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# SHOULD COPYRIGHT OF ACADEMIC WORKS BE ABOLISHED?

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## ABSTRACT

The conventional rationale for copyright of written works, that copyright is needed to foster their creation, is seemingly of limited applicability to the academic domain. For in a world without copyright of academic writing, academics would still benefit from publishing in the major way that they do now, namely, from gaining scholarly esteem. Yet publishers would presumably have to impose fees on authors because publishers would no longer be able to profit from reader charges. If these author publication fees would actually be borne by academics, their incentives to publish would be reduced. But if the publication fees would usually be paid by universities or grantors, the motive of academics to publish would be unlikely to decrease (and could actually increase)—suggesting that ending academic copyright would be socially desirable in view of the broad benefits of a copyright-free world. If so, the demise of academic copyright should probably be achieved by a change in law, for the “open access” movement that effectively seeks this objective without modification of the law faces fundamental difficulties.

## 1. INTRODUCTION

Original written works, and thus original written academic works, may generally be copyrighted.<sup>2</sup> However, the conventional rationale for copyright

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2 See 17 U.S.C. § 102(a); Melville B. Nimmer & David Nimmer (2008, vol. 1 §§ 2.01–2.04). Moreover, academics themselves, rather than their universities, own the copyrights in their works. See *Hays v. Sony Corp. of Am.*, 847 F.2d 412, 416 (7th Cir. 1988) (Posner, J.), noting that “virtually no one questioned that the academic author was entitled to copyright his writings” despite the work for hire doctrine, under which the academic’s employer would be entitled to copyright; *Weinstein v. Univ. of Ill.*, 811 F.2d 1091, 1094 (7th Cir. 1987) (Easterbrook, J.), noting that “faculty own the copyrights in their academic work” regardless of the work for hire doctrine; William M. Landes & Richard A. Posner (2003, 272), “It is generally and we think correctly understood that academics, although employees of the university in which they teach and conduct their research, own the copyrights on their academic books and articles.”

of written works—that it stimulates their creation and publication by allowing authors to profit from their sale<sup>3</sup>—is seemingly of limited applicability to academic authors. The primary spur for academic writing ostensibly is not profit but rather scholarly esteem and professional advancement. Hence, one might be led to believe that copyright is not needed to encourage academic writing. This view, though, is incomplete, because it does not reflect the point that if publishers were unable to benefit from copyright earnings, they would apparently have to impose fees on authors to cover their publishing costs. The possible effects of such publication fees must be evaluated along with other relevant factors to determine whether the benefits of a copyright-free academic world make it socially preferable to our own.

2 I attempt to make this assessment here, beginning in Section 2 with an informal consideration of a stylized model of academic authorship and publication (the model is presented formally in an appendix), the major assumption of which is that academic authors desire readership of their works to gain esteem. I interpret the model in Section 3, taking into account a variety of issues that are not included in it. The analysis and discussion in these sections may be summarized as follows.

3 First, publication of academic works does indeed carry significant benefits of recognition and of professional reward for academics that are independent of the existence of copyright; and copyright itself provides academics with little remuneration—academics generally do not earn any royalties from articles and only modest royalties from books. Hence, the affirmative motives of academics to publish would be little diminished in the absence of copyright.

4 Second, publishers would have to recover at least the first copy costs of selecting and preparing works for publication from a source other than

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3 See U.S. Const. art. I, § 8, cl. 8, “The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”; *Eldred v. Ashcroft*, 537 U.S. 186, 212 n.18 (2003), “copyright law celebrates the profit motive, recognizing that the incentive to profit from the exploitation of copyrights will redound to the public benefit by resulting in the proliferation of knowledge . . . . The profit motive is the engine that ensures the progress of science.” (quoting *Am. Geophysical Union v. Texaco, Inc.*, 802 F. Supp. 1, 27 (S.D.N.Y. 1992)); *Mazer v. Stein*, 347 U.S. 201, 219 (1954), “The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance welfare through the talents of authors and inventors in ‘Science and the useful Arts.’” See also Paul Goldstein (2005, vol. 1 §§ 1:41–:44); Peter S. Menell & Suzanne Scotchmer (2007, 1476–1482).

readers were there no copyright. Thus, as indicated, publishers would have to impose fees for publishing. If the fees incorporated first copy costs, they might lie in the range of one to several thousand dollars for an article and would be significantly higher for a book.

Third, if academics would have to bear the publication fees themselves, their incentives to publish would fall, possibly non-negligibly in view of the potential magnitude of the fees. Still, the social losses associated with such a decline in publications would be tempered by two considerations: discouraged publications would tend to be of lower than average quality; and written but unpublished works could still be posted on the Internet, so presumably would be available to readers in that form. 5

Fourth, if academics would not have to bear publication fees—on the assumption that universities or grantors would subsidize them—the incentive of academics to write and to publish articles would not fall and could rise. The reason that the elimination of copyright could, perhaps paradoxically, augment incentives to publish articles is that readership of articles would grow in the absence of copyright, and thus the esteem that authors would derive from publication would tend to increase. The incentive of academics to write and to publish books, however, would not necessarily be promoted, because authors would forgo royalties. Yet since royalties are generally low, it is possible that incentives to write and publish books would also be enhanced. An enhancement of incentives to write due to the subsidy of publication fees is not necessarily socially desirable, though, because it could lead to the writing of works that are not socially valuable on net in view of the costs of publication—the subsidy could lead to a socially excessive level of publication. This problem, however, could be addressed by conditioning subsidies on the quality of publication venues. 6

Fifth, universities and grantors would have a motive to subsidize publication fees in the absence of copyright, for it would be in their interest to prevent a dilution in the incentives of faculty members and of grantees to write and publish works, at least works of reasonable quality. Furthermore, universities should not face great difficulties in financing publication fees, for they would no longer have to purchase journal subscriptions or books. 7

Finally, substantial social benefits would flow from a copyright-free world. Unfettered access to academic works would mean that all works would become available on the Internet for any person to download for free, that print versions could be made at cost, and that the assembly of teaching materials would no longer be burdened by the task of securing 8

permissions from copyright holders. Further, the various legal and other costs of protecting copyright privileges would be avoided.

9 The conclusion that I draw from the foregoing is that if publication fees would be largely defrayed by universities and grantors, as I suggest would be to their advantage, then the elimination of copyright of academic works would be likely to be socially desirable: it would not compromise academic publication activity and would yield the social benefits of a copyright-free regime. On the other hand, if publication fees would not be broadly subsidized, whether ending academic copyright would be socially advantageous is unclear.

10 In Section 4, I examine the “open access” movement, which holds that academic publications should be costlessly obtainable from the Internet.<sup>4</sup> Although open access initiatives have grown in recent years, they have also faced difficulties. Namely, traditional journals are generally unwilling to grant immediate open access to published works,<sup>5</sup> and most authors would not find it in their personal interest to publish in open access journals that sometimes charge publication fees rather than in the often more prestigious traditional journals that do not charge publication fees. Moreover, there is a fundamental divergence between individual and collective interests afflicting the open access movement: if an individual academic publishes his or her own work as an open access article or book, the academic does not thereby obtain the broad social benefits that would flow from the general disappearance of academic copyright. This individual-versus-social incentive problem suggests that open access efforts to cabin copyright-associated charges for access will not succeed fully, or will do so only after a substantial delay. An outright change in law to terminate academic copyright is therefore likely the best policy if academic copyright is judged to be socially undesirable.

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4 See, e.g., Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003); Bethesda Statement on Open Access Publishing (2003); Budapest Open Access Initiative (2002), defining open access as “the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds.” See generally John Willinsky (2005); Symposium (2006); Nicholas Bramble (2006); *Nature*, Web Focus (2004); Peter Suber (2007). These sources on open access initiatives emphasize journal literature, not academic books.

5 However, as I discuss in Section 4.1, traditional journals that hold copyright in their articles often do allow so-called “green” open access, that is, immediate free access to various pre-publication versions of articles and sometimes delayed free access to published versions.

In Section 5, I discuss how the elimination of academic copyright<sup>6</sup> could be implemented and whether there would be serious legal or political difficulties in so doing. 11

Before proceeding, let me note that I do not seek any striking novelty in this article. That academics are motivated to write to gain scholarly respect, and therefore that copyright may not be required to encourage publication of academic works, has often been mentioned before.<sup>7</sup> The contribution made here lies mainly in the development of this observation employing a model in which explicit account is taken of the desire of academics for esteem and of the publication fees that would likely emerge absent copyright,<sup>8</sup> in the analysis suggesting that if universities or grantors would bear the publication fees, incentives to publish would not fall and might rise, and thus that abolishing copyright might well be socially desirable; and in the argument that the open access movement confronts serious problems in achieving its end, probably requiring a change in law to assure that outcome. 12

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6 But as I note there, the author would possess the right to require proper attribution of his or her work and possibly certain 'moral rights', such as the right to prevent problematic abridgment of a work.

7 See, e.g., *Princeton Univ. Press v. Mich. Document Servs.*, 99 F.3d 1381, 1410 (6th Cir. 1996) (en banc) (Ryan, J., dissenting), "More than one hundred [academic] authors declared on the record that they write for professional and personal reasons such as making a contribution to a particular discipline, providing an opportunity for colleagues to evaluate and critique the authors' ideas and theories, enhancing the authors' professional reputations, and improving career opportunities. These declarants stated that the receipt of immediate monetary compensation such as a share of licensing fees is *not* their primary incentive to write"; Yochai Benkler (2006, 47–48), describing information production in which authors produce a work for status or reputation benefits; Carol Tenopir & Donald W. King (2000, 146–149), surveying scholarship on scholarly publication motivation and concluding that "[t]he two primary motivating factors of scholarly authors are (1) recognition for career advancement . . . , and (2) the desire to contribute to the body of knowledge in a field or to the archive of the scholarly knowledge in a field and to be recognized for their contribution by their peers"; Jessica Litman (2006, 782), commenting that authors are not motivated "by the incentives supplied by the copyright system"; Arnold Plant (1934, 169), observing that many authors, especially academics, write "to secure publicity" rather than to reap monetary reward, and thus that copyright is not needed to induce them to create new works; Uma Suthersanen (2003, 602), stating that one of the primary purposes of writing journal articles is "achieving recognition or promotion"; Budapest Open Access Initiative (2002), referring to "the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment."

8 There are, however, models of academic publication recognizing authors' desire for readership, but assuming a regime of copyright (rather than comparing that regime to a regime without copyright). See, e.g., Mark J. McCabe & Christopher M. Snyder (2007).

## 2. COPYRIGHT OF ACADEMIC WORKS IN A STYLIZED MODEL

13 I consider here the functioning of academic copyright and the possible social desirability of its elimination in a stylized model of academic authorship and publication. Because the purpose of the model is to elucidate the central effects of copyright on academic writing, I abstract from a variety of factors that will be of significance when I attempt to come to a realistic assessment of academic copyright in the next section. That section will be better appreciated by the reader in light of the analysis of the model, but he or she can still pass over this section without great loss of continuity.

14 The crucial assumption of the model is that the utility of academic authors is increased by the readership of their published works because they gain esteem from readership. For simplicity, I suppose that an author's utility from readership depends only on the number of readers (and thus, not also on the status of the readers or on the reputation of a publisher or a journal). I let a parameter  $t$  denote the degree to which an author's utility is raised by readership of a work. If  $t$  is small, the author cares slightly about readership, whereas if  $t$  is high, the author cares substantially about readership.

15 I suppose too that an author's utility depends on the conventional factors of income and expense and of writing effort.

16 I assume that an author must devote positive effort and incur disutility to write a work<sup>9</sup> and that its publication involves two types of cost for publishers: an initial fixed, or "first copy" cost  $f$ , for reviewing, editing, proof-reading, and the like; and a per unit or marginal cost  $c$  of dissemination, such as the per article cost of printing a copy of a journal and of mailing it.<sup>10</sup> This per unit cost could be almost zero if the work is made available for downloading on an Internet site, an important case that I will discuss in the next section.

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9 If the author obtained a benefit from writing rather than incurred disutility from doing so, the qualitative nature of the conclusions I would reach would not change. The reason is that the author who enjoys writing itself might still be discouraged from publishing in the absence of copyright by having to pay a fee in order to publish.

10 See Theodore C. Bergstrom (2001, 187), "The costs of publishing a journal can be usefully partitioned into *first copy costs* and *marginal subscriber costs*."; Donald W. King (2007, 94–96), discussing concepts of cost in journal publishing.

