not enter into the making of copies because, once the work is created, the author's efforts can be incorporated into another copy virtually without cost.

For a new work to be created, the expected return—typically, and we shall assume exclusively, from the sale of copies—must exceed the expected cost. The demand curve for copies of a given book is, we assume, negatively sloped because there are good but not perfect substitutes for a given book.⁴ The creator will make copies up to the point where the marginal cost of one more copy equals its expected marginal revenue. The resulting difference between price and marginal cost, summed over the number of copies sold, will generate revenues to offset the cost of expression. Since the decision to create the work must be made before the demand for copies is known, the work will be created only if the difference between expected revenues and the cost of making copies equals or exceeds the cost of expression. If we assume that the cost of creating

³ See generally Michael E. Horowitz, Note: Artists' Rights in the United States: Toward Federal Legislation, 25 Harv. J. Legis. 153 (1988).

⁴ We maintain throughout our analysis the assumption of a downward-sloping demand curve for copies of a given work.

(equivalent) works differs among authors, the number of works created will increase until the returns from the last work created just covers the (increasing) cost of expression.

Two qualifications should be noted. First, for many types of intellectual property some price discrimination may be possible because individual works are not perfect substitutes and arbitrage is preventable. Thus, a book publisher will commonly charge higher prices for hardcover editions and later reduce the price for persons willing to wait for the paperback edition to appear. Similarly, the prices charged by exhibitors for first-run movies will generally be higher than the prices in the aftermarket (cable viewing, video cassettes, and network television). Price discrimination increases revenue and thus the number of works produced, though it may not increase the number of copies of each work.⁵ Second, the demand for copies of a given work depends not only on the number of copies but on the number of (competing) works as well. The greater the number of such works (past and present), the lower the demand for any given work. Thus, the number of works and the number of copies per work will be determined simultaneously, and the net effect of this interaction will be to reduce the number of works created.

This description of the market for copies and the number of works created assumes the existence of copyright protection. In its absence anyone can buy a copy of the book when it first appears and make and sell copies of it. The market price of the book will eventually be bid down to the marginal cost of copying, with the unfortunate result that the book probably will not be produced in the first place, because the author and publisher will not be able to recover their costs of creating the work. The problem is magnified by the fact that the author's cost of creating the work, and many publishing costs (for example, editing costs), are incurred before it is known what the demand for the work will be. Uncertainty about demand is a particularly serious problem with respect to artistic works, such as books, plays, movies, and recordings. Even with copyright protection, sales may be insufficient to cover the cost of expression and may not even cover the variable cost of making copies. Thus, the difference between the price and marginal cost of the successful work must not only cover the cost of expression but also compensate for the risk of failure. If a copier can defer making copies until he knows whether the work is a success, the potential gains from free riding on expression will be even greater, because the difference between the price and mar-

⁵ The effect of (imperfect) price discrimination on output is normally assumed to be indeterminate. See, for example, F. M. Scherer, *Industrial Market Structure and Economic Performance* 316, 321 (2d ed. 1980).

ginal cost of the original work will rise to compensate for the uncertainty of demand, thus creating a bigger profit potential for copies. So uncertainty generates an additional disincentive to create works in the absence of copyright protection.

Practical obstacles limit copying the original works of others even in the absence of any copyright protection. But these obstacles, while serious in some cases, can easily be exaggerated. When fully analyzed, they do not make a persuasive case for eliminating copyright protection.

1. *The copy may be of inferior quality, and hence not a perfect substitute for the original.* In the case of books and other printed matter, the copier may not be able to match the quality of paper or binding of the original or the crispness of the printing, and there may be errors in transcription. None of these is an important impediment to good copies any longer, but in the case of works of art—such as a painting by a famous artist—a copy, however accurate, may be such a poor substitute in the market that it will have no negative effects on the price of the artist's work. Indeed, the copy may have a positive effect on that price, by serving as advertising for his works. On the other hand, it may also deprive him of income from selling derivative works—the copies of his paintings—himself. (More on derivative works shortly.) To generalize, when either the cost of making equivalent copies is higher for the copier than for the creator or the copier's product is a poor substitute for the original, the originator will be able to charge a price greater than his marginal cost, even without legal protection. And, obviously, the greater the difference in the costs of making copies and in the quality of copies between creator and copier (assuming the latter's cost is higher or quality lower), the less need there is for copyright protection.

2. *Copying may itself involve some original expression—as when the copy is not a literal copy but involves paraphrasing, deletions, marginal notes, and so on—and so a positive cost of expression.* The copier may incur fixed costs as well, for example costs of rekeying the words from the copy he bought or of photographing them. Still, we would expect the copier's average cost to be lower than the creator's because it will not include the author's time or the cost of soliciting and editing the original manuscript. Nevertheless, when the copier cannot take a completely free ride on the creator's investment in expression and his other fixed costs, the need for copyright protection is reduced.

Between the literal copier and the author who makes no use whatever of previous works, three additional types of producer can be distinguished. One is the author who makes at least some, but perhaps modest, use of previous works; most authors are of this type. Next is the author of a derivative work, that is, a work that draws very heavily on previous

works, though the derivative work involves some original elements. Third is the unoriginal copier who nevertheless tries to complicate the author's task of proving infringement by differentiating the copied work from the original in minor ways. Derivative works and infringement are discussed in Section II; the author who makes some use of previous works figures prominently in our formal analysis, along with the literal copier.

3. *Copying takes time, so there will be an interval during which the original publisher will not face competition.* This point, which is related to the first because generally the cost of production is inverse to time,⁶ has two implications for the analysis of copyright law. First, because modern technology has reduced the time it takes to make copies as well as enabled more perfect copies to be made at low cost, the need for copyright protection has increased over time. Second, for works that are faddish—where demand is initially strong but falls sharply after a brief period—copyright protection may not be as necessary in order to give the creator of the work a fully compensatory return.

4. *There are contractual alternatives to copyright protection for limiting copying.* One is licensing the original work on condition that the licensee not make copies of it or disclose it to others in a way that would enable them to make copies. But contractual prohibitions on copying may, like trade secrets, be costly to enforce and feasible only if there are few licensees. Where widespread distribution is necessary to generate an adequate return to the author or where the work is resold or publicly performed, contractual prohibitions may not prevent widespread copying. Thus, the greater the potential market for a work, the greater the need for copyright protection. The development of radio, television, and the phonograph has expanded the market for copies and thereby increased the value of copyright protection.

5. *Since a copier normally must have access to a copy in order to make copies, the creator may be able to capture some of the value of copies made by others by charging a high price for the copies he makes and sells.* For example, a publisher of academic journals may be able to capture part of the value that individuals obtain from copying articles by charging a higher price for the journal—especially to libraries; or a record company may be able to charge a higher price because of home taping.⁷ Although this possibility limits the need for copyright protection, it does not eliminate it. If one can make many copies of the first copy, and many copies of subsequent copies, the price of copies will be driven down to marginal cost and the creator will not be able to charge a sufficiently

⁶ See Armen A. Alchian, Costs and Outputs, in Readings in Microeconomics 159, 165 (William Breit & Harold M. Hochman eds., 2d ed. 1971).

⁷ This point is stressed by Liebowitz, Copying, *supra* note 2.

higher price for his copy to capture its value in allowing others to make more copies; no one (except the first copier and the most impatient readers) will buy from him rather than from a copier.

6. *Many authors derive substantial benefits from publication that are over and beyond any royalties.* This is true not only in terms of prestige and other nonpecuniary income but also pecuniary income in such forms as a higher salary for a professor who publishes than for one who does not,⁸ or greater consulting income. Publishing is an effective method of self-advertisement and self-promotion. The norms against plagiarism (that is, against copying without giving the author credit) reinforce the conferral of prestige by publishing; to the extent that those norms are effective, they ensure that the author will obtain recognition, if not always royalties, from the works he publishes.

Such points have convinced some students of copyright law that there is no need for copyright protection.⁹ Legal rights are costly to enforce—rights in intangibles especially so—and the costs may outweigh the social gains in particular settings. Perhaps copyright in books is one of them. After all, the first copyright law in England dates from 1710 (and gave much less protection than modern copyright law), yet publishing had flourished for hundreds of years in England despite censorship and widespread illiteracy.¹⁰ The point is a little misleading, however. In the old days, the costs of making copies were a higher fraction of total cost than they are today, so the problem of appropriability was less acute. Also, there were alternative institutions for internalizing the benefits of expression.¹¹ And before freedom of expression became generally applauded, publishing was often believed to impose negative externalities—so there was less, sometimes no, desire to encourage it. Finally, while it may be difficult to determine whether, on balance, copyright is a good thing, it is

⁸ Compare Howard P. Tuckman & Jack Leahey, What Is an Article Worth? 83 J. Pol. Econ. 951 (1975).

⁹ See Plant, *supra* note 2; compare Stephen G. Breyer, The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs, 84 Harv. L. Rev. 281 (1970). But see Barry W. Tyerman, The Economic Rationale for Copyright Protection of Published Books: A Reply to Professor Breyer, 18 UCLA L. Rev. 1100 (1971).

¹⁰ On the history of copyright law—which appears to have emerged first in fifteenth-century Venice—see Bruce W. Bugbee, The Genesis of American Patent and Copyright Law, ch. 2 (1967); Brander Matthews, Books and Play-Books, ch. 1 (1895); Comment, Copyright: History and Development, 28 California L. Rev. 620 (1940); and references in note 11 *infra*.

¹¹ In England, the Stationers' Company had long enjoyed a monopoly of printing, and this gave the company the equivalent of copyright protection. With the decline of the company, a need for a copyright law was felt, leading to the passage of the first general copyright law (in England) at the beginning of the eighteenth century, as mentioned. See Benjamin Kaplan, An Unhurried View of Copyright, ch. 1 (1967); Philip Wittenberg, The Protection of Literary Property, ch. 1 (1968).

easy to note particular distortions that a copyright law corrects. Without copyright protection, authors, publishers, and copiers would have inefficient incentives with regard to the timing of various decisions. Publishers, to lengthen their head start, would have a disincentive to engage in prepublication advertising and even to announce publication dates in advance, and copiers would have an incentive to install excessively speedy production lines. There would be increased incentives to create faddish, ephemeral, and otherwise transitory works because the gains from being first in the market for such works would be likely to exceed the losses from absence of copyright protection. There would be a shift toward the production of works that are difficult to copy; authors would be more likely to circulate their works privately rather than widely, to lessen the risk of copying; and contractual restrictions on copying would multiply.

A neglected consideration—one that shows not that copyright protection may be unnecessary but that beyond some level copyright protection may actually be counterproductive by raising the cost of expression—will play an important role both in our model and in our efforts to explain the salient features of copyright law. Creating a new work typically involves borrowing or building on material from a prior body of works, as well as adding original expression to it. A new work of fiction, for example, will contain the author's expressive contribution but also characters, situations, plot details, and so on, invented by previous authors. Similarly, a new work of music may borrow tempo changes and chord progressions from earlier works. The less extensive copyright protection is, the more an author, composer, or other creator can borrow from previous works without infringing copyright and the lower, therefore, the costs of creating a new work. Of course, even if copyright protection effectively prevented all unauthorized copying from a copyrighted work, authors would still copy. But they would copy works whose copyright protection had run out, or they would disguise their copying, engage in costly searches to avoid copying protected works, or incur licensing and other transaction costs to obtain permission to copy such works. The effect would be to raise the cost of creating new works—the cost of expression, broadly defined—and thus, paradoxically, perhaps lower the number of works created.¹²

¹² A parallel analysis (independent of ours) of the novelty requirement in patent law is found in Suzanne Scotchmer & Jerry Green, *Novelty and Disclosure in Patent Law* (Berkeley and Harvard, unpublished manuscript, May 12, 1988). The authors point out that the more stringent the requirement, making it harder to get a patent, the greater the gains from patenting but the less information useful to other inventors will be disclosed (patent applicants must disclose their inventions in the application).

Copyright holders might, therefore, find it in their self-interest, *ex ante*, to limit copyright protection. To the extent that a later author is free to borrow material from an earlier one, the later author's cost of expression is reduced; and, from an *ex ante* viewpoint, every author is both an earlier author from whom a later author might want to borrow material and the later author himself. In the former role, he desires maximum copyright protection for works he creates; in the latter, he prefers minimum protection for works created earlier by others. In principle, there is a level of copyright protection that balances these two competing interests optimally—although notice that the first generation of authors, having no one to borrow from, will have less incentive to strike the optimal balance than later ones.¹³ We shall see in Section II that various doctrines of copyright law, such as the distinction between idea and expression and the fair use doctrine, can be understood as attempts to promote economic efficiency by balancing the effect of greater copyright protection—in encouraging the creation of new works by reducing copying—against the effect of less protection—in encouraging the creation of new works by reducing the cost of creating them.

2. A Formal Model of the Effect of Copyright Protection on the Creation of Works

The basic economics of copyright protection can be brought out more clearly by a formal model. We assume for the sake of simplicity that authors and copiers produce quality-adjusted copies that are perfect substitutes.¹⁴ Let p equal the price of a copy, $q(p)$ the market demand for copies of a given work, x and y the number of copies the author and the copiers produce, respectively (so $q = x + y$), c the author's marginal cost of a copy (assumed to be constant), and e the author's cost of creating the work (that is, the cost of expression). To simplify further, we ignore the other fixed costs of creating and publishing a work and assume that demand is not subject to uncertainty. We denote the level of copyright protection by $z \geq 0$ where $z = 0$ means no copyright protection. The level of copyright protection involves such considerations as the necessary degree of similarity between two works before infringement can be found,

¹³ Later generations of authors may also differ among themselves on where to set the level of copyright protection. Authors expecting to borrow less than they are borrowed from will prefer more copyright protection than those expecting to be net borrowers. *Ex ante*, however, before anyone knows whether he is likely to be a net "debtor" or "creditor," authors should be able to agree on the level of copyright protection.

¹⁴ For example, a copier might produce a copy half as good as one produced by the author. On a quality-adjusted basis, two copies of the copier would count as one quality-adjusted copy.

the elements in a work that are protected, and the period of time for which the work is protected. For purposes of our formal model, we assume that all these factors can be incorporated into a single index of copyright protection, z .

We assume that copiers, like fringe firms in a market with a dominant firm, supply copies up to the point where price equals marginal cost, and that their marginal cost increases (not necessarily steeply) as both the number of copies and the level of copyright protection increase.¹⁵ We can thus write the copiers' supply curve as

$$y = y(p, z) \quad (1)$$

with $y_p > 0$ and $y_z < 0$.¹⁶

The author's profits are

$$\Pi = (p - c)x - e(z), \quad (2)$$

and substituting for x , we have

$$\Pi = (p - c)[q(p) - y(p, z)] - e(z), \quad (3)$$

where $e(z)$ denotes the author's cost of expression, which is higher the greater copyright protection is.¹⁷

¹⁵ Given our earlier assumption that the author's marginal cost (c) is constant, increasing marginal cost for copiers is a necessary assumption; otherwise copiers will produce all copies (in which event, the work will not be created) or no copies (in which event, the degree of copyright protection is not an interesting question). There is also a substantive reason to expect increasing marginal cost for copiers. Recall that the copying that takes place for a given level of z is lawful. Some of it will be by consumers (for example, home taping of television programs) and some will be by producers who incorporate the author's work into their product (for example, fair use copying). To be sure, the higher the level of z , the smaller the amount of such lawful copying. At a given level of z , however, there will be some types of copying that require consumers and firms to use only a small amount of their own resources. In effect, there will be a lot of free riding on the author's work, so the cost of copying will tend to be low. Other types of copying will require relatively larger amounts of resources by the copier. Here free riding will be less important, so costs will tend to be greater. Such differences should generate differences in the cost of copying among copiers and lead to rising marginal costs.

¹⁶ We can derive the copiers' supply curve from their cost as follows. Let the total cost of copying for copiers equal $M = M(y, z)$ where $M_y > 0$ (= marginal cost), $M_{yy} > 0$, $M_z > 0$, $M_{zz} \geq 0$, and $M_{yz} > 0$. That is, marginal cost is positive and increases with the number of copies. We assume that z increases both the total and marginal cost of copies (M_y) because, as z increases, the amount of protected material in a given work will rise, so that copiers must add more of their own material or make greater alterations in the copy to avoid infringement. This factor will tend to make copying more costly. To simplify, we assume that $\partial M_{yy} / \partial z = 0$ —that is, that the rate of change in marginal cost is independent of z . Since copiers operate where $p = M_y(y, z)$, we have $y_p = \partial y / \partial p = 1 / M_{yy} > 0$ and $y_z = \partial y / \partial z = -M_{yz} / M_{yy} < 0$. Note that y_z denotes the shift to the left in the copier's supply curve as z increases, so that at each price copiers make fewer copies.

¹⁷ Our model is similar to one used by Salop and Scheffman to analyze how a dominant firm selects strategies that raise both its and its rivals' costs. See Salop & Scheffman, Cost-

Let the author's gross profits, R in our notation, equal his revenue from selling copies minus the cost of making those copies, or $(p - c)x$. We show later that R increases as z increases. The author will create a work only if

$$R \geq e(z) \quad (4)$$

since otherwise his profits (eq. [2]) would be negative.

Let N equal the total number of (equivalent) works created. Our assumption that the cost of expression [$e(z)$] will differ among authors—some authors will be more efficient at creating equivalent works and so their costs will be lower than other authors'—implies that with free entry of authors into the business of creating new works, N will rise until the cost of expression of the marginal author equals R . The supply of works will equal

$$N = N(R, z), \quad (5)$$

where $N_R > 0$ and $N_z < 0$.

The net effect on N of an increase in copyright protection (z) depends on the balance between two effects, because the increase leads to both a movement up the supply curve of works (as R increases) and a shift of the supply curve to the left as z drives up the cost of expression. In symbols, $dN/dz = N_R(dR/dz) + N_z$. At low levels of z the revenue-enhancing effect of limiting copying by free riders should dominate, so that $dN/dz > 0$. For example, when z is very low, few or no works will be created, since free riding by copiers may prevent any author from covering his cost of expression.¹⁸ So N will increase as z increases, at least up to some level, say $\bar{z}$. Beyond $\bar{z}$ we assume that increases in the cost of expression to marginal authors will dominate, so that the number of works will begin to fall. That is, $dN/dz > 0$ for all $z < \bar{z}$, $dN/dz = 0$ at $\bar{z}$, and $dN/dz < 0$ for all $z > \bar{z}$.

The intuition behind these results is straightforward. Some copyright protection is necessary to generate the incentives to incur the costs of creating easily copied works, but too much protection can raise the costs of creation for subsequent authors to the point where those authors cannot cover them even though they have complete copyright protection for their own originality. The key issue is how the level of protection, z , here

Raising Strategies, 36 J. Indus. Econ. 19 (1987). In our model, copyright protection is like a strategy that raises both the rivals' (copiers') marginal cost and the dominant firm's fixed cost (the author's cost of expression). Salop and Scheffman's framework was helpful to us in developing our formal model.

¹⁸ If, however, the copier's marginal cost is much greater than the creator's marginal cost, copyright protection may not be necessary for the creator to be able to cover his full cost of expression. In such a case, the principal effect of increasing z , even at lower levels, will be to raise the cost of expression and thus lower N .

modeled as a single index, is set along several dimensions. In general, the modern law of copyright makes intelligent estimates when it withholds legal protection from ideas as opposed to their expression, when it gives copyright holders rights over derivative works, when it creates a limited fair use exception, and when it sets the term of a copyright at life plus 50 years. Each of these topics is considered in the second part of this article.