The definition of social welfare that I consider is a version of the standard utilitarian one, namely, the benefits obtained from the publication of written works—both the benefits obtained by readers and the utility obtained by authors because of the utility they derive from their readership – minus the costs of writing effort and of publication. 17

## 2.1. Copyright

Let me now discuss the nature of the contract that an academic who has written a work would rationally make with a publisher in a regime with copyright. (I will discuss later whether an academic would be motivated to write the work in the first place.) I will suppose that the contract involves two terms: a price at which the author's work will be sold to readers in the marketplace; and a payment term—either a royalty payment made by the publisher to the author, or possibly a publication fee paid by the author to the publisher. In some respects, the reader might find it convenient to suppose that the author's work is a book rather than a journal article, for an author of a book would be able to bargain about the price at which it would sell, but the author of an article would not be thought to be able to bargain individually about the price at which a journal sells.<sup>11</sup> Nevertheless, the average desires of authors about journal prices should be reflected in journal prices, so that the model can be interpreted as applying to authors' contracts with journals in an approximate sense. 18

In addition, I assume for simplicity that there are many competing publishers, implying that publishers will earn only enough to cover their costs.<sup>12</sup> In other words, any publisher revenue from sales of a work in excess of publisher costs will be paid to the author as a royalty, or any shortfall of sales from publisher costs will be paid by the author to the publisher as a fee. 19

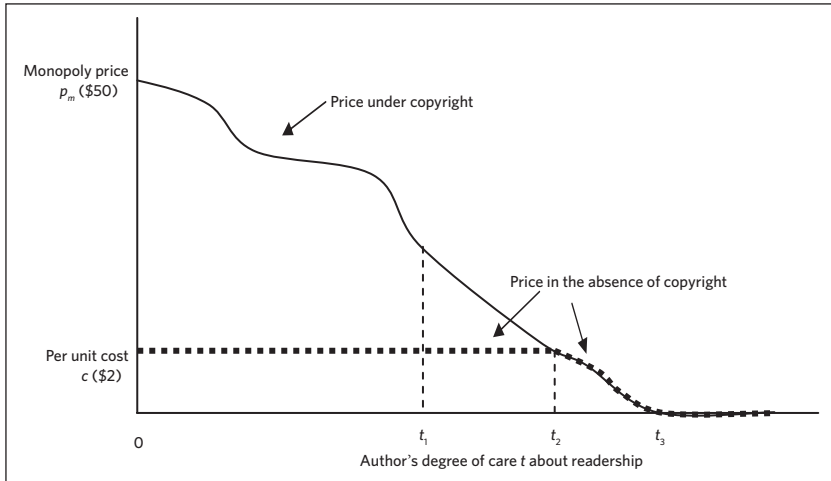
The author will choose a contract that maximizes his or her utility. That is, among the possible contracts that allow publishers to cover their costs, the author will select the particular contract that makes him or her best off. The nature of this contract will depend on the degree  $t$  to which the author cares about readership, as is illustrated in Figure 1 below. 20

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11 For a model in which journals rather than books are the venues for publication, see McCabe & Snyder (2007). It would be distracting from my central purpose—the comparison of a regime of copyright to a regime of no copyright—to have to take account of the complexities of such a model, rather than to address them informally, as I do, in the next sections.

12 This assumption does not affect the qualitative conclusions that I reach. In fact, many journals and publishers of books are of course profitable, as I note in Section 5.2. To the degree that profits are positive under copyright and thus that prices are higher than I assume in the model, the advantage of abolition of copyright would be enhanced.



**Figure 1. Contract Prices**

- 21 To explain, consider first an author for whom  $t$  is 0, in other words, the author is motivated to publish entirely by royalty payments and does not care about the level of readership per se. Such an author would choose the sales price that maximizes profit, the traditional monopoly price of economics.<sup>13</sup> This price is labeled  $p_m$  in the graph, and for illustration, let us assume that it is \$50. If  $t$  is positive, so that the author does care about readership, the author will generally want to increase readership from the level that would result if the monopoly price were charged. Thus, the author will want to set the price charged below the monopoly price even though this will mean some sacrifice of profits and royalty payments. For example, suppose that by reducing the price from \$50 to \$49, readership would increase by 100 individuals and profits and hence royalty payments would fall by \$200. If the utility value to the author of having an additional 100 readers exceeds \$200, the author would prefer the lower \$49 price to the \$50 monopoly price despite the reduction in royalty payments. The best price for the academic author who cares about readership can be shown always to be less than the monopoly price,<sup>14</sup> and is lower the greater is the degree  $t$  to which

13 The monopoly price is such that the marginal revenue equals marginal cost. See, e.g., Robert S. Pindyck & Daniel L. Rubinfeld (2009, 330).

14 Because the monopoly price maximizes profits, a slight variation in the price would leave profits essentially unchanged. Hence, the effect of a small decrease in the price would be to increase readership with only a negligible lowering of profits; and since the author values readership, the author would benefit thereby.

the author cares about readership. This is why the graph of the price of the published work that the academic author would choose declines as  $t$  rises.

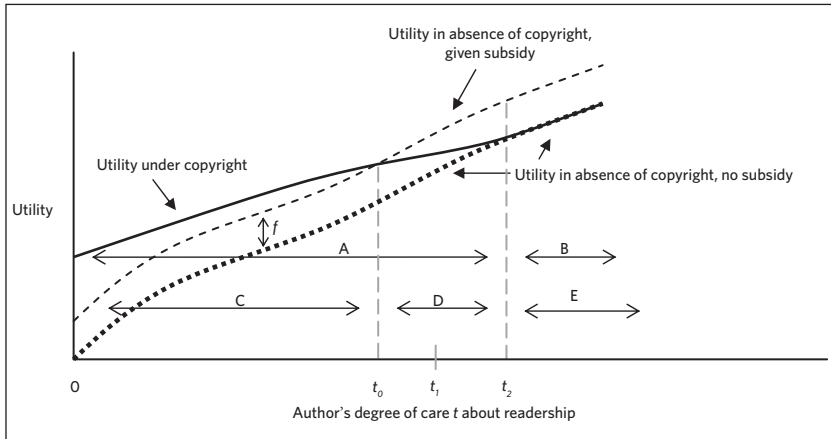
The degree of care about readership  $t_1$  displayed in Figure 1 is the  $t$  at which the price chosen by the author would yield revenues just equal to the publisher's total costs, implying that the author would obtain no royalty payment from the publisher.<sup>15</sup> Beyond  $t_1$ , the price favored by the author would not yield revenues sufficient to cover the publisher's costs and would result in the author having to make a payment to the publisher. That is, if the degree to which an author cares about readership is at least  $t_1$ , the author will value readership enough that he or she will pay a publication fee to augment readership by lowering the sales price substantially, even though the author could contract for a higher sales price and not have to pay to publish. At  $t_2$  authors would pay a publication fee of  $f$  in order to lower the price to  $c$ . Indeed, if authors care enough about readership, if their  $t$  is at least  $t_3$ , they would give their work away for free—possibly by mounting it on the Internet and letting it be downloaded gratis—and have to pay a fee equal to the entire publisher costs. That corresponds to a price of zero on the graph.<sup>16</sup>

In interpreting the graph, the reader might note that it is common for an academic author of a book to negotiate with the publisher for the selling price to be lower than the publisher would like, because, as is consistent with the analysis, the author often wants larger readership rather than higher income from royalties.<sup>17</sup> Also reflecting the graph and the point that authors value readership as well as not having to make payments is that authors of journal articles generally do not collect royalties

15 Note that the graph shows that the price at  $t_1$  exceeds the unit cost  $c$  even though no profits are made. The explanation is that the apparent profit of  $t_1 - c$  on the units that are sold just offset the first copy costs  $f$ .

16 I do not consider negative prices—the possibility that authors would pay individuals to read their works.

17 See *Am. Geophysical Union v. Texaco Inc.*, 802 F. Supp. 1, 27 (S.D.N.Y. 1992) (Leval, J.), “generally [academic] authors have a far greater interest in the wide dissemination of their works than in royalties,” *aff’d*, 60 F.3d 913 (2d Cir. 1994); Ralph R. Shaw (1951, 572), “The commercial publisher’s interest in publications is the sale of copies of the entire issue or volume for profit. If he does not sell copies at a profit, he will soon be a bankrupt ex-publisher. The author, however, may be interested in the widest possible dissemination of his writings, and if someone were willing to reprint 10,000 copies of his article for free distribution, that would provide a great additional profit to the author in terms of professional credit.” I myself have bargained with a university press about the price of a book that I authored. I was urging a lower price for the book (and earlier release of an inexpensive paperback version) than the press was inclined to accept because of its interest in revenues and profits.

**Figure 2. Utility from Contracts**

and that journals retain copyright and charge prices to readers that allow them revenues sufficient not to have to impose fees for publishing on authors.<sup>18</sup>

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The utility that an author would obtain from publishing employing his or her preferred contract is displayed by the solid graph in Figure 2. (The other graphs will be discussed subsequently.) The author's utility increases the higher is his or her  $t$ , even though the sales price charged falls, and even though, beyond  $t_1$ , authors pay a positive fee to have their works published. The argument explaining that the utility of authors must grow with  $t$  is essentially this. Compare an author with one level of  $t$ , say  $t_L$ , to an author with a higher level of  $t$ , say  $t_H$ .<sup>19</sup> The  $t_H$  author could always make precisely the contract that the lower  $t_L$  author makes – name the same price and collect the same royalty (or pay the same fee). If the  $t_H$  author did this, the  $t_H$  author would be happier than the  $t_L$  author because, by hypothesis, the  $t_H$  author obtains more utility from having readers than the  $t_L$  author. In fact, the  $t_H$  author will obtain even greater utility than the amount just mentioned, since the  $t_H$  author will prefer to choose a different contract with a lower sales price from that chosen by the  $t_L$  author. Hence, the  $t_H$  author must be better off, as claimed.

18 See the discussion in Section 3.1 below.

19 These levels of  $t$  are not shown in Figure 2.

The solid graph in Figure 2 determines whether an author would want to invest the effort to create a work in the first place under copyright. In particular, an author would write a work if and only if the utility gained from his or her preferred contract would exceed the effort cost. In general, I assume that the effort costs vary for authors of each  $t$ , so that some authors of each type would choose to write and some would not. 25

## 2.2. No Copyright

Next let me consider the situation in a regime without copyright. In this context, a contract between an author of a work and a publisher cannot specify a sales price exceeding the per unit cost  $c$ . The reason, of course, is competition: if the publisher named a higher price than  $c$ , it would sell nothing, as other publishers could copy the work and could sell at a lower price as their unit cost would be only  $c$ .<sup>20</sup> Because, then, the publisher contracting with the author could only obtain a price of  $c$  for the work, the publisher would need to charge a publication fee to recoup the first copy cost  $f$  in order to cover its costs and to be willing to publish. 26

*Publication fees are borne by authors.* Assume here that authors themselves would bear publication fees. Thus, if an author made a contract and the sales price were  $c$ , the author would have to pay a fee equal to the first copy cost  $f$ . Likewise, if the author made a contract and named a lower price than  $c$ , the author would have to pay more than  $f$  as a publication fee in order to cover the publisher's costs.<sup>21</sup> 27

The sales price that an author of a work would choose if he or she made a contract can be seen from Figure 1. An author who would have chosen a price higher than  $c$  given copyright cannot name such a price in the absence of copyright. The best feasible price for such an author to elect is  $c$ . Therefore, all authors with a  $t$  less than or equal to  $t_2$  would choose  $c$  and have to pay the first copy cost  $f$  in order to publish. Authors with higher  $t$  would have chosen a price below  $c$  and can still do so in the absence of copyright. Hence, the price chosen by authors in their preferred contracts is given by the dotted graph in Figure 1. 28

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20 I assume that in the absence of copyright, the first publisher could not prevent copying by technological means, such as digital rights management. See Section 5.1.

21 This presumes that the per unit cost  $c$  is positive, that is, that publishing does not consist of mounting the work on the Internet.

29 Relatedly, we can see that the utility of authors from their contracts is given by the dotted graph in Figure 2. Note that authors with  $t$  below  $t_2$  obtain less utility because in the absence of copyright they are unable to make their otherwise-preferred contracts involving prices exceeding  $c$ . The utility loss suffered by such authors is greatest for authors with  $t$  of 0, for these authors would have named the highest price (the monopoly price) and would have earned the highest royalty, and the utility loss declines as  $t$  increases. For  $t$  at least  $t_2$ , authors suffer no utility loss, for the absence of copyright does not affect the contract that these authors would make, as the price would be  $c$  or below.

30 The height of the dotted graph tells us whether an author would choose to write in the absence of copyright; if the height of the graph exceeds the effort cost, the author would write and publish; otherwise the author would not write.

31 *Publication fees are subsidized.* Now suppose that authors would not bear publication fees, because universities or grantors would do so (for reasons to be discussed in Section 3). In particular, assume that universities and grantors would pay a publication fee of  $f$ , so that authors could publish for free.<sup>22</sup> It can be shown that if an author wrote a work and made a contract, the author would choose the same contract price as he or she would in the absence of a subsidy of  $f$ .<sup>23</sup> Thus the dotted graph in Figure 1 that shows a contract price of  $c$  for authors with  $t$  below  $t_2$  and then lower prices for higher  $t$  applies whether or not authors would bear publication fees.