B. The Exploitation of a Work

Optimal copyright protection depends not only on the number and the cost of works but also on the number and the cost of copies of each work. The latter cost is the focus of this part of the article. Once created, a work can be exploited in many ways and they need not be mutually exclusive. The author (or publisher, remember) of a novel may sell copies, sell to a magazine prepublication rights to publish selections, and license derivative works such as a play, musical, movie, translation, or condensation. Similarly, he may license the characters in his novel for a comic book or television series, or for a line of clothes. Later we distinguish between copiers who simply make identical copies of the novel and those who create derivative works (since, for example, one might expect that the disincentive to create the novel would be greater in the former than in the latter instance). For now, we treat all different ways to exploit a work identically and call them the making and selling of copies.

1. The Price of a Copy

The author will choose the price that maximizes his profits, Π in equation (2). This requires that p satisfy the equation

$$[q(p) - y(p, z)] + (p - c)(q_p - y_p) = 0, \quad (6)$$

which can be rewritten as

$$p\{1 - F/[\epsilon^d + \epsilon^s(1 - F)]\} = c, \quad (7)$$

where F is the share (that is, fraction) of copies made by the author, $1 - F$ is the share of copies made by copiers, ϵ^d is the elasticity of demand for copies, and ϵ^s is the elasticity of supply of the copiers [$\epsilon^s = y_p(p/y)$]. The price per copy will be greater the less elastic the demand for copies, the less elastic the copiers' supply curve, and the larger the author's share of copies relative to that of copiers, which in turn will be larger the lower the author's cost of making copies relative to that of copiers.¹⁹

¹⁹ We assume that the second-order condition for a maximum is satisfied—that is, that

$$\partial^2 \Pi / \partial p^2 = 2(q_p - y_p) + (p - c)(q_{pp} - y_{pp}) < 0.$$

We can determine the effect on price of changes in the level of copyright protection (z), and in the author's marginal cost of copying, by totally differentiating p in equation (6) with respect to z and c . This yields

$$dp/dz = y_z/S > 0, \quad (8)$$

$$dp/dc = (q_p - y_p)/S > 0, \quad (9)$$

where S equals $\partial^2\Pi/\partial p^2$, which is negative (from the second-order condition for profit maximization). Increases in z and c increase the price of a copy and reduce the total number of copies sold—provided, of course, that copiers' output is still positive. If not, increases in z will have no effect on the price and output or the number of copies; the author will be a monopolist and will not need any further copyright protection.

We are also interested in the effect of changes in z on the author's gross profits (that is, before deducting the cost of expression) and on the number of copies made by author and copiers (again assuming that copiers have a positive output). The change in gross profits (R) from a small change in z is given by

$$dR/dz = - (p - c)y_z > 0.^{20} \quad (10)$$

Since y_z in equations (8) and (9) denotes the reduction in the quantity supplied by copiers as z increases (holding p constant), the change in the author's gross profits for a small increase in z will equal the difference between price and the author's marginal cost multiplied by the increased number of copies he supplies, an increase that in equilibrium will just match the reduction in copies supplied by copiers.

Although the author's gross profits will increase with greater copyright protection until copiers cease making copies—after which additional copyright protection can yield no benefit since there are no more competitors to exclude—net profits need not rise. The cost of expression to authors of copyrighted works increases as copyright protection increases. The less material an author (not a copier) can borrow from other copyright holders without infringing their copyrights, the greater will be the cost of creating his work. Formally, the change in net profits from in-

²⁰ We have dR/dz equals

$$d(p - c)x/dz = xdp/dz + (p - c)\{q_p(dp/dz) - [y_p(dp/dz) + y_z]\}.$$

Collecting terms yields

$$d(p - c)x/dz = dp/dz[x + (p - c)(q_p - y_p)] - (p - c)y_z.$$

Since $x + (p - c)(q_p - y_p) = 0$ from the first-order profit-maximizing condition, the first term in the above expression vanishes, which then leaves the expression in the text.

creases in z will be positive or negative depending on whether

$$-(p - c)y_z - e_z \geq 0. \quad (11)$$

The sign of equation (11) bears on the earlier question of whether an increase in copyright protection will raise or lower the number of works created. A positive sign for the marginal work (or author) means that an increase in z increases gross profits by more than the cost of expression, so net profits will rise and the number of works will increase. A negative sign means that greater copyright protection will reduce the number of works.

We speculated earlier that at low levels of z the revenue-enhancing effect would dominate, while at higher levels (above $\bar{z}$) the cost-enhancing effect would dominate. Equation (11) allows us to be more explicit about the factors affecting the relationship between z and the number of works. Since gross profits equal the cost of expression for the marginal author, we can rewrite (11)—the condition for whether z increases or decreases the number of works—in percentage terms:

$$-\bar{y}_z(y/x) - \bar{e}_z \geq 0, \quad (12)$$

where “ $\bar{\cdot}$ ” denotes the percentage change in the variable-per-unit change in z . Equation (12) is more likely to be negative the smaller the copiers’ share relative to the author’s share (that is, the smaller is y/x). Since the copiers’ share will fall and the author’s rise as z increases, equation (12) is more likely to be negative at higher than at lower levels of copyright protection. So, consistent with our earlier speculation, the revenue-enhancing effect of additional copyright protection diminishes as the level of protection increases.

Although there is no obvious relationship between $\bar{y}_z$ and the level of copyright protection, $-\bar{y}_z$ will be greater the larger the increase in the copiers’ marginal cost as z increases and the smaller the rate of increase in marginal cost with respect to a change in the number of copies—that is, the smaller the copier’s supply elasticity.²¹ This has two implications:

1. *The more difficult it is for copiers to avoid infringing the author’s copyright by substituting other inputs for the protected part of the author’s work, because the protected part is bigger, the larger will be the increase in the copiers’ marginal cost.* The greater, therefore, will be the increase in the author’s gross profit, and so the more likely it will be

²¹ From note 16, recall that $-y_z = M_{yz}/M_{yy}$, where M_y denotes the copiers’ marginal cost. Hence, $-\bar{y}_z$ will tend to be greater the bigger the increase in the copiers’ marginal cost as z increases and the smaller the increase in their marginal cost as y increases (that is, the flatter or more elastic the copiers’ marginal cost curve).

that the number of works will increase as copyright protection expands. If the copying is exact, there will be, by definition, no other inputs to substitute for the author's work, and therefore an increase in z will tend to have a large positive effect on the copier's marginal cost curve and so on the number of works created.

2. *The smaller the difference in efficiency or cost of copying among copiers (which depends in turn on the similarity of the uses that copiers make of the author's work), the more elastic the copiers' supply or marginal cost will be and the larger, therefore, the increase in the author's gross profit as z increases.* This, too, makes it more likely that expanding copyright protection will increase the number of works created. Alternatively, if copiers use the author's work in diverse ways, the marginal cost of copying is likely to be less elastic and, hence, an increase in copyright protection will have a smaller effect on the author's gross profits.

What happens to the number of copies produced by copiers and by the author as the level of copyright protection rises? Since price will rise, the total number of copies will fall. The change in the copiers' output (y), however, will depend on the net effect of two offsetting effects. As z rises the copiers' supply curve will shift to the left ($y_z < 0$), reducing y ; but the increase in p will lead to a movement up the supply curve, increasing y .

Turning to the number of copies sold by the author (x), and recalling that $x = q - y$, one sees that since an increase in copyright protection raises price and lowers the total number of copies sold, the author will sell more copies only if y declines by more than the reduction in q . That is indeed the most likely outcome, however. Since an increase in z raises the residual demand faced by the author, he would normally be expected to sell more. But if the elasticity of the residual demand curve declines sufficiently as it shifts outward, the author may produce less at the new equilibrium price. This is simply an illustration of the well-known proposition that an increase in demand may reduce the optimal output of a monopolist if the elasticity of demand declines sufficiently with the increase.

2. Some Welfare Effects of Copyright Protection

Let w equal the standard measure of economic welfare (the sum of consumer and producer surplus) in the market for copies of a single work before the cost of creating the work is deducted:

$$w = \int_{p^*}^{\infty} q(p)dp + (p^* - c)[q(p^*) - y(p^*, z)] + \int_{p^0}^{p^*} y(p, z)dp. \quad (13)$$

The first term in the equation is consumer surplus at p^* (the profit-maximizing price set by the author), the middle term is the author's gross profits, and the last term is the copiers' profits.²²

Net welfare equals $w - e(z)$, where $e(z)$ is the cost of creating the particular work and is a function of the scope of copyright protection. The change in net welfare with respect to change in z equals

$$\begin{aligned} \partial[w - e(z)]/\partial z = & (p^* - c)\{q_p(dp^*/dz) - [y_p(dp^*/dz) + y_z]\} \\ & + \int_{p^0}^{p^*} y_z dp - e_z \geq 0. \end{aligned} \quad (14)$$

This complicated expression has a simple interpretation. The first term is the change in the author's surplus from changing the scope of copyright protection. It depends on the difference between price and the author's marginal cost and on the change in the number of copies he sells; for the term in brackets is merely the difference between the change in total copies and the number of copies sold by copiers. Normally the author will sell more copies when z increases, because the copiers' marginal costs will rise. Notice that at the margin, copiers generate no consumer or producer surplus because they equate marginal cost to price. As for the last two terms in equation (14), $\int_{p^0}^{p^*} y_z dz$ is negative because an increase in z increases the total cost to copiers of the copies they produce, and $-e_z$ is also negative because the cost of expression increases with the amount of copyright protection.

An increase in copyright protection is likely to reduce the welfare benefits (consumer plus producer surplus) generated by a given work—assuming it will be created. Both the increase in the cost of creating the work and the increase in the cost to copiers reduce welfare, and only rarely will these increases be offset by cost savings resulting from the shift

²² Notice that p_0 is the minimum price at which copiers are willing to produce a copy. Since we assume that copiers incur no fixed costs, the number of copies at p_0 is zero—that is, $y(p_0, z) = 0$.