32 However, the utility of authors is higher as a result of the subsidy, as is shown in the dashed graph in Figure 2. Specifically, the utility of an author is higher by the amount  $f$  at each  $t$  than if the subsidy would not be paid in the absence of copyright; this is why the dashed graph is everywhere above the dotted graph by the distance  $f$ . One can also see geometrically that the dashed and solid graphs must intersect at some point, which I label  $t_0$ . Accordingly, to the left of  $t_0$  the incentive to write is lower than under copyright and to the right of  $t_0$  the incentive to write is higher than under copyright. The sense behind this conclusion is as follows. For relatively low  $t$ , authors have to give up relatively high royalty revenues; and the greater

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22 I assume that universities and grantors would not pay a higher fee, which would for instance allow a book costing  $c$  to be printed to be sold below cost.

23 This is established in the appendix.

readership, which they value relatively little, combined with the subsidy they obtain in the absence of copyright does not offset the royalties they cede. For relatively high  $t$ , converse logic implies that authors are better off giving up royalty revenues in exchange for higher readership and the subsidy.

Again, the height of the graph of utility determines whether an author would choose to write; if the height of the dashed graph exceeds the effort cost, the author would write and publish.

### 2.3. The Effect and the Social Desirability of Eliminating Copyright

From what has been said, we can proceed to identify the effects and the possible social desirability of elimination of copyright. I separately consider the case where publication fees would be paid by authors and the case where the fees would be subsidized.

*Publication fees are borne by authors.* In this case, we have seen from Figure 2 that eliminating copyright will reduce the incentive to write for authors in Region A, namely, those authors who would have selected a price above  $c$  under copyright.

Some of these authors with reduced incentives in Region A will decide not to write. Such authors will tend to have relatively low  $t$ , for they are the ones who would have earned relatively high royalties and thus who lose the most in the absence of copyright. When these authors are discouraged from writing, social welfare will fall. The measure of the social welfare loss suffered for a work that is not written is the value that would have been obtained by its author and its readers under copyright less the costs of writing and publishing it.

The remaining authors in Region A will still elect to write, because the decline in their utility from publishing will leave them with benefits exceeding the cost of writing. These authors will likely be those with relatively high  $t$ , because they are the ones who would have earned the lowest royalties and thus give up the least in the absence of copyright. Social welfare will increase in regard to each of these authors. The reason is that these authors would have published at a price above  $c$ , whereas in the absence of copyright they will publish at a price of  $c$ , resulting in a beneficial rise in readership. To illustrate, suppose that the price given copyright would be \$25 and that the price would fall to the per unit cost of \$2 without copyright. Then individuals who place a value on reading the work that is in between \$2 and \$25 will purchase the work, whereas they would not

have at the price of \$25, and their purchase will augment social welfare. For example, an individual who is willing to pay \$20 for the work would purchase it at a price of \$2, and this would raise social welfare by \$18 (the \$20 value placed on it by the person minus the \$2 unit cost of providing it to the person).<sup>24</sup>

38 It is also clear from Figure 2 that authors in Region B, with  $t$  at least  $t_2$ , have incentives to write that are unaffected by elimination of copyright. Hence, for them, the elimination of copyright has no social welfare consequence.

39 Whether elimination of copyright is socially desirable can now be expressed as follows. To the extent that academic authors are in Region A and would be discouraged from writing by the elimination of copyright, that policy would be undesirable. But to the extent that authors are in region A and would not be discouraged from writing, the policy would be desirable. The numbers of authors in both groups and the significance of the associated social welfare changes must be evaluated to determine whether the elimination of copyright would on net be socially desirable.

40 *Publication fees are subsidized.* In this case, we know from Figure 2 that in Region C, with  $t$  less than  $t_0$ , eliminating copyright reduces the incentive to write.

41 Now in Region C, we can reason as we did in regard to Region A in the case just considered. That is, some of the authors in Region C, those with relatively low  $t$ , will be discouraged from writing by their loss of royalties and the elimination of copyright, causing social welfare to fall. The other authors in Region C will still write, and since the price of their works will fall to  $c$ , social welfare will rise.

42 In Regions D and E, however, the incentive to write will increase relative to under copyright (because the dashed graph is above the solid graph), leading to a number of effects on social welfare. First, all authors in Region D who would have written given copyright will continue to write but will publish at a lower price  $c$ , and this will raise social welfare as has been explained. Second, in both Regions D and E, there will be authors who will

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24 Actually, this statement is inexact. Social welfare would rise by more than \$18 because, if the person obtained the work, the author would also gain utility from having an additional reader. For expositional ease, I abstract from this factor in discussing social welfare in the text, but I take it into account in the appendix.

write only because copyright has been eliminated and publication fees subsidized. That these new writings will occur may either raise or lower social welfare. In particular, the possibility that the new writings would lower social welfare arises because the subsidy of publication fees means that an author contemplating writing does not take into account the actual cost of publishing.<sup>25</sup>

Whether eliminating copyright in this case is socially desirable depends on three groups of authors: those in Region C who would be discouraged from writing by the elimination of copyright and in respect to which social welfare would be lowered; those in Regions C and D who would write both in the presence and the absence of copyright, and in respect to which social welfare would rise (because the price would fall to  $c$ ); and those in D and E who would write only in the absence of copyright, in respect to which social welfare could either rise or fall.

### 3. DISCUSSION OF THE MODEL—AND THE POSSIBLE CASE FOR ABOLITION OF ACADEMIC COPYRIGHT

In this section, I restate and interpret the analysis of the stylized model.

*Academic authors would still have a strong affirmative motivation to publish in the absence of copyright—to gain scholarly esteem and to advance themselves professionally.* A major assumption in the model was that academics have a positive incentive to publish regardless of the existence of copyright, especially to gain scholarly esteem. That this reason for publishing is important is manifest to any person familiar with the academic environment. Academics plan and politic to present their works, they seek to publish their works in as highly ranked venues as possible, and they attempt in other ways as well to promote citations to their works; for many academics, these efforts to achieve notice for one's publications are ardent and consuming. I assume, therefore, that academics derive substantial value from publication of their works because of the respect and attention

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25 For instance, suppose the following: the author's disutility of writing would be 10, the author's utility from readership would be 12, the publication fee (and first copy cost) would be 20, and the utility readers themselves would obtain from publication is 15. Then the author would write given that the fee is subsidized, for 12 exceeds 10. Yet writing is not socially desirable because the social costs of writing are  $10 + 20 = 30$ , exceeding the social benefits of  $12 + 15 = 27$ .



given to them by their readers,<sup>26</sup> and that they would benefit in this way in a world without copyright.<sup>27</sup>

46 Another source of utility to academics from publication that does not depend on the existence of academic copyright is that the promotion and salary of academics, and possibly their textbook-writing and consulting opportunities, are a function of their publication records.<sup>28</sup> Publication would bring these monetary benefits to academics even if academic copyright were eliminated.<sup>29</sup>

47 Consistent with the view that academics obtain significant value from publication that does not depend on the existence of copyright is the observation that, in actuality, academics earn little royalty income from publication. Publication of articles rarely results in receipt of royalties.<sup>30</sup> Publication of academic books usually does result in some royalty payments, but this income tends to be minor.<sup>31</sup> That academics in fact generally obtain only

26 See sources cited in note 7 above; Ian Rowlands & Dave Nicholas (2005, 17 & fig.7), finding that the most important factors to authors in choosing a journal for publication are its reputation and readership.

27 Academics would continue to benefit presuming that they would be cited as the authors of their works. In a world without copyright, I assume that there would still be a requirement to attribute copied material to its author. See Section 5.1 below.

28 See, e.g., *Weinstein v. Univ. of Ill.*, 811 F.2d 1091, 1094 (7th Cir. 1987) (Easterbrook, J.), noting that a university's "demands—especially the demands of departments deciding whether to award tenure—will be 'the motivating factor in the preparation of' many a scholarly work"; Landes & Posner (2003, 48), "Many authors derive substantial benefits from publication that are over and beyond any royalties. This is true not only in terms of prestige, celebrity, and other forms of non-pecuniary income, but also in terms of pecuniary income in such forms as a higher salary for a professor who publishes than for one who does not, or greater consulting income . . ." (footnote and emphasis omitted); Mark J. McCabe & Christopher M. Snyder (2004), "Prestige is the currency of academia. Aside from the pure enjoyment of prestige, a scholar's chances for promotion, tenure, a higher salary, etc., increase with his or her prestige. Prestige comes from doing high-quality research." On the importance of publishing for salary, see, e.g., Onur Baser & Elda Pema (2003, 6), "Publications, we conclude, have a positive and diminishing effect on salaries."; and William J. Moore, Robert J. Newman, & Geoffrey K. Turnbull (1998, 360-361), concluding that quantity and quality of publications have strong positive effects on academic economists' salaries.

29 Textbooks could still be copyrighted if academic copyright were eliminated, as I discuss in Section 5.1 below.

30 See, e.g., Stephen R. Barnett et al. (1998, ¶ 1(e)), "The Author grants the above rights without claim of royalties or other compensation."; Beth Luey (2002, 3), "Journals do not pay authors . . ."

31 For example, my understanding is that under a typical arrangement, an academic author would receive a royalty rate of 15 percent of revenue. If a book sold, say, 1,000 copies at a price of \$60, the royalties received would be \$9,000. If the book were 300 pages in length and the author spent an average of 3 hours a page, the implied hourly rate of pay received by the author would be \$10.

insubstantial or no royalty income from publishing yet they devote great effort to writing implies that the incentives to publish that are unrelated to copyright must be strong.

*Publication fees, however, would probably be charged by publishers in the absence of academic copyright, and the fees would be more than nominal.* As emphasized in the analysis of the model, publishers would be unable to profit from reader charges if academic copyright were eliminated. A publisher of a book or journal would not be able to impose fees on readers for Internet access to its content, since all academic works would be made freely available by other parties. Likewise, a publisher would not be able to charge readers for print versions of works amounts exceeding printing and distribution costs, due to competition from other sellers of print versions.<sup>32</sup>

Hence, an initial publisher of a work would need to recover the first copy costs it incurred—the expenses of arranging peer review, selecting, editing, and formatting the work—from a source other than reader charges. Consequently, the publisher would have to impose fees on authors for publishing (assuming that the publisher’s operations would not be directly subsidized by universities or other donors).

What would be the likely magnitude of the first copy costs and publishing fees? First copy costs vary widely, from about \$400 to \$8,000 per article, with most falling in the \$1,000 to \$4,000 interval (King 2007).<sup>33</sup> We can also gain some appreciation of the magnitude of first copy costs from the publication fees now charged by open access journals. As of April, 2008, fees charged to authors by major open access journals ranged from \$1,250

32 In other words, I am assuming that first publishers in today’s world would not be able to earn meaningful profits merely from being first, given the ease of copying and the existence of the Internet. I am assuming also, as I noted, that initial publishers would not be able to purposely impede copying through technological means. See Section 5.1 below. In the past, profits sufficient to allow publishers to succeed may have been possible in the absence of copyright. See Stephen Breyer (1970).

33 See also Wellcome Trust (2004, 11), discussing certain literature and commenting on methods of financing scientific publishing; Bernard Wysocki, Jr. (2005, A1), “Industry experts say typical per-article costs are between \$3,000 and \$4,000.” In terms of first copy costs per page, compare Bergstrom (2001, 187), noting that for economics journals, “first copy costs average about \$100 per page” and “marginal subscriber costs are about \$.02 per subscriber per page,” with Joop Dirkmaat (2002, 229), criticizing Bergstrom’s methodology and estimating first copy costs to be at least \$281 per page. For major international journals, these costs will be much higher than average owing to increased content in each issue to edit, more submissions to sift through, and greater expenditures on peer review for each submission. See Wellcome Trust (2004, 14); see, e.g., Wysocki (2005, A1), noting that the journal *Science* has a per article first-copy cost of approximately \$10,000.

to \$3,000 per article (King & Alvarado-Albertorio 2008, 264 table 7). For instance, Public Library of Science journals charge from \$1,250 to \$2,750 per article, and BioMed Central charges from nothing to \$2,685 per article, with \$1,690 being standard (*Id.*). These open access journal fees may, however, understate their first copy costs because they sometimes receive income from grantors;<sup>34</sup> and if the journals engage in less reviewing of submissions than traditional journals, their costs and fees may also understate the first copy costs of many journals of relevance to us.<sup>35</sup>

51 Being longer than articles, books involve greater first copy costs, so that publishing fees for books would be greater. A conservative estimate is that if fees covered first copy costs for books, they would be at least \$10,000.<sup>36</sup>

52 It should also be observed that first copy costs are likely to fall over time because of publisher use of the Internet and of computer software.<sup>37</sup>

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34 See Lila Guterman (2004, A10, A11), noting that the Public Library of Science open access journals have benefited from a \$9 million grant from a private foundation; Colin Steele (2008), mentioning grants from the MacArthur Foundation and Mellon Foundation to university presses to print open access monographs; Peter Suber (2009a, § 5), reporting grants from the Wellcome Trust and the Mellon Foundation to open access journals. I myself have been involved in the launching of a new open access publication, the *Journal of Legal Analysis*, which is supported by grants from a private donor and by Harvard Law School.