²³ From eq. (13) we have

$$\partial w/\partial z = -q(p^*)(dp^*/dz) \quad (i)$$

$$+ [q(p^*) - y(p^*, z)](dp^*/dz) + (p^* - c)[q_p(dp^*/dz) - (y_p(dp^*/dz) - y_z)] \quad (ii)$$

$$+ y(p^*, z)(dp^*/dz) - y(p^0, z)(dp^0/dz) + \int_{p^0}^{p^*} y_z dp, \quad (iii)$$

where (i) denotes the reduction in consumer surplus ($dp^*/dz > 0$); (ii) the change in the author's profits which depend on both the change in price and the change in the number of copies he produces (which may be positive or negative); and (iii) the change in the copier's surplus, which depends on the increase in price, the increase in his costs, and the change in the number of copies he produces. Combining the terms in $\partial w/\partial z$ yields eq. (14).

in producing copies from copiers to the author, a shift that will be larger the lower the author's marginal cost relative to that of the copiers. For the cost savings are obtained only on the additional units produced by the author, while the cost increase affects all copies produced by copiers plus the cost of expression.

Total welfare, however, which we analyze next, depends on the number of works created as well as on the consumer and producer surplus generated by a given work, assuming it is created; and the number of works may rise as copyright protection expands even though welfare per work falls. The traditional view stresses the trade-off between the benefits of copyright protection in encouraging the production of works and the losses from reducing access to the works by consumers. If one defines "access" as the sum of consumer and producer surplus generated by a single work, access is indeed likely to fall as copyright protection increases. But it falls because of factors—the increase in copiers' costs *and* in the cost of expression—that are ignored in the traditional view. That view stresses losses to consumers from higher prices—a factor that drops out of our analysis.

C. *The Optimal Level of Copyright Protection*

Let total welfare equal

$$W = W[N, w, E(N, z)]. \quad (15)$$

W will be an increasing function of both N , the number of (equivalent) works created, and w , the consumer and producer surplus per work before deducting the cost of creating the work, and will be a decreasing function of E , the total costs of creating works (including the cost of administering and enforcing the copyright system). In turn, E will be an increasing function of both N and z (that is, $E_N > 0$ and $E_z > 0$).²⁴ We assume for convenience that (15) can be written as

$$W = f(N)w - E(N, z), \quad (16)$$

²⁴ Note that $E_{NN} > 0$ because authors will differ in the costs of creating works and, as the economic return from creating works increases, higher-cost authors will find it economical to create works. $E_{Nz} > 0$ because increasing copyright protection will raise the cost to all authors of creating works. Administrative and enforcement costs are likely to rise both with the number of works created, holding constant z , and with the level of copyright protection, holding constant N , since more works will be registered and more infringement suits brought. One possible offset, however, is that an increase in copyright protection will deter some infringers. In that event, the number of suits may fall despite the greater incentive to pursue infringement claims as z increases.

where $f_N > 0$ and $f_{NN} < 0$ —that is, there is diminishing marginal utility as the number of works created increases.

Maximizing W with respect to z yields

$$\partial W/\partial z = f_N N_z w + f(N)w_z - (E_N N_z + E_z) = 0, \quad (17)$$

or, equivalently,

$$N_z(f_N w - E_N) = -f(N)w_z + E_z, \quad (18)$$

where $N_z = (\partial N/\partial R)R_z + (\partial N/\partial z)$ and $w_z = (p^* - c)(dx/dp)(dp/dz) + \int_{p^0}^{p^*} y_z dp$ (see eq. [14]).²⁵ We denote by z^* the level of z that maximizes w . The right-hand side of equation (18) will be positive at z^* in the typical case, because an increase in z will lower producer and consumer surplus per work (that is, w_z is negative) and raise the cost of expression for all works and increase administrative and enforcement costs ($E_z > 0$).²⁶

N_z measures the response of the number of works created to an increase in copyright protection. As we saw earlier, it can be either positive or negative. However, when z is set optimally, N_z will be positive. For suppose that N_z were negative at z^* . Since the same level of N could be attained at a lower z (because N increases initially and then falls as z rises), a lower z would yield a higher level of W . Not only would $E(N, z)$ be lower (since it is a positive function just of z when N is unchanged, and z would now be lower), but w (consumer and producer surplus per work before deducting the cost of expression) would be higher at a lower z for reasons explained in the previous section.

We can therefore eliminate from our analysis levels of z at which $N_z < 0$. The only exception would be where w fell as z fell—that is, the loss in producer surplus from substituting copies made by copiers for those made by authors exceeded the reduction in the cost of copiers as z fell—provided that, in addition, this effect was large enough to offset the reduction in E as z fell. We showed earlier, however, that w is likely to rise as z falls. Moreover, if total welfare were maximized when N_z was negative, this would turn the traditional rationale for copyright protection upside down. Instead of encouraging the production of works, copyright would discourage them in equilibrium; and instead of reducing access, it would increase access (defined, as before, in terms of welfare per work).

Another consideration, not captured in our formal model but working in

²⁵ We assume that the second-order condition for a maximum is satisfied, that is, $\partial^2 W/\partial z^2 < 0$.

²⁶ The right-hand side of eq. (18) could be negative in the unlikely event that w increased and enforcement costs decreased as z increased, and these changes more than offset the increased cost of expression. In that event, z^* would be at a level sufficient to eliminate all copying.

the same direction, is that, as N rises, a point may be reached where further increases in N will raise each author's cost of expression and hence E_N , the marginal cost of expression. With more and more copyrighted works, the amount of public-domain material—unappropriated materials suitable for inclusion in a new work—remaining will fall, and it will cost more to create a new work. This problem would be particularly serious if “ideas” (in the sense used in copyright law) as well as expression were copyrightable. They are not, as we shall see, and our explanation will be based on the relation between z and N developed in this section.

D. Implications

Our analysis of optimal copyright protection has a number of implications.

1. At z^* , the amount of producer and consumer surplus per work (w) weighted by f_N must exceed the cost of creating the marginal work;²⁷ otherwise the left-hand side of (18) would be negative. This implies that the optimal amount of copyright protection is greater for classes of work that are more valuable socially (that is, higher w is relative to the cost of creating the work). The left-hand side of (18) would rise, initially, relative to the right-hand side, requiring an increase in z to restore equilibrium.

2. Optimal copyright protection requires that z^* be set *below* the level that maximizes the number of works created. The latter would require that $N_z = 0$ (assuming that N increases initially and later decreases as z increases), which would make the left-hand side of equation (18) zero. Differently stated, strengthening copyright protection beyond z^* would increase the incentive to create more works ($N_z > 0$) but would not be worth the costs in reduced welfare per work, the higher costs of expression (for works that would have been created anyway at a lower value for z), and the greater administrative and enforcement costs.

3. From (18) it follows that the greater the responsiveness of N to an increase in z (that is, the greater N_z at each level of z), the greater the optimal value of copyright protection must be to reach equilibrium. In turn, N_z will be greater as z increases, the greater the increase in gross profits (R) (which is greater the greater the difference between p and c and the bigger the reduction in copies made by copiers as z increases), the smaller the increase in the cost of expression for the marginal author, and the smaller the rate of increase in the marginal cost of expression as N

²⁷ E_N also includes the incremental cost of administering and enforcing the copyright system that results from an increase in N . Note that since $E_{NN} > 0$, w will also exceed the full cost of creating each work at z^* .

increases (and hence the smaller the difference among authors in the cost of creating works).

4. We know that the optimal extent of copyright protection tends to rise with the value of a work (w) and that w will be greater the greater the demand for the work and the lower the marginal cost of making copies. Hence if, over time, growth in income and technological advances enlarge the size of the market for any given work, and the cost of copying declines, copyright protection should expand.

5. Suppose that w falls only slightly as copyright protection expands. Then the right-hand side in equation (18) will be smaller, and the optimal level of copyright protection will rise. Put differently, the less that welfare per work is affected by copyright protection, the higher will be the optimal level of that protection because of the benefits of copyright in increasing the number of works.

6. The more that the cost of expression rises as z increases (that is, the greater is E_z), the lower will be the optimal degree of copyright protection. This suggests that, if it is feasible to differentiate in infringement proceedings between individuals who make literal copies and those who use copyrighted material to create new, albeit derivative, works, there will be broader copyright protection against the former group than against the latter.

7. Finally and obviously, our analysis implies that the lower the cost of administering and enforcing a copyright system is and the more responsive authors are to pecuniary incentives, the greater will optimal copyright protection be.

II. APPLICATIONS

A. *The Nature of Copyright Protection*

Our task now is to use our model to explain the principal features of copyright law. We begin with the nature of the protection that a copyright gives its owner. In contrast to a patent, a copyright merely gives protection against copying; independent (that is, accidental) duplication of the copyrighted work is not actionable as such. In speaking of "independent [accidental, inadvertent] duplication" we are addressing only the problem of an independent *recreation* of the original copyrighted work. The accidental *use* of someone else's work might be thought of as duplication, but in that context liability for infringement is strict, much as it is for the trespass on a neighbor's land made by a person who thinks that he owns it.

The more difficult question is to explain why duplication in the sense of

independent recreation is not actionable. Our analysis suggests two possible explanations. The first is the added cost to the author of checking countless numbers of copyrighted works to avoid inadvertent duplication. The costs (if actually incurred—a qualification whose significance will become apparent shortly) would increase $e(z)$ and lower social welfare because both net welfare per work $[w - e(z)]$ and the number of works created would fall. True, the author's gross revenues might rise if the reduction in the amount of accidental duplication raised the demand for copies or made that demand less elastic.²⁸ But since accidental duplication of copyrighted works is rare (except in the area of popular music, discussed below), the net effect of making it unlawful would be to lower social welfare.

In contrast to copyright, accidental infringements of patents are actionable, and the difference makes economic sense. A patent is issued only after a search by the applicant and by the Patent Office of prior patented inventions. This procedure is feasible because it is possible to describe an invention compactly and to establish relatively small classes of related inventions beyond which the searchers need not go. The procedure makes it relatively easy for an inventor to avoid accidentally duplicating an existing patent.

No effort is made by the Copyright Office to search copyrighted works before issuing a copyright, so copyright is not issued but is simply asserted by the author or publisher. There are billions of pages of copyrighted material, any one page of which might contain a sentence or paragraph that a later writer might, by pure coincidence, duplicate so closely that he would be considered an infringer if he had actually copied the words in question or if copying were not required for liability. What is infeasible for the Copyright Office is also infeasible for the author. He cannot read all the copyrighted literature in existence (in all languages, and including unpublished works!) in order to make sure that he has not accidentally duplicated some copyrighted material.

The cost of preventing accidental duplication would be so great, and the benefits in terms of higher revenues (and so the amount of damages if such duplication were actionable) so slight because such duplication is rare, that even if it were actionable no writer or publisher would make much effort to avoid accidental duplication, so the increase in the cost of expression would probably be slight. But social welfare would be reduced somewhat. At best we would have a system of strict liability that had no

²⁸ If we include in y the copies made by accidental duplication, then expanding the scope of copyright protection to make each "copying" unlawful would shift upward the copiers' supply curve and raise the residual demand curve of the author.

significant allocative effective; and as explained in the literature on negligence and strict liability in tort law, the costs of enforcing such a regime are socially wasted because their only product is an occasional redistribution of wealth (here that would be from the accidental "infringer" to the first author or publisher of the material duplicated).²⁹

The second reason we expect accidental duplication not to be made unlawful derives from the economic rationale for copyright protection, which is to prevent free-riding on the author's expression. Accidental duplication does not involve free-riding. Since the second work is independently created, its author incurs the full cost of expression. If the works are completely identical—a remote possibility, to say the least³⁰—competition between the two works could drive the price of copies down to marginal cost and prevent either author from recovering his cost of creating the work. It is more likely that significant differences between the two works will remain, so that both authors may be able to earn enough to cover their respective costs of expression—particularly if neither author is the marginal author, whose gross revenues would just cover the cost of expression in the absence of accidental duplication.

Although for simplicity our analysis focuses on copyright protection for literature and other written works, it is applicable, *mutatis mutandis*, to other forms of expression as well. A significant difference between literary and musical copyright is that courts hold that accidental duplication may infringe a songwriter's copyright if his song has been widely performed.³¹ Since most popular songs have simple melodies and the number of melodic variations is limited, the possibility of accidental duplication of several bars is significant. Widespread playing of these songs on the radio makes it likely that the second composer will have had access to the original work, which both increases the likelihood of accidental duplica-

²⁹ See William M. Landes & Richard A. Posner, *The Economic Structure of Tort Law* 70, 115–16 (1987).

³⁰ Recall Learned Hand's remark in *Sheldon v. Metro-Goldwyn Pictures*, 81 F.2d 49 (2d Cir. 1936), that "if by some magic a man who had never known it were to compose anew Keats' Ode on a Grecian Urn, he would be an author, and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats." Hand, of course, thought such accidental duplication a remote possibility. The probability of accidental duplication of Keats' poem word for word is too small to justify courts in treating it as a litigable question, that is, one fairly open to doubt.

³¹ For example, in *ABKO Music, Inc. v. Harrisongs Music, Ltd.*, 722 F.2d 988, 998–99 (2d Cir. 1983), the court found that George Harrison's "My Sweet Lord" had infringed "He's So Fine," recorded by the Chiffons. "He's So Fine" had been one of the most popular songs in the United States and England during the same year that Harrison (a former member of the Beatles) composed "My Sweet Lord." The court found an infringement even though it also found that Harrison had copied the Chiffons' song unconsciously rather than deliberately.

tion and reduces the cost of avoiding it. If proof of intentional duplication were required for infringement, composers of popular songs would have little copyright protection and social welfare would fall.

This result may appear to show that musical copyright follows the pattern of patent law rather than of literary copyright, but the appearance is deceptive. Two forms of "accidental" duplication of a copyrighted work must be distinguished. The first is independent creation: the duplicator makes no use, direct or indirect, of the copyrighted work. Such a duplicator is never an infringer. The second is unconscious borrowing. Unlike the independent creator, the unconscious borrower is a free rider, and is therefore properly deemed an infringer. Musical copyright is special only in that unconscious borrowing is more likely in the musical than in the literary realm.

To distinguish between copying and independent duplication, the courts use an implicit indifference-curve analysis in which access is traded off against similarity. Where there is a strong showing of similarity, it is more likely that the original work was copied and less likely that it was independently created (particularly for complicated works, in contrast to, say, a few bars of a popular melody). In such a case, the copyright owner can prevail even if he presents only weak evidence that the defendant had access to the original work. On the other hand, where the differences between the original work and its "copy" are substantial, the copyright owner will normally have to provide strong evidence of access to rebut the defense of independent creation.

B. The Scope of Protection

The most difficult economic questions about copyright law have to do with the scope of legal protection. We shall discuss these under the headings of (1) idea versus expression, (2) derivative works, and (3) fair use.

1. Idea versus Expression

i) *The economic rationale for not protecting ideas.* A copyright protects expression but not ideas.³² Postponing to the next section the problem of distinguishing between the two, we offer several reasons for the difference in treatment.

a) Suppose that the N works in our model express the same idea differently; for example, each work might be a different novel about a

³² Ideas may sometimes be protected in other ways. For example, if A discloses an idea to B on the implicit understanding that if B uses the idea he will pay A, A will be protected under the doctrine of quasi contract or unjust enrichment. See *Minnear v. Tors*, 266 Cal. App. 2d 495 (1968).

romance between young people who belong to different social classes or religious faiths and whose parents are feuding. If copyright protected the first author's idea, the cost of expression to each of the remaining $N - 1$ authors would increase, because each would have to invest time and effort in coming up with an original idea for his work, or to substitute additional expression for the part of his idea that overlapped the first author's, or to incur licensing and other transaction costs to obtain the right to use the first author's idea.³³ The net effect of protection would be to reduce the number of works created—in the limit, to one, although the Coase Theorem makes this outcome unlikely—so that social welfare in equation (16) would fall. Granted, the copiers' cost would also rise if a copyright protected ideas, because copiers use not only the author's expression but also his ideas. However, this offset is likely to be small. Copiers are copying expression either unlawfully, in which case the marginal deterrence from protecting ideas is likely to be small, or lawfully, for example, because their copying is deemed a fair use. In either case, copyright protection for ideas would have a negligible effect on the copier's cost of copying. Even if protection did increase the gross profits of the $N - 1$ authors and thus offset partially the reduction in N , social welfare would fall because both N and welfare per work would fall.

The traditional explanation for protecting only expression emphasizes the welfare losses from monopoly of an idea. We emphasize the increase in the cost of creating works and the reduction in the number of works rather than the higher price (per copy) that is normally associated with monopoly. In a more complicated model the demand for copies would depend not only on the number of copies (our model) but also on the number of competing works. In that case, protecting ideas would raise the price of copies.

b) The author is both a user of ideas developed by others and a creator of new ideas. Suppose our N authors did not know which one would be the first to come up with an idea that the other $N - 1$ authors would use. Since (as we shall see in the next section) the costs involved in coming up with the kind of new idea normally embodied in an expressive work usually are low relative to the costs in time and effort of expressing the idea, and since the originator of the idea will probably obtain a normal return in one form or another from being first in the market even without receiving copyright protection, the N authors, behind a veil of ignorance,

³³ More formally, the full cost of creating a work would equal $e(z) + i$, where i is the cost of obtaining the ideas used in the work. Normally, i would not depend on the level of copyright protection. However, if copyright law protected ideas (call this protection z' to distinguish it from z), then i would rise. In addition, e would probably rise because the author would substitute e for i .

probably would agree unanimously (or nearly so) to a rule that protected expression but not ideas. If so, then that rule would be Pareto optimal.

c) Another objection to copyright protection of ideas is that it would encourage rent seeking. Since the costs of developing a new idea are likely to be low in most cases relative to the potential reward from licensing the idea to others, there would be a mad rush to develop and copyright ideas. Resources would be sucked into developing ideas with minimal expression, and the ideas thus developed would be banked in the hope that a later author would pay for their use. Although the development of new ideas would be accelerated, the dissemination of ideas might not be.

d) A final concern is with the administrative costs involved in defining rights in ideas. Courts would have to define each idea, set its boundaries, determine its overlap with other ideas, and, most difficult of all, identify the idea in the work of the alleged infringer. Yet the total administrative and enforcement costs of operating a copyright system might actually shrink if ideas were protected, because of the significant reduction in the number of works created. Since the optimal level of copyright protection for expression takes account of the costs of enforcement, our first point—the decline in social welfare from fewer works—incorporates the savings in administrative and enforcement costs from few works. The present point, therefore, concerns the increase in these costs if the number of works is held constant.

ii) *Distinguishing ideas from expression.* Although the line between expression and idea is often hazy, there are clear cases on both sides of it. If an author of spy novels copies a portion of an Ian Fleming novel about James Bond, he is an infringer. If, inspired by Fleming, he decides to write a novel about a British secret agent who is a bon vivant, he is not an infringer. If an economist reprints Professor Coase's article on social cost without permission, he is an infringer; but if he expounds the Coase Theorem in his own words, he is not.

In both of these cases the original work (novel or article) is the joint output of two types of input, only one of which is protected by copyright law. In the case of the novel, the reason for the limited protection is easily seen.³⁴ The novelist creates the novel by combining stock characters and situations (many of which go back to the earliest writings that have survived from antiquity) with his particular choice of words, incidents, and *dramatis personae*. He does not create the stock characters and situations, or buy them. Unlike the ideas for which patents can be obtained, they are not new and the novelist acquires them at zero cost, either from observation of the world around him or from works long in the public

³⁴ See Richard A. Posner, *Law and Literature: A Misunderstood Relation*, ch. 7 (1988).

domain. Most works of fiction that anyone would want to copy are intended for a mass audience—which means they *must* use stock characters and situations in order to be understood. To give the author of a work embodying such characters or situations (“idea” in copyright lingo) copyright protection beyond the form in which he molds them into a particular novel or story (“expression”) would increase the cost of expression of later authors without generating offsetting benefits.