35 Some individuals have expressed skepticism to me that first copy costs could be as large as I have described in this paragraph, suggesting that first copy costs should be negligible, in part because readers do not really demand copy-editing. If these individuals are correct in their assessment, that only reinforces the overall case I make in this article in favor of elimination of copyright; obviously, the lower are the costs of writing, the lower would be the fees for publication and the less they would impede the motive to write and publish.

36 Dryburgh Assoc. (2002) reports from a survey that the total first copy cost of an academic book is £7,391 (54 percent of which is for copyediting and typesetting), which at an exchange rate of \$1.49, <http://www.x-rates.com>, is \$11,013. "The upfront costs for publishing a monograph are . . . from about \$20,000 on the low end to many multiples of that . . ." Sanford G. Thatcher (2009, 62). Harvard University Press suggested in a conversation that the average first-copy cost per page is about \$50, implying a first copy cost of \$15,000 for a book of 300 pages. Telephone Interview with personnel, Harvard University Press, in Cambridge, Mass. (May 28, 2009). Also, it is reported that the copy editing costs of a page of an article average \$85, suggesting that copy editing costs of a book of 300 pages would be over \$20,000 (Tenopir & King 2000, 258 tbl. 51).

37 One might think that first copy costs are also likely to fall because authors would undertake copy editing tasks themselves. But if authors were to do this, they would then add to the publication fee their effort costs of copy editing. Hence, it is not obvious that the effective publication fee would fall as a consequence of authors doing copy editing themselves. Indeed, if a typical author's time is more valuable than that of a copy editor or a typical author is less efficient in performing copy editing, the effective fee would rise if authors do copy editing (and for that reason, one would predict that copy editing would continue to be done by journals or by hired professionals).

Journals now usually accept online submissions of manuscripts and communicate with authors and referees electronically, saving mailing costs. Also, journal administration is becoming automatic in many respects; journals are increasingly employing sophisticated software to facilitate the refereeing and review process. Software is also, of course, employed in the editing and formatting of manuscripts; it is used to check spelling, grammar, and references, to prepare diagrams, and to format manuscripts.<sup>38</sup> Nevertheless, copy editing costs are likely to remain a significant component of first copy costs, because of the inherent value of copy editing.<sup>39</sup>

A related mitigating point about costs is that various fixed costs of publishing would be avoided if academic copyright were eliminated. There would obviously be no need for legal protection of copyright; thus publishers would not have to ensure that authors properly granted them copyright, to negotiate licensing arrangements, or to police for copyright infringement. Also, there would be no need for subscription management and for charging readers, except to the extent that print versions were sold. Because these fixed expenses would not be incurred in the absence of academic copyright, the costs and publishing fees would be lower than might otherwise be thought.

*If academics would have to bear publication fees in the absence of copyright, their incentive to write and to publish would fall.* Let us provisionally assume that the publication fees just discussed would be borne directly by academics. Then we know as a logical matter that the incentive to publish

38 On the efficiencies of online administration of journals and of editorial software, see John B. Thompson (2005, 112–113), noting that the cumulative effect of the Internet and computer software “has been a dramatic decline in the cost of typesetting”, and Priscilla Markwood (2006), describing a number of novel software techniques for publication and noting how technology advances in recent years, especially software for copyediting, have allowed many tasks to become automated.

39 Janet H. Fisher of MIT Press states that “Some discussions ... have asserted that authors can handle everything—they don’t need copy editing, proofreading, or formatting of their computer files. The argument is that authors are doing most of this themselves now anyway. I strongly disagree. Most peer-reviewed journals are copy edited, and most scholars who have been through the process are grateful for the careful eye of a copy editor to catch incomplete references, mistakes in mathematical calculations, mislabeled figures, misnumbered footnotes, and even the occasional convoluted sentence. The quality of a scholar’s article would decline—in some cases significantly!—if copy editing was removed from the process.” Fisher (1995, 89). If this judgment is incorrect, copy editing turns out to be largely unnecessary, and first copy costs become much lower than predicted in the text, then the conclusion to which I come—that the elimination of academic copyright would be socially desirable—would again only be reinforced.

and thus to write would fall for all authors who today do not pay publication fees and who grant copyright to their publishers. These authors, who are typical,<sup>40</sup> would be made worse off by having to pay publication fees, so that their motive to publish and write would be lower in the absence of copyright.<sup>41</sup>

55 Would the imposition of the publication fees under discussion have a significant effect on writing and publication? Would having to pay, say, \$2,000 to publish an article or \$10,000 to publish a book substantially reduce writing and publication of articles and books? This is an empirical question about which we have, as far as I know, little hard information.<sup>42</sup> My own intuition is that publication fees would exert an effect that would be measurable, and I find it plausible that the effect would be significant, especially for the many academics whose salaries are modest. However, this conclusion is premised on the assumption that the academics themselves would have to pay the fees, an assumption that I now relax.

56 *If, however, academics would not have to bear publication fees—because universities or grantors would pay them—their incentive to write and to publish articles would not fall and could even rise, and so too might their incentive to write and publish books.* Now let us suppose that universities or grantors

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40 See Sanford G. Thatcher (2008, 98), “It has long been a tradition in scholarly publishing for authors to transfer all rights to the publishers of their articles and even their books.”; Bo-Christer Björk & Turid Hedlund (2009), estimating that open access journals comprise 8.5 percent of all scholarly peer-reviewed journals worldwide; Bo-Christer Björk, Annikki Roosr & Mari Lauri (2008, 184), calculating that in 2006, 4.6 percent of articles worldwide were freely available immediately, another 3.5 percent would be available after a period of delay, and another 11.3 percent were available in repositories.

41 Authors today are in principle able to pay publication fees to offset first copy costs and not to give copyright to publishers, but most choose to give copyright to publishers. Hence, it must be that they would be worse off if they did not transfer copyright to publishers and paid publication fees. In terms of the model, these are authors with  $t$  less than  $t_2$ . They are the authors in region A of Figure 2. To the extent that there are authors who today pay full publication fees and do not transfer copyright, the elimination of copyright would make no difference. In terms of the model, these are authors with  $t$  at least  $t_2$ .

42 There does exist survey evidence suggesting that most authors would be unwilling to pay any, or at any rate, more than \$500 in fees to publish an article. See Robert Denicola (2006, 358 & n.38), collecting surveys. This evidence, however, is misleading: It does not imply that imposition of publication fees would in fact have a pronounced negative effect on publication in a world without copyright, for unlike authors in that world, the survey respondents enjoy the option of publishing for free in traditional journals. See Sara Schroter & Leanne Tite (2006, 143), noting that 53 percent of surveyed authors “said it would be pointless to pay to publish in ‘this’ journal when other journals might publish it for free.”

would pay the publication fees.<sup>43</sup> Then the incentive of authors to write and to publish articles could in principle increase in the absence of copyright. The reason is that, as is generally true today, authors would pay nothing to publish articles,<sup>44</sup> but authors should benefit from greater readership, and thus from greater esteem, because their articles would be available for free on the Internet and printed copies of articles and of journals would sell at cost due to competitive pressures.<sup>45</sup> What the magnitude of the change in incentives would be is not clear—it depends on how much the authors would value the increase in readership<sup>46</sup>—but its direction is.

The case of books is different from that of articles, because authors of books earn royalties today.<sup>47</sup> Hence, an author of a book would lose royalties even though he or she would gain readership in a regime without copyright and subsidy of publication fees. The incentive to write and publish books would therefore increase if the benefit from greater readership outweighs the loss in royalty revenue, but would decrease in the converse situation. Still, an increase in publication of books would not be a surprise, in light of the low royalties earned from academic books and the probably substantial increase in readership that would come about in a world without copyright.

*Universities and grantors would have a motive to subsidize publication fees in a world without copyright.* Universities would have a reason to pay the fees that would otherwise be charged to their faculty members for publishing in a world without copyright. Namely, universities would not want their

43 In particular, assume as in the model that they would pay fees equal to first copy costs, but would not pay more, such as if an author of a book wanted the printed version to be sold below the marginal cost of printing.

44 In terms of the model, authors of articles in journals are roughly described by Figures 1 and 2 at the point  $t_1$ , where the price charged is above  $c$  and where authors pay nothing and receive nothing.

45 In the model, an author would definitely experience greater readership in the absence of copyright because his or her work would be freely available on the Internet (or in printed form at a price equal to cost). However, in fact the author might not gain readership because not only would the author's work become freely available, so would all other works that had been copyrighted, meaning greater competition for readership. I abstracted from these complications in the model.

46 If most of the readers about whom an author cares—say academics who are actively engaged in related research—would already see the article, then the increase in readership would matter little to the author. Yet this is not always the case.

47 In terms of the model, authors of books are roughly described by Figures 1 and 2 at points below  $t_1$ , where the price charged is above  $c$  and where authors receive positive payments.

faculty to write and publish less. A university's reputation and thus its ability to attract faculty, students, gifts, and grants, are obviously importantly affected by the publication record of its faculty members. Hence, it would presumably be in the interest of universities to subsidize publication fees to offset an undue dilution in publication incentives that would otherwise result from faculty having to bear publication fees. A proviso, however, is that universities might want to exercise some control over the quality of publications for which they pay publication fees (how so, to be discussed below).

59 Another proviso is that universities would not want a policy of subsidies to result in an excessive increase in publication fees by publishers. If universities simply paid publication fees, whatever their magnitude, an escalation of such fees could be imagined to occur. This problem could be ameliorated by granting each faculty member a fund for academic expenses including publication fees, for then faculty would have a motive to search for lower fees.<sup>48</sup> Universities could also police fees for unreasonableness.

60 The view that universities would wish to subsidize publication fees is consistent with the fact that universities today sometimes pay publication fees charged to faculty by open access journals<sup>49</sup> and that, of course, universities spend generally on support of faculty research.

61 It should also be noted that, on average, universities would not be expected to face a serious liquidity problem in financing publication fees. In a world without copyright, universities would not have to spend the considerable amount they now do on subscriptions for journals and on new books. Today, the annual cost of a single journal subscription can exceed \$20,000 (Denicola 2006, 352 & n. 4), and the annual library budgets of

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48 A saving that a faculty member achieved in publication fees could be used by the faculty member on, say, travel to a conference or other academic expenses. Thus, even if, as would be desirable, the fund is generous enough to cover all publication fees, a faculty member would still have a motive to search for low fees, other things being equal. The problem of the design of a faculty member fund for subsidy of publication fees is more complicated in a regime like our present one where copyright exists (mainly because the fund for fees cannot be fungible with other academic expenses, lest the faculty member simply avoid all fees by publishing in traditional journals with no fees). On this matter, *see* Stuart M. Shieber (2009).

49 *See* Bramble (2006, 213); Leslie A. Harmel (2005, 568); Suber (2009a, § 5), reporting that the number of universities providing funds to pay publication fees for open access journals increased in 2008 from six to eleven; Universities UK and the Research Information Network (2009), containing recommendations for university payments of open-access publication fees.

research universities are typically in the millions of dollars.<sup>50</sup> Because publishers would only be able to charge for printing and distribution costs in the absence of copyright, and because all publications would be freely available on the Internet, universities would be expected to save substantially. On the whole, the amount that universities would save could exceed the amount they would spend on publication fees, for the subscription and new book prices now paid cover publisher costs and profits, whereas the publication fees would cover only publisher costs. That is, university expenditures on publication fees could be less in a world without copyright than their expenditures today on subscriptions and book purchases, because universities would no longer be financing publisher profits from academic works.<sup>51</sup> However, those universities whose faculties are relatively productive researchers would tend to pay more in publication fees than they would save on subscriptions and book purchases.<sup>52</sup>

Grantors too would be predicted to want to subsidize publication fees. Since a grantor usually has as a specific purpose the publication of research, its incentives to subsidize publication might be comparable to those of universities. Again, consistent with this prediction about grantor behavior is that several prominent research sponsors today fund author publication costs; the Howard Hughes Medical Institute, the National Science Foundation, and the National Institutes of Health allow for this (Denicola 2006, 359).<sup>53</sup>

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50 At doctoral degree granting institutions in the United States, the mean expenditure in 2006 on library materials was \$8.688 million, including \$2.263 million on serials. See Mary Jane Petrowski (2007, 23). For example, in that year Brigham Young University spent \$23.942 million on library materials (*id.*, 25); Catholic University spent \$5.122 million (*id.*, 27); Duke University spent \$33.532 million (*id.*, 27); and Yale University spent \$74.938 million (*id.*, 43).