This discussion helps to show why, in the first part of our discussion of ideas versus expression, we disparaged the welfare benefits from creating property rights to ideas. What passes for “ideas” in the case of most expressive writing normally is not comparable to the sort of inventions, costly to develop, that receive protection under the patent laws. An alternative to distinguishing between ideas and expression, therefore, would be to confine copyright protection to original works, or to a work insofar as it was original, much as in the case of patent law. The problem is that originality or novelty is an even more debatable quality of fiction than of mechanical and other technical processes. If copyright protection depended on originality, authors and publishers would find it hard to know in advance of litigation whether they actually had a property right.

In the case of Professor Coase, the reason for confining copyright protection to the form in which he expressed the Coase Theorem, and not extending it to the theorem itself, is less obvious. The theorem was not obtained at zero cost but reflected extensive education and thought. Also, it is clearly original. But precisely because the theorem is a powerful analytical construct, copyright protection would yield the inventor a very large income over and above the considerable nonpecuniary (as well as indirect pecuniary) income that accrues to a major theoretician. The total income would, in all likelihood, exceed the cost of inventing the theorem, thus creating a problem of rent seeking. Moreover, the cost of copyright enforcement would be much greater than in the case where the article itself was copied. It would often be hard to tell whether an article in economics was really using the Coase Theorem; the author (if he did not want to pay a royalty) would make every effort to explain his results in different terms. Furthermore, mathematical and scientific (including social scientific) ideas often are discovered simultaneously, or nearly so; this would make it difficult to determine whether an alleged infringer was a copier or an independent inventor.

iii) *The merger of ideas and expression.* By this locution we refer to cases where there are only a few ways of expressing an idea, so that protecting expression fully would, as a practical matter, prevent anyone but the author from using the idea. In such cases, copyright protection is construed narrowly, as we would predict. The classic case is *Baker v.*

Selden.³⁵ Selden had published a book describing a bookkeeping system that he had invented, and he illustrated the book with blank bookkeeping forms. Baker copied the forms, rearranging columns and using different headings, and sold them to people who wanted to use Baker's system. This was held not to be infringement, since otherwise Selden would have had a monopoly over his bookkeeping system that he could have exploited by insisting that anyone wanting to use the system buy the forms necessary for using it from him.

It might seem that without copyright protection Selden could not have prevented Baker even from copying Selden's book, but this is not correct. If Baker had published a book in which he copied verbatim (or by close paraphrase) the expository portions of Selden's book, he would have been guilty of infringement. If he wanted to sell the forms together with explanatory material, he had to write that material himself. The expressive part of Selden's book was protected.

Is this the optimal result? On the one hand, denying Selden the right to copyright his forms may have prevented him from recouping the expense in time and effort of inventing a new bookkeeping system. On the other hand, there are other ways he could have cashed in on such a notable commercial innovation; and granting him such copyright protection might have overcompensated him (and thus created a danger of rent seeking)—as well as have created deadweight losses in the market for account forms, by raising the price of those forms above their cost by the amount of royalty that he charged for permission to use his copyright.

The scope of the rule of *Baker v. Selden* is an issue in the current controversy over whether copyright protection for computer software extends to the visual “desktop” on which the computer operator views “icons” representing documents, files, programs, and so on, and to the organization and sequence by which the operator is led through a program. Because a given desktop display or program sequence can be generated by a variety of different programs, the program copyright itself does not cover these visual aspects of computer use. The question is whether they are separately copyrightable by analogy to a painting—a visual display that could be generated by a variety of different processes too. The argument against copyrightability is that the visual aspects in question have become so standardized in the computer market that copyright protection would enable the copyright holder as a practical matter to exclude competing manufacturers of computers. The counterargument is

³⁵ 101 U.S. 99 (1879); see also *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675 (1st Cir. 1967), where the rationale for denying copyright protection is explained in terms highly congruent with our analysis.

that the "idea" is the display of documents or other data, or sequences of stops, on a screen, and the "expression" the particular visual symbology. The mere fact that a particular set of symbols has become the industry standard is a tribute to the expressive skills of the particular manufacturer and should not be deemed to convert expression into idea.

We hope the debate will be resolved not by the semantics of the words "idea" and "expression" but by the economics of the problem and, specifically, by comparing the deadweight costs of allowing a firm to appropriate what has become an industry standard with the disincentive effects on originators if such appropriation is forbidden. These disincentive effects may be small. The probability that a particular display format will become the industry standard is small; presumably there are significant returns over and above copyright to a firm that achieves such a position; and the narrowly expressive aspects of the display are protected, thus limiting the effect of free riding.

Another contemporary application of *Baker v. Selden* concerns copyright of architects' plans. The plans themselves can be copyrighted, and if they are then copied without authorization the copier is an infringer. But what if someone copies not the blueprints but the building built from them? Is he an infringer? The law's answer is "no."³⁶ The economic explanation is that a building is functional as well as formal or decorative, so that if the architect could prevent the copying of the design elements visible in the building he would have much fuller property-right protection than copyright law (with its very long term) envisages. The analogy to the principle that denies trademark protection to "functional" trademarks (for example, trademarks in features, such as shape, that may be essential to the operation as well as appearance of the trademarked product) should be evident.³⁷ Notice the close analogy to the computer-software problem. The building built without the aid of the architect's plans corresponds to the desktop display generated without access to the originator's software. In both cases, the originator's property right is measured by the savings in cost of duplication that the copier could obtain by taking out a license from the originator.

Returning once more to the Coase example, notice that while in *Baker v. Selden* expression was incidental to idea, that is not true of Coase's article, in which, besides announcing the theorem, Coase gave illustra-

³⁶ See, for example, *Imperial Home Corp. v. Lamont*, 458 F.2d 895, 898 (5th Cir. 1972); *Demetriades v. Kaufmann*, 680 F. Supp. 658 (S.D.N.Y. 1988).

³⁷ See Landes & Posner, *Trademark Law: An Enforcement Perspective*, *supra* note 1, at 297-99.

tions of it, compared it with previous approaches, defended it, and discussed its implications for law, economics, and public policy.

A difficult problem in distinguishing ideas from expression is posed by technique, which we view as intermediate between idea and expression. The main illustrations are in literature and the arts, and include the sonnet form, stream-of-consciousness writing, the five-act play, perspective in painting, the pointed arch, and serial composition in music.³⁸ The law assimilates techniques to idea and so denies copyright protection. Another reason besides the monopoly profits that such protection would yield in many cases is that technique is harder to copy well than a work embodying the technique. It is easy to copy someone else's sonnet—but try writing one! With copies likely to be costly, slow to appear, and imperfect, the originator of a technique will be able to recoup some and perhaps all of his fixed costs even if he has no property right in the technique, as opposed to a right in his own works embodying the technique.

In between works of fiction on the one hand, and works in which expression is largely or entirely merged into ideas (*Baker v. Selden*) on the other hand, are works of nonfiction. The facts that form the subject matter of such a work may or may not dictate the expression; if they do it is a case of merger, and copyright protection should be denied. The classic example is narrative history. The first author of a history of the United States should not be allowed to copyright the sequence of events narrated, since that would preclude any subsequent author from writing a narrative history of the United States covering the same period as the first author. The argument against copyright protection in this case is even stronger than in a case like *Baker v. Selden*. The historian has not, of course, invented the facts of history that constitute the subject matter of his work—although it would not be correct to say that he acquired them at zero cost; he may have made a substantial investment in research and study.

2. Derivative Works

A derivative work is translation into a different language or medium. Illustrations include a German translation of an English play, the movie version of a play, photographs of a painting, a wind-up Mickey Mouse doll, and a porcelain plate with scenes taken from a movie. The owner of a copyrighted work has a right to prevent the making of a derivative work and

³⁸ See Posner, *supra* note 34, ch. 7.

thus can sue the maker of an unauthorized derivative work for infringement of the original. He can also copyright the derivative work. Thus he has a monopoly of works derived from his copyrighted work. If, however, the original work is in the public domain, the creator of the derivative work can obtain a copyright of the derivative work, though not, of course, of the original.

The case for giving the owner of a copyrighted work a monopoly of its derivative works as well is a subtle one. It is not, as it might seem to be, to enable the original author, publisher, and so on, to recoup his fixed costs. By definition, the derivative work is an imperfect substitute; often it is no substitute at all. A person who is in the market for an original painting priced at \$20,000 will not be interested in a \$50 photograph of the painting. A German who cannot read English will not buy the English original if there is no German translation. There are exceptions, of course; for example, a movie based on a book might reduce or, more likely, expand the demand for the book. Even where there is no element of substitution or complementarity—that is, where the derivative work is not part of the copiers' supply curve (see eq. [15]), so that the demand faced by the author for the original is independent of the demand for the derivative work—giving the original author the exclusive right over derivative works will enhance his income. But the conferral of the right is not necessary in order to prevent his sales from being driven to zero. And since it is not certain that *any* copyright protection is necessary to enable authors and publishers to recover their fixed costs, it would be speculative to conclude that without control over derivative works authors and publishers would not be able to cover the fixed costs of the original work—though no doubt some works would not be created without the expectation of revenues from derivative works, just as some products would not be produced if producers were forbidden to price discriminate.

To understand the best economic case for giving the owner of the original control over derivative works, even if the demand for the work is unrelated to the demand for the original, one must first consider why derivative works should be copyrightable. Imagine the situation of the translator who was not permitted to obtain copyright protection for his contribution to the derivative work, viewed as the joint product of him and the original author. To translate *The Brothers Karamazov* into English is an enormously time-consuming task. If the translator could not obtain a copyright of the translation, he might be unable to recover the cost of his time; for anyone would be free to copy the translation without having incurred that cost and could undersell him at a profit.

This analysis may seem to imply that the derivative, not original, author should be allowed to copyright the derivative work. Not so. Such a rule

could distort the timing of publication of both the original and derivative works. The original author, eager to maximize his income from the work, would have an incentive to delay publication of the original work until he had created the derivative work as well (or arranged for its creation by licensees), in order to gain a head start on any would-be author of such a work.³⁹

Another reason for giving the original author a monopoly of derivative works is to reduce transaction costs. Suppose Dostoevsky's heir owned the copyright on the original Russian version of *The Brothers Karamazov*, but some American owned the copyright on the English translation. A publisher who wanted to bring out a new edition of that translation would have to deal with two copyright holders. Transaction costs would be reduced if one person owned both copyrights. Of course, even if they were separately owned to begin with, one of the owners could buy the other's copyright. But this transaction, with its attendant costs, can be avoided if the law places the power to obtain both copyrights in the same person to begin with—and that is, in effect, what the law does.

If it is optimal for the original author to have the right to copyright derivative works, why not just forbid copyright in derivatives of copyrighted works? A copyright is just the right to exclude; if no one can copyright a derivative work, anyone who makes such a work is an infringer of the original work—except, of course, the author of the original work. Therefore, a rule that derivative works are not copyrightable would give the original author the same legal protection he would enjoy under a rule that allowed only the original author to copyright a derivative work. Not quite, however. First, if the derivative work is made shortly before the expiration of the copyright on the original work, the author may lack an adequate incentive to create the derivative work unless it can be copyrighted. Second, proof of infringement is simplified if the author can enforce a copyright in a derivative work, for then there is no need to decide whether the infringer's derivative work is similar enough to the original to be infringing. Third, by enabling the author's property right to be subdivided, the copyrightability of derivative works facilitates transactions (compare time-sharing and other subdividings of more conventional property rights). We give an example below.

For obvious reasons, the derivative work must have some expressive elements not found in the original work; otherwise it would be identical to

³⁹ Here is an analogy from another area of copyright law. The fair use privilege (of which more shortly) is narrower in the case of unpublished than published works. See *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539 (1985). If there were a broad fair use privilege for unpublished works, authors would have an incentive to incur heavy expenditures to prevent anyone from gaining access to the works.

the original work. Suppose the derivative work is a wind-up Mickey Mouse doll that looks just like the copyrighted Mickey Mouse comic strip character;⁴⁰ the commercial success of the doll depends on its being an exact replica of the Walt Disney character. Since this mechanical “translation” of the figure into a new medium involves no expression, copyright protection is not required to prevent free riding by third parties, as it was in our example of an English translation of Dostoevsky.

Now consider derivative works based on works in the public domain—for example, a modern edition of Adam Smith’s *Wealth of Nations*. Here the case for granting copyright protection to the derivative work is stronger, so we would expect a weaker requirement of incremental expression than for derivatives of copyrighted works. Since in such a case the original author (or his heirs), lacking copyright, is not able to prevent free riding on the expression contained in the derivative work, the incentive to create the derivative work will be seriously impaired if the work is not copyrightable. In contrast, if the original author’s copyright has not run out, no one can copy from the derivative work without also copying from the original when the derivative work adds very little in expression to the original, so the author of the derivative work (normally the original author or his licensee) is protected. Moreover, the problems associated with multiple copyright holders are somewhat reduced when the derivative work is based on public domain material. So arguments based on administrative and enforcement costs against granting copyright protection are also weaker.

To determine the presence of incremental and, hence, copyrightable expression requires comparison between the original and the derivative. Some courts have required that the increment be significant, worrying that if it is set too low, and if the original and derivative copyrights happen to be in different hands (recall that one reason for allowing the copyrighting of derivative works is to allow an unbundling of the original author’s rights), the costs of determining infringement could be prohibitive.⁴¹ If the derivative work is only trivially different from the original, it may be impossible to determine whether an infringing work was copied from (and hence infringed) the derivative work, the original, or both. In addition, if the original and derivative works are barely distinguishable (for example, translating John Steinbeck into “modern” American prose), the benefits

⁴⁰ Divided ownership may arise by contract when that is efficient. For example, consider a movie based on a book. The producers of the movie will invariably own the copyright on the movie, because they are best able to exploit derivative uses of the movie (for example, video cassettes, adaptations for television, posters, advertisements, colorization); concentrating ownership in the book publisher would impede such exploitation.

⁴¹ See, for example, *Gracen v. Bradford Exchange*, 698 F.2d 300 (7th Cir. 1983).

of legal protection in encouraging the creation of new and distinct works may be trivial. But in making this point we are abstracting from the case, illustrated by photography of works of art, where the creativity of the derivative work consists precisely in the fidelity with which it reproduces the impression created by the original.

3. Fair Use

“Fair use” is a doctrine that allows some copying of a copyrighted work without deeming the copier an infringer, even though the copyright holder has not authorized the copying.⁴² The conventional view is that no general theory can explain the cases that invoke the doctrine. Such a view is reinforced by Section 107 of the Copyright Act, which codified the fair use doctrine for the first time.⁴³ Section 107 identifies a series of factors—drawn from prior judicial decisions—to be considered, such as purpose and character of use, nature of copyrighted work, amount and substitutability of portion used, and effect on potential market for copyrighted work, but leaves open the question of their relative importance and how one uses them to determine whether a use is fair. Our economic model, however, explains the major applications of the fair use principle.

i) *The high-transaction-cost case.* Suppose that the costs of a voluntary exchange are so high relative to the benefits that no such exchange is feasible between a user of a copyrighted work and its owner. User A might be willing to pay B (the copyright holder) a sum that B would gladly accept to consent to the use of the work, but the cost of negotiating such a license may be prohibitive if, for example, all A wants to do is quote a brief passage from B’s work. A fair use privilege creates a clear benefit to A but does not harm B. The copier here is neither a firm selling copies nor a potential purchaser of copies, so his projected use affects neither the supply of copies nor the demand for them.

Several qualifications are in order, though none undermines this important justification for fair use. First, although transaction costs are prohibitive in our example, we could substitute for the existing property-rights approach (which in the absence of the fair use doctrine would prevent A from making any use of B’s work) a liability rule under which the user would not have to negotiate with the copyright holder but would merely be required to pay damages (if any) *ex post*. However, the transaction

⁴² It is an immensely important doctrine, as illustrated by the fact that it has its own treatise; see William F. Patry, *The Fair Use Privilege in Copyright Law* (1985), as well as a large journal literature well illustrated by William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 Harv. L. Rev. 1659 (1988).

⁴³ 17 U.S.C. § 106.

costs of this approach would also be high relative to the potential benefits, such as the extra incentive to create the work. Often, users are numerous, and this would make for a high cost of arranging compensation and a large number of legal proceedings. Also, the potential fee (or damages) per user might be so small—perhaps zero—that enforcement proceedings would be infeasible. A compulsory licensing scheme might be possible, but any such government regulation would be likely to entail substantial costs.

Second, fair use, if too broadly interpreted, might sap the incentive to develop innovative market mechanisms that reduce transaction costs and make economic exchanges between copyright holders and users feasible. The American Society for Composers, Authors, and Publishers (ASCAP) (or Broadcast Music, Inc. [BMI], the other performing-rights organization) is an illustrative market response to copyright problems caused by high transaction costs. The number of users (radio and TV stations, night clubs, and so on) of copyrighted music makes individual negotiations with copyright holders to acquire performance rights infeasible. This problem is eliminated when ASCAP acquires nonexclusive rights from copyright holders and offers a blanket license to users for an annual fee; this allows users to perform any songs in ASCAP's repertory. Since performance distributions from ASCAP are an important part of composers' incomes, a fair use exception for performance would greatly reduce the pecuniary incentive to compose music.

Third, even if there are many users and it is too costly to negotiate individual licenses for part of the work, some users might be willing to purchase the entire work. Suppose you want to photocopy a chapter from a book. Although individual negotiations may be infeasible, you might, if forbidden to photocopy the chapter, purchase the entire book.

These are not arguments against the fair use doctrine. They are arguments for construing it narrowly. Only if the benefits of the use exceed the costs of copyrighted protection—as they do *not* in the performing-right case, given the economical method of conferring copyright through performing-rights organizations, and possibly not in the chapter-photocopying case as well—is the no right/no liability solution of fair use defensible on pure transaction-cost grounds.

ii) *Book reviews.* A standard example of fair use is the book review that quotes brief passages from the book being reviewed. Conventional legal analysis conceives the doctrine as striking a balance between the author's interest in royalties and the interest of the reviewer and his readers in free access to limited portions of the work. The first stage of economic analysis reconceives the doctrine as economizing on transaction costs, though they need not be prohibitive as in our previous discussion. Since book reviews are a substitute for advertising, the publisher

presumably would “license” reviewers to quote brief passages from the book for free. By giving reviewers, in effect, an automatic license, the fair use doctrine avoids the costs of explicit transactions between publishers and reviewers that would yield the identical outcome. This is the theory by which “time-shifting” home video recordings of copyrighted television programs were held in the *Betamax* case to be protected by the fair use doctrine.⁴⁴

A second stage of economic analysis begins by noting that a book or movie is an experience good rather than an inspection good, so that accurate pre-use information about product quality is likely to enlarge demand for these products. Yet if there were no fair use doctrine, a publisher might not allow quotation by reviewers apt to review a particular book unfavorably, or (what amounts to the same thing) might condition the license on the reviewer’s deleting “excessively” critical portions of the review. But it does not follow that publishers, as a class, would be better off under such a regime, since readers would tend to discount favorable reviews, knowing there was some probability that the favor had been procured by permission to quote the book. Ex ante, publishers are better off if reviewers are free to quote without permission; it makes reviews a credible form of book advertising.⁴⁵ Even if publishers were made better off by retaining legal control over reviews, the consumers of books would be worse off. The suppression of an unfavorable review would be comparable to concealment by an ordinary seller of a defect in his goods.

iii) *Parody*. One stage beyond the review is the parody, which copies the distinctive features of the original work in order to recall it to the reader. The reminding function is essential; without the reader’s awareness of the original, the parody will not be recognized as such and so will fall flat. One could view the parody as a derivative work, and give the author of the original work control over it, but this would enable the author of the original work to stifle what is often a particularly effective form of criticism—ridicule.