51 To amplify, suppose that universities are the only purchasers of academic works in a world with copyright and that in the absence of copyright, publication fees would equal only publisher costs. Then university expenditures on publication fees would fall in the absence of copyright by the amount of publisher profits. However, to the extent that purchasers of academic works today are parties outside the university (and that such parties do not publish and thus would not pay publication fees), university expenditures on publication fees would fall by less than the amount of publisher profits. Indeed, if the fraction of purchasers outside the university were sufficiently high, university expenditures on publication fees would rise in the absence of copyright.

52 For example, Guterman (2004, A11) calculated that Duke University would pay slightly more in publication fees in an open access setting than it would save on its library journal budget. See also the discussion of this issue in Donald King and Carol Tenopir (2004).

53 See also BioMed Central (2009), noting thirty seven major funders of biomedical research that allow payment of article processing charges for open access publications.



63 Both universities and grantors could, as a partial substitute for paying authors publication fees, subsidize journals or book publishers directly, allowing them to reduce the publication fees they would need to charge authors. However, this policy would often be less attractive for universities and grantors than payment of publication fees. The reason is that if a university or grantor subsidizes a publishing venue, then all authors who publish there are benefited, not just the university's faculty member or the grantee. Thus, from a university or grantor's perspective, it is more effective to subsidize publication fees than journals or publishers. Hence, I would expect the primary way in which universities and grantors would support publishing is by the payment of publication fees.

64 *The effect of elimination of academic copyright on the level of publication depends on the extent to which universities and grantors would subsidize publication fees. Because of the motive of universities and grantors to subsidize these fees, the number of published works is unlikely to decline substantially and could increase.* This conclusion follows from what has been said above.

65 *To the degree that publications would be discouraged by the elimination of academic copyright, the social losses would be limited because these publications would not ordinarily be of high quality.* An article of high quality that has been accepted for publication is likely to be recognized as having this character by its author. The author will be able to make judgments about the merit of the article from such indicators as the ranking of the journal to which it was accepted, the reception of the article at presentations, and citations to it in unpublished form. Furthermore, the author will be aware of his or her own general standing in the profession and record of success. If, then, authors generally know when their accepted articles are of high quality, they will value publication of such articles commensurately and thus be relatively unlikely to decide against publishing on account of having to bear a publication fee. Moreover, the probability of having to bear a publication fee should be comparatively low for high quality articles, for universities will be more likely to defray publication fees for articles published in upper tier journals and for faculty with better track records; additionally, high quality articles tend to be published by faculty at universities with substantial resources.

66 Conversely, articles of poor quality that have been accepted for publication are likely to be recognized as weak by their authors. These articles will often have been rejected for publication at a number of journals, will have been accepted only at a low-ranking journal, will not have made

much of an impression on colleagues at presentations or have been cited often, and will have been written by individuals without strong scholarly records. In all, it seems that articles that have been written that are of poor quality are the ones whose publication would tend to be discouraged by publication fees.

I have explained that if an article has been written and is of high rather than poor quality, it would be relatively unlikely to be discouraged from being published by publication fees. However, it should also be asked whether the writing of high quality articles in the first place would be reduced by publication fees. When an author contemplates writing an article that would turn out to be of high quality, would the author decide against making the effort because of the possibility it would be poor and that the author would then be likely to have to pay publication fees? This is possible, but it must also be taken into account that when an author contemplates writing an article, the author might have an idea of its quality, or at least might formulate one after undertaking preliminary work on the article. 67

The importance of the claim that discouraged articles are unlikely to be those of high quality seems substantial because of the great variability in quality of academic articles. There is evidence that article quality is concentrated, that a small fraction of all published articles receives the great majority of citations.<sup>54</sup> If publication of this group of articles would only be discouraged in a minor way by publication fees, then the social loss associated with the typical discouraged publication will be small. 68

The foregoing points about articles apply to academic books as well, but I conjecture with somewhat less force. The reasons are that an author's ability to forecast the quality of a book from the status of the publisher who accepted it or from citations to it in unpublished form seem less than for an article, and also that the prospect of having to pay publishing fees would weigh more heavily on an author contemplating writing a book than an article. 69

*The social loss from a discouraged publication would also be limited because an unpublished work could be posted on the Internet.* Articles and books that are not published could and probably would be posted on an Internet site, such as that of an open access repository, a working paper series, or an 70

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54 See e.g., John P. A. Ioannidis (2006), documenting that for the sciences, including the social sciences, "the most influential papers are extremely concentrated in a few journals" and noting that a core number of journals, constituting about 2 percent of all journals, publishes 95 percent of all cited articles.

author's personal website. Internet posting would limit the social loss from a work's not being published because it would be available for all to read. Furthermore, the ability of potential readers to locate the work would not be greatly compromised by its not being published because the author could post it on a site of appropriate subject matter relevance and because of the power of search engines.

71 Of course, the point that an unpublished work can be posted on the Internet is moot if the work would not have been written in the first place due to the prospect of having to pay a fee for publication. But this possibility is itself made less likely by the opportunity to post works on the Internet, for that means that the author still would obtain utility from having written an article or book.

72 *To the degree that publications would be encouraged by the elimination of academic copyright and subsidy of publication fees, either social gains or losses could be engendered. The latter problem might be offset by university and grantor efforts to condition a subsidy on quality.* I observed above that in the absence of copyright but given subsidy of publication fees, some authors might decide to write who would not do so in a world with copyright. The generation of such new works would often be socially desirable but would also sometimes be socially undesirable.

73 The possibility of socially undesirable publication is an instance of the standard disadvantageous economic byproduct of a subsidy: because those receiving the subsidy do not take into full account the cost of what they purchase—here publication services—they might decide to make a purchase even though true costs exceed the benefits. Consider, for example, a journal of very low quality that so few read as to make its operation socially undesirable in view of its publishing costs of \$2,000 per article. Even so, this journal could be imagined to operate successfully if its publication fee of \$2,000 would be borne by universities, for authors might well derive positive benefits from publishing in it—suppose they had written articles that were rejected in better journals and wanted to see their work in print.<sup>55</sup>

74 Such problems of socially excessive publication could be countered if universities (and grantors) imposed quality constraints on articles that they subsidize. They would have an incentive to do this as well, because

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55 Note that it is plausible that the journal would not operate in a world with copyright, for given the assumption that the journal has very few readers, it would have to charge authors publication fees approximating \$2,000 per article. It would be expected that few authors would want to pay this fee to publish in a journal known to be poor and having few readers.

publications of questionable quality would not tend to enhance their reputations (but would cost as much as high quality publications). However, universities would not want to exercise control over the subsidy of publication fees for articles in such a way that academic freedom, and expression of unpopular views, would be compromised. Suppose, though, that universities base the granting of subsidies for an article on the identity of the journal that accepted the article—giving subsidies to any article accepted in a journal in a named list of journals of sufficient reputation. Then the content of the particular article itself could not directly influence the subsidy decision and thus the threat to academic freedom would presumably be limited. Likewise, if universities base the granting of subsidies for a book on the identity of the publisher that accepted the book, not on the book itself, there should be no real threat to academic freedom in respect to the publication of books.

*Summary to this point: The effect of elimination of copyright on authors' incentives to publish might not be negative overall—it might lead to more publications, due to subsidy of publication fees—and to the extent that it would discourage publications, the loss in social welfare would probably be limited.* The preceding discussion suggests that the level of publications—especially of articles—would be unlikely to fall and might even increase in the absence of copyright. If the number of published works were to fall, the decline would be unlikely to be substantial. The main reasons for these predictions are that universities and grantors would have an incentive to pay authors' publication fees and that readership of works and thus authors' esteem would rise in the absence of copyright. Also, the social loss associated with discouraged publications would probably be limited, for the quality of such publications would tend to be low and unpublished written works could still be posted on the Internet. Further, although the effects on social welfare of a subsidy-induced increase in publications could be positive or negative, the latter possibility could be countered by the conditioning of subsidies on publication quality.

*Social benefits from eliminating academic copyright—deriving from the free availability of academic works.* If copyright of academic works were ended, a social benefit would be enjoyed associated with works that would still be published but that would otherwise have been copyrighted, and also with some of the works that would be published only because of the absence of copyright. In the absence of copyright, all these articles and books would presumably become instantly available on the Internet for individuals to

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download freely. Also, print copies would often be produced and would sell for approximately production cost, due to competitive pressures. Hence, for instance, many new academic books would quickly become available as moderately priced hardbacks or as inexpensive paperbacks. Furthermore, teaching materials drawing on published works would become easy for academics to assemble because permissions for use would not have to be secured or royalties paid.

77 In considering these social benefits, we need to make a realistic comparison with the state of affairs under copyright. Today, universities subscribe to a large number of journals and make their content freely available to many in the university community through library and Internet access, and faculty members often have budgets that are designated for the purchase of journals and books. Moreover, copyright protection is significantly incomplete for articles. Journals are increasingly allowing free downloading of their articles from the Internet, at least after a window of time following publication.<sup>56</sup> In addition to this voluntary provision of access to articles, there is much legally unpermitted exchange of articles because of the ease of copying and of emailing content over the Internet. Authors often maintain personal websites from which their actual published articles can be downloaded despite this being a violation of publisher's copyright privileges. Furthermore, as I will discuss in Section 4.1, pre-published versions of published articles can usually be located on the Internet and are often deposited in repositories. Hence, the difference that elimination of copyright would make to the availability of articles should not be exaggerated; access to articles that are copyrighted is much greater than would be true were copyright protection insisted upon and rigorously enforced, and were it true that each individual had to pay for copyrighted works rather than a university paying for them.

78 Nevertheless, the benefits of abolition of copyright of articles are positive. Faculty and students do not have ready access to all published articles on the Internet and often face costly-in-time hurdles to locate what is in theory freely available. Articles in pre-published form are not equivalent to published versions.<sup>57</sup> The assembly of teaching materials from articles and the

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56 See, e.g., PubMed Central (2009), containing a list of journals in medicine and the life sciences, and showing that approximately half of the journals allow immediate access to their content and the remainder after two to thirty-six months, with twelve months being most common, and a similar listing at the Stanford University (2009) HighWire press website.

57 See Section 4.1.

printing of them is often seriously constrained by copyright.<sup>58</sup> Further, many academics and students in institutions without substantial resources (including many small colleges and junior colleges in the United States and teaching institutions in other countries) cannot afford to pay for more than a narrow segment of journals. Additionally, there are numerous individuals who are not members of the university community but who wish to read academic works. When one takes these various observations into account and aggregates the benefits of a copyright-free world over the relevant populations and the huge number of articles that are published, my supposition is that the sum would be substantial.

Books seem to enjoy greater effective copyright protection than articles. Academic books published under copyright today are not usually available in electronic form,<sup>59</sup> even though publishing practices are changing.<sup>60</sup> And when books are offered in electronic versions, they must generally be purchased; unlike articles, books are not usually made freely available after a waiting period. Moreover, my personal impression is that there is a much lower ability of individuals to obtain electronic copies of books in pre-published version from the Internet than of articles. Hence, it appears that the difference that elimination of copyright would make for a typical book is greater than for a typical article, so that the proportional social benefit would be greater per book.

Whether for articles or for books, it is evident that the existence of the Internet greatly magnifies the social benefits that would be gained from elimination of copyright. Because of the Internet, all new academic works

58 See, e.g., *Princeton Univ. Press v. Mich. Document Servs.*, 99 F.3d 1381 (6th Cir. 1996) (en banc), affirming summary judgment against a commercial copy shop for copyright infringement because it reproduced substantial segments of copyrighted materials in course packs; *Basic Books, Inc. v. Kinko's Graphics Corp.*, 758 F. Supp. 2d 1522 (S.D.N.Y. 1991), finding Kinko's liable to publishing houses for copyright infringement because it excerpted their copyrighted works, compiled them into course packets, and sold them to students; Ann Bartow (1998, 151), "[O]ver the past decade the scope of educational fair use has been dramatically compressed . . . . Fearful and litigation averse educational institutions . . . protect themselves by adopting copyright policies that define a minimal scope of educational fair use, and make individual faculty members liable for any infringing photocopying activity outside of this petite orbit."

59 A perusal of the websites of a number of university presses (Cornell University, Duke University, Harvard University, University of Michigan, University of Texas) that I chose essentially at random shows that most sell few or no books in electronic form. The relatively limited list of books in electronic form offered by university presses may be found at the Association of American University Presses (2009) website.

60 On electronic publishing of academic books, see, e.g., Susan Gay (2007, 2).

would effectively become freely available to everyone.<sup>61</sup> Before the age of the Internet, the elimination of copyright would only have meant that works would become available in the sense that journal publications and books would have fallen in price and that duplicated copies would have been mailed between individuals.

81 Finally, the elimination of copyright would mean that publishers would not invest resources in charging readers, making copyright arrangements with authors, granting licenses to others, or in protecting their copyrights through search for violations and through litigation. These savings would be distinct from the benefits that we have been discussing due to free access to works and would be of some importance.<sup>62</sup>

82 *Conclusion.* The judgment that I reach is that there is a plausible case for elimination of academic copyright, even though on a priori grounds one cannot come to the conclusion.<sup>63</sup> I have offered arguments suggesting that the overall level of published academic articles and books might actually increase in the absence of academic copyright due to subsidy of publication fees, but in any event, would not be likely to fall substantially. I have explained as well that any reduction that does occur would tend to be of relatively low quality works, and that most articles would be available on the Internet if not published, implying that the social loss per discouraged work would be relatively low. An increase in publications could be socially beneficial or detrimental, but the latter problem of excessive publication could be countered by limiting subsidization of publication fees to works

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61 The availability of works copyrighted in the past is a different issue and one that I do not address, as the change in law I contemplate would abolish copyright only for future works, as I state in Section 5. In particular, therefore, I do not consider questions surrounding the social desirability of Google's plan to digitize copyrighted and out-of-copyright books. See Google Book Settlement (2009). For conflicting discussions of the impact the settlement will have on access to online books, see Robert Darnton (2009), criticizing the settlement for putting control of access to electronic versions of university books in the hands of a single for-profit company, and Paul Courant et al. (2009), presenting Paul Courant's response to Robert Darnton that the settlement creates a valuable "universal bookstore," and Darnton's reply to Courant continuing to criticize the settlement for giving Google a de facto monopoly.

62 King (2007, 99, 104) discusses rights management and copyright protection activities as a component of indirect costs, which make up from 20 percent to 50 percent of total costs, and mentions an estimate that subscription management accounts for 7 percent of total costs. These costs would not be incurred in a copyright-free world.

63 As I explain in the model, whether eliminating academic copyright is socially desirable (in both the case where publication fees would and would not be subsidized), depends on the distribution of authors by type  $t$ , the cost of writing,  $c$ , and the values placed by readers on academic works.

published in venues of reasonable quality. The social benefits from ending copyright would be that the entire body of articles and books now under copyright, and thus the most valuable, highly cited works, would become available to all, for free downloading from the Internet, could be included in teaching materials without seeking permissions, and the like. Moreover, the costs of arranging and protecting copyrights would be avoided. In all, it does not seem unlikely that the benefits would dominate the costs, and my prediction is that further analysis would validate this view.

#### 4. THE FUNDAMENTAL DIFFICULTIES FACED BY THE OPEN ACCESS MOVEMENT AND THE PROBABLE NEED FOR ABOLITION OF ACADEMIC COPYRIGHT

In this section, I describe briefly the efforts of the open access movement to make academic works freely available; I explain why these efforts are unlikely to succeed fully or without undue delay; and I suggest that a change in law may be needed to end academic copyright if the goal of unlimited access to academic publications is sought.

##### 4.1. The Open Access Movement and Its Problems

The most notable efforts to achieve unconstrained availability of academic works fall under the heading of the open access movement. The announced aim of this movement is to assure that individuals can costlessly obtain published academic works, mainly journal literature.<sup>64</sup>

Open access initiatives have generally been limited in their objectives, however.<sup>65</sup> Frequently, they seek to make freely available only pre-publication versions of articles, usually by having authors deposit these versions of their articles in repositories.<sup>66</sup> What such initiatives achieve

64 See note 4 above. As Peter Suber (2007) states, open access means the removal of “price barriers (subscriptions, licensing fees, pay-per-view fees)” for readers and focuses on “peer-reviewed research articles.”

65 See Peter Suber (2009b) for a detailed description of open access initiatives.

66 Pre-publication versions of articles range from “preprints,” versions that have not been accepted for publication, to “postprints,” versions that have been approved for publication by peer review (but that may not have been copyedited); see Suber *supra* note 4. See, e.g., Nature Precedings (2009), allowing researchers to post preprint manuscripts; National Institutes of Public Health (2009) for its public access policy requiring grantees to “submit final peer-reviewed journal manuscripts that arise from NIH funds to the digital archive PubMed Central upon acceptance for publication....”



over the status quo—in which discussion paper versions of articles have always been available—is not entirely clear, although it is positive, and the more so the closer is the accessible pre-publication version to the published article. In any case, a pre-publication version of an article is not a perfect substitute for the published article: readers will not necessarily know what is missing from a less than final version of an article, they will benefit from copyediting, they might want to cite final page numbers, and the like. Although some initiatives do aim to make actual published articles freely available, this is usually sought only after a delay, often six months or a year.<sup>67</sup>

86 Not only have open access initiatives been limited in their objectives, the initiatives have also encountered difficulties in achieving their announced goals. Academics who have pledged support to an initiative or have been required to do so by their institutions have often been reluctant to follow through on their obligations. For example, a group of prominent scientists asked in 2001 for a boycott of scholarly journals that did not provide open access to publications within six months of publication (Public Library of Science 2001). Although over 30,000 scientists signed a promise to join the boycott, few actually did so and the boycott was viewed as a failure (Young 2002, A14). Recently, faculties at Harvard, MIT, and Stanford universities decided to require their members to publish their articles only if open access is allowed by publishers, but faculty members have been allowed to opt out of this “mandate,” presumably because of fear that they would resist it.<sup>68</sup> Relatedly, the ability and willingness of universities that have

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67 See, e.g., Howard Hughes Medical Institute (2007) for its policy requiring “its scientists to publish their original research articles in scientific journals that allow the articles and supplementary materials to be made free accessible in a public repository within six months of publication”; the Scientific Council of the European Research Council (2007) for its policy mandating that “all peer-reviewed publications from ERC-funded research projects be deposited on publication into an appropriate research repository where available, such as PubMed Central, ArXiv or an institutional repository, and subsequently made Open Access within 6 months of publication.”

68 Harvard University’s open access policies (Harvard University 2009), adopted in 2008 and 2009, apply at present to the Faculty of Arts and Sciences, Harvard Law School, and the John F. Kennedy School of Government. Under these policies each “faculty member grants to ... Harvard ... permission to make available his or her scholarly articles ... to the public in an open-access repository.” But “[t]he Dean ... will waive application of the policy to a particular article upon written request by a Faculty member ...” MIT also decided to employ an essentially identical open access policy (MIT News 2009). Stanford University’s School of Education adopted a similar open access policy (Stanford University, School of Education 2008).

adopted open access policies to sanction violations by their faculty has been limited.<sup>69</sup>

The open access movement has also sought to foster the development of open-access academic journals, such as those in the Public Library of Science (Public Library of Science 2009). Open access journals generally do not copyright their works and often charge fees to authors to publish in order to cover their costs; thus they are examples of the kinds of journals that I described in Sections 2 and 3 that would exist in a world without copyright. The number of open access journals has been rising, and they now constitute about 4 percent of all journals.<sup>70</sup> However, open access journals are on the whole not among the most prestigious venues for publication (Thomas Hess et al. 2007).<sup>71</sup>

An important gauge of the effect of the open access movement is the percentage of academic works published under conditions of open access. The fraction of journal publications that are immediately available on an open access basis is reported to be less than 5 percent (Björk, Roos, & Lauri 2008), although almost all journal publications are available in at least some pre-published form.<sup>72</sup> Finally, books are generally unavailable in open access format.

#### 4.2. Explanation for the Problems

The problems and only partial success of the open access movement are not difficult to explain. Obviously, traditional publishers would be unwilling to cede copyright privileges for nothing, for that would end their ability to charge for access. Traditional publishers would have to be paid to give up

69 For example, the Harvard, MIT, and Stanford open access policies, *see* preceding note, do not mention any sanctions for their violation.

70 The open access website (Directory of Open Access Journals 2009) lists 4,050 open access journals, and the Genamics Journal Seek (2009) website reports the total number of journals to be 94,589. However, Björk & Hedlund (2009) report that 8.5 percent of journals are open access.

71 *See also* Bramble (2006, 219), noting that “[c]ompared with more traditional modes of publishing, Open Access journals and Open Access publishing/archiving in general suffer from a prestige gap”; Denicola (2006, 360), stating that “[w]hen authors who had never published in open-access journals were asked why they had not, sixty-nine percent said that their perception that open-access journals have low prestige and low impact was an important or very important factor.” *But see* Public Library of Science (2005), noting, in addition, that young journals from the PLoS, particularly PLoS Biology, have made an impressive impact despite the prestige advantage of their more established competitors.

72 One survey reports that 97 percent of journals are “green,” with a majority allowing posting of postprints and the remainder posting of preprints (SHERPA RoMEO 2009a).

copyright, but as I discussed in Section 2.1, authors would not be expected to find it personally advantageous to do this; they will prefer for publishers to hold copyright in order to avoid having to pay fees for open access publication. This is presumably why open access initiatives have been generally limited in nature and have not sought immediate open access to published articles themselves.

90 The relative lack of success of open access journals is also not hard to understand. A primary difficulty for an open access journal is, again, that authors will usually not want to pay publication fees to an open access publication; authors will tend to prefer to save these fees and not to benefit from the expanded readership that open access to their own works would bring. An additional problem for an open access publication is that authors will be reluctant to publish with them due to their lack of prestige, as I mentioned above. Indeed, I suspect that many academic authors would consider their lack of prestige a more serious disadvantage of open access publications than possibly having to pay publication fees.<sup>73</sup>

91 If open access publications are of lower quality than many traditional publications, the question arises why this would be so. The answer is presumably that open access publications were relatively recently begun and that high-quality publishing venues are difficult to establish. There is, though, no apparent intrinsic basis for believing that open access journals would be of low quality. Open access journals can charge sufficiently high submission and publication fees to finance a rigorous refereeing and editorial process; they can, and would generally be motivated to, exercise selectivity in the works that they accept for publication.<sup>74</sup> Hence, the quality disadvantage of open access journals would be expected to wane over time.

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73 Note the irony in this regard: academics' desire for esteem is not only the factor that makes elimination of copyright socially desirable, it is also a factor that stands in the way of its elimination.

74 A number of commentators have suggested that open access journals would have an incentive to publish a greater volume of works in order to increase revenue—for their revenue would depend on publication fees—and that this would lead to a dilution of article quality. See, e.g., Karen Hunter (2004); and John Ewing (2004). This view does not make clear economic sense: if a journal degrades its quality, the fee that it will be able to charge each author will decline (for the esteem an author derives from publication depends on journal quality); hence, if a journal increases the number of acceptances and quality declines, its publication fee revenue and its profits will not necessarily increase.

Another issue of relevance is the possibility that traditional journals would convert into open access journals.<sup>75</sup> Conversion would, however, seem usually to go against the joint interests of authors and journals because authors, as I have emphasized, would usually prefer to avoid publication fees and to transfer copyright to journals so that they can impose charges on readers. Equivalently, if a traditional journal converted to an open access plan and charged publication fees, its submissions from authors would be likely to fall.<sup>76</sup> A subset of authors, however, might prefer to pay publication fees in order to obtain open access for their articles, suggesting that a traditional journal might offer the option to an author of paying a publication fee and having that article freely available for downloading on the Internet.<sup>77</sup>

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#### **4.3. The Fundamental Divergence between the Effects of Individual and Collective Efforts toward Open Access—and the Consequent Need for Legal Change**

One can express the difficulties faced by the open access movement in terms of a basic divergence between the effects of individual and collective actions. If an individual academic insists on open access to his or her publication, this single action brings about no real change in the overall system of copyrighted works—that system continues to exist. And because the system of copyright continues to exist, the academic who obtains open access for his or her work does not as a consequence

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75 This happened with the journal *Nucleic Acids Research*; see *Nucleic Acids Research* 2009. See also Claire Bird (2008), discussing and evaluating impact of *Nucleic Acids Research's* transition to open access, and noting that 68 other Oxford journals have since transitioned to some form of open access. A list of traditional journals that have converted to open access journals can be found at Open Access Directory (2009). On the other hand, some formerly open access journals have recently switched to subscription models. See, e.g., *Journal of Visualized Experiments* (2009), explaining that high production costs for video articles led the previously-open access *Journal of Visualized Experiments* to adopt a subscription model.

76 I am presuming that authors would have to pay the publication fees in saying this. Clearly, if universities would subsidize publication fees, journals that converted to an open access model would not lose submissions; they would gain submissions because their readership would increase.

77 See, e.g., Toby Green (2009, 75), reporting that of 263 publishers responding to a recent survey by the Association of Learned and Professional Society Publishers, 30 percent offer optional open access to authors. For instance, the publisher Springer offers this option to authors under its Open Choice program; authors can publish individual articles giving readers open access if they pay a fee of \$3,000 (Springer 2008); see also, e.g., Elsevier (2009); Oxford Journals (2009); Taylor & Francis (2009); Wiley InterScience (2009). For a partial list of journals offering this option and their prices, see SHERPA RoMEO (2009b).

obtain the benefits that would flow from the general abolition of academic copyright. That is, the academic does not enjoy free access to all academic works. Likewise, even if a university requires that there be open access to works published by its faculty members, the university will not then garner the benefits of free access to all academic works—the university will still have to pay for journals and for books. Hence, it may well be that a collective action, namely, one that ends the legal right to copyright academic works, is needed to achieve open access, or at least to achieve that objective soon.