A difficult case is that of the noncritical parody, perhaps better described as “burlesque” and well illustrated by Jack Benny’s famous bur-

⁴⁴ See *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417 (1984); Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and Its Predecessors*, 82 Colum. L. Rev. 1600 (1982).

⁴⁵ Consistent with this view, reviewers may not take so much from the original work that the review itself serves as a substitute for the work. Yet it is lawful for the criticism in the review to destroy the market for the work. The latter is an aspect of the provision of information on experience goods. This information tends, on balance, to increase the demand for such goods, though in particular instances it will reduce it.

lesque of *Gas Light*.⁴⁶ Benny was not attacking *Gas Light* any more than Abbott and Costello were attacking *Frankenstein* in *Abbott and Costello Meet Frankenstein*. Humorous but not ridiculing versions of the original, these burlesques are derivative works in a pure form, and modern copyright law gives the copyright holder the exclusive right to make such works. A derivative work is a substitute, though an imperfect one, for the original; it may therefore siphon revenues from the original work not by disparaging that work but by satisfying part of the demand for it. So maybe the law should try to distinguish between parody and burlesque and treat the latter but not the former as infringing. The difficulty of doing this should be obvious. Yet the law may already be doing it implicitly by the emphasis it places on whether the allegedly infringing work is fulfilling the demand for the original work (which a parody does not do); if so it is a derivative work and infringing.⁴⁷

iv) *Reducing the cost of creating works.* The question of fair use arises in another setting involving the permissible use that later authors can make of earlier works: deciding whether an allegedly infringing work is “substantially similar” to the work which it is said to infringe. Answering this question requires a court to sort out the contribution to the new product of the original copyright holder and the alleged infringer. The inputs into a work of fiction (including movies, television plays, and so on) include characters, situations, plot details, and so on, invented by previous authors and not yet so standard or hackneyed that they are considered part of the elementary repertory of stock characters and situations on which all authors should be free to draw. When “substantial similarity” is defined narrowly, the later author will be allowed to use these inventions without having to negotiate with the copyright holder. Courts refer to this as a *productive* fair use, as distinct from simply a *reproductive* use. A productive use is one that lowers the cost of expression and tends to increase the number of works, while a reproductive one simply increases the number of “copies” of a given work, reduces the gross profits of the author, and reduces the incentives to create works. Not surprisingly, a fair use defense for a productive use is looked on more favorably than such a defense for a reproductive use.

Striking the right balance was a critical issue in our formal model, where we saw that if all borrowing from previously copyrighted works were deemed infringement, the number of new works (N) might fall.

⁴⁶ See *Benny v. Loew's Inc.*, 239 F.2d 532 (9th Cir. 1956), affirming a judgment against Benny.

⁴⁷ See, for example, *Berlin v. E. C. Publications, Inc.*, 329 F.2d 541 (2d Cir. 1964; *Fisher v. Dees*, 794 F.2d 432, 437–38 (9th Cir. 1986).

Whether the law has struck the right balance is not readily determinable, but the fact that the law denies protection for ideas and requires substantial, rather than some, similarity for infringement⁴⁸ is evidence of implicit awareness of the problem.

C. The Optimal Term of a Copyright

The usual economic argument for limiting the duration of a right in intellectual property is twofold. First, such a limitation reduces the potential monopoly profits (hence, rent seeking and resource misallocation) from ownership of such a right.⁴⁹ Second, it reduces tracing costs. Both reasons loom large in the patent area, which is why patents expire much sooner than either copyrights or trademarks. Patents confer larger potential gains than copyrights or trademarks, and (a related point) patented inventions are hard to keep track of over a long period of time because an invention (for example, the wheel) may eventually become embodied in a vast range of different products. Trademarks rarely confer any monopoly power. And they pose no tracing problem, because to be valid a trademark must be used in conjunction with a specific product that is actually being sold in the market; hence the term of a trademark is indefinite (that is, until abandonment—just as with real property and other tangible products).

Copyrights, too, rarely confer monopoly power, but there are two types of tracing problem, though neither is serious. First, it is hard to keep track of heirs over many generations. This is a potential problem with real estate as well, but is solved by having a registry of land titles. A similar system could be instituted for copyrights. Second, books may go out of print and older works in general may not be easily available. But this problem is solved by having a registry—the Copyright Office—which retains copies of all copyrighted works. Moreover, since copyright just protects against copying, not independent duplication, a book or other work that is not widely available is simply less likely to be copied. Nevertheless, since the tracing cost is positive and grows with the amount of time that has elapsed since the publication of the copyrighted work, there is an argument for limiting the term of a copyright to the point at which the incentive effects of copyright become negligible because of the time value of money. Income prospects that lie twenty-five years in the future have

⁴⁸ See, for example, *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930) (L. Hand, J.); 3 *Nimmer on Copyright* § 13.03[A] (1986).

⁴⁹ See William Nordhaus, *Invention, Growth and Welfare*, ch. 5 (1969), for a formal model of the optimal life of a patent that depends on the trade-off between incentive creation and resource misallocation.

little effect on present decisions, though not zero since people do make provisions for retirement more than twenty-five years in advance. The prospect of royalties in one hundred years, however, would have no effect on most authors' incentives.

It might seem that more than tracing costs are at stake in the decision to impose a time limit on copyrights. The longer the term, the fewer the number of works that are in the public domain, and therefore the higher that E (the cost of expression) will be. This is true, but the higher cost must be discounted along with the higher income of copyright holders. Thus, if the question were whether to increase the term of copyright from fifty to sixty years, not only would the additional revenues to the authors have to be discounted to present value but so would the additional costs to the authors of new works. This assumes, however, that the increase in term is prospective only. If the increase applies retroactively, that is, to existing works as well as to works not yet produced, the increased incentive to create will be limited to a subset of the affected works (those not yet produced), while the increase in the cost of expression will apply to borrowing from all works, existing and not yet produced. This is a strong argument against making increases in copyright term retroactive.

If we are right that copyrights should be time-limited to save on tracing costs, it might seem to follow that all property rights should similarly be limited. But this is wrong. Even one hundred years from now it will be desirable to have a given parcel of land owned by someone, in order to prevent overuse—and why not the heirs of the present owner unless they sell it before then? There is no congestion externality in the case of information, including the text of a book, and hence no benefit (yet potentially substantial costs) in perpetuating ownership beyond the period necessary to enable the author or publisher to recoup the fixed costs of creating the work. After that, it is fine to dump the copyrighted work into the public domain. As we do not intend land ever to be in the public domain, we cannot economize on the costs of administering property rights by placing a time limit on these rights in land.

This point can be sharpened by contrasting the copyright situation with that of "publicity rights" (rights to the commercial exploitation of a person's name or likeness), where there *is* a congestion externality. Suppose an insurance company wants to use a picture of George Washington in its logo and an heir of George Washington appears and objects, claiming that the right of publicity is a descendible right. The heir could not argue that the recognition of such a right almost two hundred years after the death of a public figure is necessary to recoup the investment in becoming a public figure, but he could argue that, unless there is a property right in the public figure's name and likeness, there may be congestion, resulting in a

loss of value. This is the economic insight behind the growing movement toward making publicity rights inheritable⁵⁰ and also behind state antidilution statutes.⁵¹ The advertising value of a name and likeness may be diminished if anyone can use them. That is not a problem with books, art works, and other copyrighted items.⁵²

The current length of a copyright is the author's lifetime plus fifty years. This reflects a long trend toward lengthening the term of copyright (as well as expanding its scope, for example, by including derivative works, which in this country has gone from twenty-eight years in 1790 (a fourteen-year initial term renewable for another fourteen years) to forty-two years in 1831 (a twenty-eight year initial term renewable for fourteen years) to fifty-six years in 1909 (a twenty-eight-year initial term renewable for twenty-eight years) to the present term in 1976. This trend is consistent with the fact that the cost of copying has fallen over this period, for we showed earlier that the lower the cost of copying the greater the optimal scope of copyright protection.

The present term may seem both too long—the author who publishes a work at age thirty and dies at age eighty has one hundred years of copyright protection, and even in the unlikely event that the work will still generate a substantial income in the one hundredth year, the present value of that expectation will be virtually zero—and arbitrary in making the term of the copyright depend on the author's longevity. But maybe the term is neither too long nor arbitrary. A point stressed in the legislative history of the 1976 act is that, by making the death of the author the determining date for copyright protection, "all of a particular author's works, including successive revisions of them, would fall into the public domain at the same time, thus avoiding the present problems of determining a multitude of publication dates and of distinguishing 'old' and 'new' matter in later editions."⁵³ And we know that bequest motives play a role in people's decisions to work, save, and so on, and those motives depend on the altruistic feelings that people have, primarily for members of their family, including descendants. This feeling is attenuated with regard to remote descendants, but the fifty-year term after death cuts them off.

⁵⁰ See Timothy P. Terrell & Jane S. Smith, *Publicity, Liberty, and Intellectual Property: A Conceptual and Economic Analysis of the Inheritability Issue*, 34 *Emory L. J.* 1 (1985).

⁵¹ See Landes & Posner, *Trademark Law: An Economic Perspective*, *supra* note 1, at 306–09.

⁵² An exception, however, is when the absence of property rights in an earlier work discourages someone today from incurring the cost necessary to rediscover and popularize the work.

⁵³ H. R. Rep. No. 1476, 94th Cong., 2d Sess. 134 (1976).