94 A related observation is that it may be rational for an individual academic or for a individual university to refrain from committing to publish academic works only if open access is granted, yet to support a change in law to eliminate academic copyright. Indeed, I suspect that most academics and many universities are in this category.

## **5. HOW COULD THE ELIMINATION OF ACADEMIC COPYRIGHT BE ACCOMPLISHED?**

95 I have suggested in the preceding section that if free access to published works is thought to be socially desirable, it would best be accomplished by a modification in copyright law rather than by the initiatives of the open access movement. Let me now briefly describe such an alteration in law and whether it would be difficult to effect.

### **5.1. A Law Eliminating Copyright in Academic Works**

96 By a law abolishing copyright in academic works, I mean a law denying the right of copyright for all newly authored academic works in the United States.<sup>78</sup> I suppose also that the law would seek to bar use of technological methods intended to impede copying and that contractual arrangements to prevent copying would be made unenforceable. Hence, all new academic works could be copied and presumably would be made available free of charge in electronic form or sold at cost in printed form. Copied material would, however, have to include citations to its source and might be protected

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78 The arguments suggesting that copyright be abolished apply throughout the world, but I restrict attention here to the law in the United States.

against certain forms of abridgment—otherwise the author could bring a legal action against the violator.<sup>79</sup>

The implementation of a law ending copyright of academic works would require a definition of academic works. Let me first consider articles (books will be addressed subsequently). An article could be deemed an academic work if it were to be published in an academic journal. To determine whether a journal is academic, four indicia could be employed:<sup>80</sup> whether its authors are usually academics; whether its readers are mainly academics; the degree to which its content is academic in character (displays sophistication and knowledge of prior learning); and, most important, the magnitude of any royalties received by authors (low or no royalties would favor classification as academic).<sup>81</sup>

These four factors bear on the importance of esteem to authors and thus, as has been explained at length above, on whether elimination of copyright would be unlikely to detrimentally diminish the volume of publications. If an article is going to be published in a journal containing works that are typically authored and read by academics and that exhibit the usual qualities of academic works, then the likelihood is that the purpose of the author of the article in question was to gain recognition from academics and also that it was not written in order to obtain royalties. Furthermore, and crucially, if the journal does not generally pay any, or more than modest, royalties, that would strongly reinforce the inference about the object of the author and the lack of need for copyright to have induced the writing of the article.

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79 The author of a work would have the right to enjoin the distribution of unattributed material and to collect damages for harm done due to lack of attribution or other violations of rights. For a discussion of the basis for these rights, see Mark A. Lemley (1995). (Today, such legal rights are presumably largely unnecessary because copyright prevents others from copying work without permission.) But there would be no legal duty to cite the author for the author's ideas. That duty would be enforced as it is now, by scholarly norms. Copyright law does not protect ideas. See, e.g., Goldstein (2005, 1:52).

80 One possibility is that these criteria would be applied by an expert extra-judicial body, which would create and maintain a list of journals considered academic. Parties displeased with the classification of a journal as academic by the expert body could have a right of appeal to the courts.

81 This last factor can be applied only in regard to a journal that was in existence before the passage of the statute under consideration. For journals established after the passage of the statute, evidence about planned payments to authors could be examined.

99 For the most part, journals would be straightforward to classify according to the four criteria, and those journals that we now would naturally consider to be academic would clearly be treated as such under the criteria. It is true that in some instances, not all of the criteria would apply, but through direct consideration of the underlying issue of whether copyright is needed to induce publication, classification could still often be intelligently accomplished. Consider an existing journal that publishes articles on international affairs; that its readership is less than half academic; that its authors are usually not academics—the nonacademic authors are drawn from think tanks and the State Department; that its articles, while serious, can readily be understood by non-specialists; and that it pays nothing to its authors. Should this journal be considered academic? If we ask the crucial question whether copyright is needed to induce publication of the articles in the journal, our answer would be no, so that we ought to treat the journal as academic and not allow copyright. In particular, the journal's nonacademic authors have positions suggesting that they would value the esteem of their readers: members of think tanks are usually highly educated individuals, often have connections to academia, and in many respects appear to share the goals and ethos of academics; and some members of the State Department may have related objectives. That the readership of the journal is not predominantly academic is not necessarily dispositive, for this factor serves only as an indicator of whether the author wants esteem. As a general matter we would infer that if the audience of a journal is not academic, then gaining the esteem of that audience would not be highly valued by an author. But in the case of a journal in international affairs, the esteem that a writer would desire would plausibly be from a wider community than just academics interested in international affairs; presumably the author would be pleased to gain notice from readers in think tanks and members of the State Department. That the articles can be comprehended by nonspecialists is, in the context at issue, not surprising, for international affairs is not an abstruse or technical field. Finally, that authors do not receive payment for their articles demonstrates that they did not need royalties to publish and suggests that many would have been willing to pay publication fees in the absence of copyright. Furthermore, institutions such as think tanks and the State Department might wish to pay publication fees in order to encourage their employees to publish.

100 Turning now to books, an approach similar to that just described for articles could be attempted. That is, a book could be deemed an academic

work if it was to be published by a publisher whose books—or books published under an imprint or distribution plan—satisfy the four factors that I mentioned in regard to journals. Notably, then, most books published by university presses, and sold by them as academic rather than trade press books, would be classified as academic works. However, I suspect that the classification of books would be more difficult than the classification of articles because books generally do result in positive royalties.

In any case, textbooks would not be considered academic, so could be copyrighted. The premise in this regard is that most textbooks would probably not be written in the absence of the prospect of profit from copyright. That is not to deny that some measure of esteem is derived by academics from authoring textbooks. It is rather that the strength of this factor does not seem very strong. 101

Compilations of academic works, however, would generally not be accorded copyright. Compilations are different from textbooks in that they require relatively little effort to create. Therefore, my suspicion is that disallowing copyright for compilations would have only limited effect on the volume of compilations generated. 102

## 5.2. Effecting the Elimination of Academic Copyright

Ending academic copyright seems straightforward to accomplish from a legal perspective. Presently, copyright is authorized under Title 17 of the U.S. Code. To terminate academic copyright could be achieved under new legislation, defining an exception for academic works. Other carve outs already exist,<sup>82</sup> and there is nothing conceptually difficult about crafting a 103

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82 A number of different types of carve-outs are already codified. There are complete denials of copyright to works produced by certain actors. *See, e.g.*, 17 U.S.C. § 105 (2006), denying copyright to works produced by the U.S. Government. There are denials of particular rights normally secured by copyright to certain types of works. *See, e.g., id.* § 114, excluding the right of performance from copyrights in sound recordings; *id.* § 120, excluding from copyrights in certain architectural works the rights to prevent the making, distribution, or display of pictures of the work. And there are denials of particular rights normally secured by copyright when the right is violated for a particular purpose. *See, e.g., id.* § 108, granting libraries and archives limited reproduction rights to preserve works or make them available for research at other libraries or archives, notwithstanding copyrights in those works; *id.* § 121, making reproduction and distribution of copyrighted works “in specialized formats exclusively for use by blind or other persons with disabilities” not an infringement. However, Paul Goldstein has suggested to me that elimination of copyright for academic works could lead to conflict with the obligations of the United States under the TRIPS Agreement.



legal exemption for future academic works.<sup>83</sup> Moreover, doing so would not be constitutionally problematic because there is no constitutional right to copyright. Indeed, insofar as abolishing academic copyright could even spur the production of knowledge, it would be the constitutionally preferred course according to the Copyright Clause's preamble that copyright should be used "To promote the Progress of Science and useful Arts."<sup>84</sup>

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Eliminating academic copyright also seems feasible from a political perspective because of its likely endorsement by universities, academics, and students. One would expect universities to support abolition of copyright because of their general desire to promulgate knowledge, their wish for faculty to be able to assemble teaching materials without their having to secure permissions from copyright holders, and their purely financial interest in not having to pay for subscriptions to journals and high prices for books. In the latter regard, recall that universities as a whole would probably save funds if academic copyright is eliminated, even assuming that they fully subsidize publication fees. This is because universities would no longer serve as the source of much of the large profits that accrue to publishers of academic works.<sup>85</sup> Academics themselves would be likely to favor abolition, especially if they felt that publication fees would often be subsidized by their universities and grantors (which as I explained above would be probable). Under this assumption, academics would probably be better off were copyright eliminated: their works would remain costless for them to publish but would be more widely circulated; and they themselves would have free access to all academic works.<sup>86</sup> Finally, students should exhibit a preference for elimination of copyright assuming that they would agree that it would not lead to a dilution in the quantity and value of academic works, for they would then be able to obtain all works for free on the Internet and at cost in print; furthermore, their instructors would face no copyright hurdles in assembling teaching materials, which would also benefit them.

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83 Abolishing copyright for works already in existence may offend constitutional protections of property and thus could be subject to constitutional restraint.

84 U.S. Const. art. I, § 8, cl. 8.

85 On the university's financial advantage (despite their subsidization of publication fees), see note 51 above.

86 The only obvious qualification is that an academic author who today would make substantial royalties from an academic book would forgo this income in the absence of copyright. However, as I observed earlier, note 31 above, this is not the usual situation.

Opposition would, of course, be expected to be voiced by for-profit publishers of academic works, as their copyright-derived earnings and sales are substantial. For example, in 2008 Elsevier earned approximately \$1 billion in operating profit on \$3.145 billion in revenue.<sup>87</sup> Copyright fuels much of these profits by enabling commercial publishers to raise journal prices substantially above cost, as evidenced by the much lower subscription prices for non-profit scholarly publications.<sup>88</sup> Opposition might also be expressed by some learned societies, because they would have to cede the profits that they now obtain from their own journals.<sup>89</sup> Opposition could come as well from parties who would view the abolition of academic copyright as undesirable because it might lead to erosion of intellectual property rights in a wider domain.

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## 6. CONCLUSION

I have endeavored here to examine the effects of eliminating copyright of academic works and the factors determining whether that change would be socially desirable. On the basis of a number of empirical judgments—notably, that universities and grantors would tend to subsidize publication fees—I suggested that ending academic copyright would be socially beneficial. The reader may, of course, make different empirical assessments and

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87 See Reed Elsevier (2009, 14, 124), reporting that in 2008 Elsevier obtained adjusted operating profits of £568 million on revenue of £1,700 million, and suggesting an exchange rate of 1.85 U.S. dollars per pound sterling. For other academic publishers, see Wolters Kluwer (2009, 2, 3), reporting that in 2008 Wolters Kluwer earned operating profits of €678 million on revenues of €3.374 billion, and John Wiley & Sons, Inc. (2008, 2), reporting that in 2008 John Wiley earned \$222.99 million on revenues of \$1.674 billion, and since its academic and scholarly revenues are 72 percent of the total, its estimated academic and scholarly earnings were \$160.55 million. Because the annual reports do not allow one to differentiate between academic works and textbooks and other works written for profit, the earnings figures I have stated are overestimates of earnings on academic works but my conjecture is that they indicate suggest the order of magnitude of such earnings.

88 See, e.g., Carl T. Bergstrom & Theodore C. Bergstrom (2004, 897 & tbl.1), determining that “the average price per page charged by commercial publishers is several times higher than that which is charged by professional societies and university presses.”

89 See John Willinsky (2004) on the dependence of learned societies on journal revenue. See also Guterman (2004, A12), observing that many learned societies use journal subscription revenues to finance conferences and other activities and thus do not favor an open access and publication fee regime. Examples of learned societies that have stated opposition to or skepticism about open access publication are the American Physiological Society (*id.*), the American Mathematical Society (Ewing 2004), and the American Association for the Advancement of Science, which publishes *Science* (Wysocki 2005, A8).

come to a different conclusion. My principal goal was not to persuade the reader that my empirical judgments are correct but rather to identify and clarify the factors bearing on the social desirability of ending copyright of academic works.

## APPENDIX

I present below the analysis of the model informally discussed in Section 2. The assumptions are essentially as described there. In particular, academic authors derive utility from readership of their published works; publication is performed by publishers; authors benefit from wealth and they experience disutility from writing effort. Define the following notation:

- $x$  = number of readers of a published work;  $x \geq 0$ ;
- $t$  = type of an author;  $t \geq 0$ ;
- $tu(x)$  = utility of an author of type  $t$  from  $x$  readers of a published work;  $u$  is positive, increasing in  $x$ , and concave in  $x$ ;
- $y$  = income of an author;
- $d$  = disutility of writing effort;  $d \geq 0$ ;
- $F(t, d)$  = probability distribution function over  $t$  and  $d$ .

An author knows his  $t$  and  $d$ . The utility function of an author from a published work is

$$tu(x) + y - d. \quad (1)$$

Readers obtain utility from a published work but no utility from unpublished works.<sup>90</sup>

Let

- $w(x)$  = utility obtained by readers from a published work;<sup>91</sup>  $w$  is positive, increasing in  $x$  with  $w'(0) > c$ , and concave in  $x$ .

Publishing a work involves a first copy cost and a marginal cost per unit. Define

- $f$  = first copy cost of publishing a work;  $f > 0$ ;
- $c$  = marginal cost of distributing a work to a reader;  $c \geq 0$ .

Hence, the cost of publishing and distributing a work to a positive number  $x$  readers is

$$f + cx. \quad (2)$$

90 Thus I abstract in the model from the point that readers do in fact obtain utility from reading works that are unpublished but posted on the Internet.

91 Note that since  $w$  does not depend on  $t$ , the utility obtained from a published work is the same regardless of who writes the work. This simplification is useful in the model, but as the reader knows, I discussed the important implications of differences in quality of works in the text.

If an author writes and publishes a work and it is read by  $x$  individuals, the contribution to social welfare will be

$$tu(x) + w(x) - (f + cx) - d, \quad (3)$$

for the author will enjoy utility of  $tu(x)$ , readers will obtain utility of  $w(x)$ , publication costs will be  $f + cx$ , and writing effort will be  $d$ .<sup>92</sup>

### A.1. Socially Ideal Outcomes

Given that a work has been written and first copy costs for publication have been incurred, the socially optimal number of readers is the  $x$  maximizing

$$tu(x) + w(x) - cx. \quad (4)$$

Let this optimal  $x$  be denoted  $x^*(t)$ , which must be positive (because  $w'(0) > c$ ) and is determined by

$$tu'(x) + w'(x) = c. \quad (5)$$

Note that  $x^*(t)$  exceeds the  $x$  at which  $w'(x) = c$  because the author derives utility from readership, and observe that  $x^*(t)$  is increasing in  $t$ .<sup>93</sup> A work should be written, and then published, if and only if<sup>94</sup>

$$tu(x^*(t)) + w(x^*(t)) \geq (f + cx^*(t)) + d. \quad (6)$$

### A.2. Outcomes under Copyright

Let me now ask what occurs under the regime of copyright as a function of an author's type  $t$  and  $d$ . I assume that if an author wishes to publish, the author makes a contract with a publisher involving two terms:

$p$  = price at which the work will be sold by the publisher;  $p \geq 0$ ;

$r$  = payment by the publisher to the author.

If  $r > 0$ , it will be described as a royalty payment, and if  $r < 0$ , it will be called a publication fee. The price  $p$  determines readership  $x(p)$  according to

$$w'(x) = p, \quad (7)$$

92 Social welfare does not include the income of authors. The motivation is the standard one that payments between parties are transfers and do not themselves absorb resources.

93 Implicitly differentiate (5) with respect to  $t$  to obtain  $x^*(t) = -u'(x)/[tu''(x) + w''(x)] > 0$ .

94 If (6) holds with equality, then whether the work is written does not affect social welfare, but for expositional convenience I adopt the convention that the work should be written and make similar assumptions below without further comment.

because readers can be viewed as maximizing  $w(x) - px$ . We know that  $x'(p) < 0$  by implicit differentiation of (7).<sup>95</sup>

The utility of an author given a contract (but exclusive of writing effort  $d$ ) is

$$tu(x(p)) + r. \quad (8)$$

I assume that publishers are numerous and perfectly competitive, so that they break even on their contracts, that is,

$$px(p) = f + cx(p) + r. \quad (9)$$

Therefore,  $r = px(p) - [f + cx(p)]$ .

The contract that an author chooses is determined by maximizing (8) subject to (9), that is, by maximizing

$$tu(x(p)) + px(p) - [f + cx(p)] \quad (10)$$

with respect to  $p$ . For simplicity, I assume that (10) is concave in  $p$ . The first-order condition for the choice of  $p$  when it is positive is

$$\begin{aligned} tu'(x(p))x'(p) + x(p) + px'(p) &= cx'(p) \text{ or} \\ tu'(x(p)) + x(p)/x'(p) + p &= c. \end{aligned} \quad (11)$$

Denote the optimal choice of  $p$  given  $t$  as  $p(t)$ , and observe that  $p(0)$  satisfies  $x(p)/x'(p) + p = c$ , that is, marginal revenue equals marginal cost, so that  $p(0)$  is the standard monopoly price. For convenience, I assume that profits would be positive at the monopoly price,

$$p(0)x(p(0)) - [f + cx(p(0))] > 0. \quad (12)$$

This assumption is reflected in Figure 2, which shows the utility of the author at  $t = 0$  as positive. Now it follows from implicit differentiation of (11) that

$$p'(t) < 0; \quad (13)$$

that is, the optimal price of the work specified in the contract falls with  $t$ , as depicted in Figure 1.<sup>96</sup> At a  $t$  sufficiently high, labeled  $t_3$  in Figure 1,  $p(t)$  must equal 0; using (11), this  $t$  is determined by

$$t_3 = \{c - [x(0)/x'(0)]\}/u'(x(0)), \quad (14)$$

95 Differentiating with respect to  $t$ , we obtain  $w''(x)x'(p) = 1$ , so that  $x'(p) = 1/w''(x) < 0$ .

96 The first-order condition (11) is of the form  $F(p, t) = 0$ , and the second-order condition is  $F_p(p, t) < 0$ . Implicitly differentiating (11), we obtain  $F_p(p, t)p'(t) + F_t(p, t) = 0$ . Hence  $p'(t) = -F_t(p, t)/F_p(p, t)$ , and since  $F_t(p, t) = u'(x(p))x'(p) < 0$ , we have  $p'(t) < 0$ .

which, note, is positive because  $x'(0)$  is negative. As in Figure 1, let  $t_2$  be such that  $p(t_2) = c$ . We know that  $0 < t_2 < t_3$  since  $p(t)$  is decreasing between 0 and  $t_3$ . Also, as in Figure 1, let  $t_1$  be such that  $r(t) = 0$ . From (9), we know that  $p(t_1)x(p(t_1)) - [f + cx(p(t_1))] = 0$ , implying that  $p(t_1) > c$ , and thus that  $t_1 < t_2$ .

The utility of the author (exclusive of writing effort) who has chosen his preferred contract I will designate by  $U_C(t)$  (where the subscript  $C$  denotes copyright); hence,

$$U_C(t) = tu(x(p(t))) + p(t)x(p(t)) - [f + cx(p(t))]. \quad (15)$$

The utility  $U_C(t)$  is increasing in  $t$ , as is illustrated in Figure 2. To show this, suppose that  $t' > t$  and observe that if an author of type  $t'$  chooses  $p(t)$ , then his utility would be  $t'u(x(p(t))) + p(t)x(p(t)) - [f + cx(p(t))]$ , which exceeds  $U_C(t)$  since  $t' > t$ . Because  $U_C(t')$  must exceed the utility obtained if  $p(t)$  is chosen,  $U_C(t') > U_C(t)$ .

An author will write if  $U_C(t) \geq d$ , for then, if the author writes, the author's benefit from publishing will be at least the writing cost.

In summary, we have the following result.

*Proposition 1:*

Under the regime of copyright, contract prices and the utilities of authors are as shown in Figures 1 and 2. Specifically,

- (a) the contractual selling price of works  $p(t)$  declines with  $t$  between 0 and  $t_3$  (determined by (14)), where  $p(0)$  is the monopoly price and  $p(t_3) = 0$ ; beyond  $t_3$ ,  $p(t) = 0$ ;
- (b) there exist  $t_1$  and  $t_2$ , where  $0 < t_1 < t_2 < t_3$ , such that  $r(t_1) = 0$  and  $p(t_2) = c$ ; hence, royalties are paid to authors for  $t < t_1$  and publication fees are paid by authors for  $t > t_1$ ;
- (c) the utility  $U_C(t)$  of authors (exclusive of writing cost) from the contracts they choose rises with  $t$ ;
- (d) authors choose to write and publish when  $U_C(t) \geq d$ . ■

### A.3. Outcomes in the Absence of Copyright

If there is no copyright and an author makes a contract with a publisher, the price cannot exceed  $c$ , because I assume that, immediately after publication, the work could be copied by other publishers and, as no first copy cost would be borne by them, competition would lead to the work being sold at its marginal cost. I now consider the two regimes described in the text. In the first, authors bear publication fees, and I will sometimes refer to this simply as the

no copyright regime. In the second, publication fees of  $f$  are paid by other entities, and I will sometimes refer to this as the no copyright/subsidy regime.

*Authors bear publication fees.* The contract that an author who has written a work chooses is found by maximizing (10) with respect to  $p$ , where  $p$  is bounded by  $c$ . Denote by  $p_N(t)$  the price chosen by an author (where  $N$  stands for no copyright). We know that  $p_N(t) = c$  for  $t \leq t_2$  because  $p(t) > c$  for such  $t$  and (10) is assumed to be concave in  $p$ . We also know that  $p_N(t) = p(t)$  for  $t > t_2$  because  $p(t) < c$  for such  $t$ . This is shown in Figure 1.

Note that when  $p = c$ ,  $r = -f$ . Hence, for  $t \leq t_2$  authors who publish pay a publication fee of  $f$  and for  $t > t_2$ , authors who publish pay a publication fee of  $f + (c - p(t))x(p(t))$ , so that fees exceed  $f$  and rise with  $t$ .

Let the utility of an author (exclusive of writing cost) who publishes and has chosen his or her preferred contract be denoted  $U_N(t)$ , so that

$$U_N(t) = tu(x(c)) - f \quad \text{for } t \leq t_2$$

$$= U_c(t) = tu(x(p(t))) + p(t)x(p(t)) - [f + cx(p(t))] \quad \text{for } t > t_2. \quad (16)$$

Note that

$$U_N(t) < U_c(t) \text{ for } t < t_2, \quad (17)$$

since authors are forced to choose a price of  $c$  rather than a higher price  $p(t)$ . Observe also that  $U_N(t)$  is increasing in  $t$ , for it is increasing in  $t$  for  $t \leq t_2$ , it is continuous at  $t_2$ , and we already know that it is increasing in  $t$  for  $t > t_2$ . This is illustrated in Figure 2.

Authors will choose to write, and then to publish, when  $U_N(t) \geq d$ . We can summarize as follows.

*Proposition 2:*

In the absence of copyright, contract prices and the utilities of authors are as shown in Figures 1 and 2. Specifically,

- (a) the contractual selling price of works  $p_N(t)$  equals  $c$  for  $t \leq t_2$  and coincides with  $p(t)$  for higher  $t$ , so is declining until  $t_3$ , beyond which it is 0;
- (b) authors pay a publication fee of  $f$  for  $t \leq t_2$  and a fee of  $f + (c - p(t))x(p(t))$  for higher  $t$ ;
- (c) the utility  $U_N(t)$  of authors (exclusive of writing cost) from the contracts they choose rises with  $t$ ;  $U_N(t) < U_c(t)$  for  $t < t_2$ ;  $U_N(t) = U_c(t)$  for  $t \geq t_2$ ; and
- (d) authors choose to write and publish when  $U_N(t) \geq d$ . ■



*Authors do not bear publication fees.* I now assume (for reasons given in Section 3) that universities or grantors pay publication fees of  $f$  (but not more). Hence, the contract that an author who has written a work is determined by maximizing  $tu(x(p)) + px(p) - cx(p)$  over  $p \leq c$ . This maximand differs from (10) by a constant,  $f$ , so that it must be maximized at the same  $p$ . In other words,  $p_N(t)$  described above also describes the choice of  $p$  when publication fees of  $f$  are not paid by authors. Note that in this case, when  $p = c$ , authors pay nothing, so that for  $t \leq t_2$  authors who publish pay nothing and for  $t > t_2$ , authors who publish pay a publication fee of  $(c - p(t))x(p(t))$ .

Let the utility of an author (exclusive of writing cost) who publishes and has chosen his or her preferred contract be denoted  $U_{NS}(t)$  (where  $NS$  stands for no copyright and subsidy of fee), so that

$$\begin{aligned}
 U_{NS}(t) &= tu(x(c)) \quad \text{for } t \leq t_2 \\
 &= U_C(t) + f = tu(x(p(t))) + p(t)x(p(t)) - cx(p(t)) \quad \text{for } t > t_2.
 \end{aligned}
 \tag{18}$$

In other words,

$$U_{NS}(t) = U_N(t) + f,
 \tag{19}$$

as is shown in Figure 2. Authors will choose to write and to publish when  $U_{NS}(t) \geq d$ . Hence, we have

*Proposition 3:*

In the no copyright/subsidy of publication fee regime, contract prices and the utilities of authors are as shown in Figures 1 and 2. Specifically,

- (a) the contractual selling price of works  $p_N(t)$  equals  $c$  for  $t \leq t_2$  and coincides with  $p(t)$  for higher  $t$ , so is declining until  $t_3$ , beyond which it is 0;
- (b) authors pay no publication fee for  $t \leq t_2$  and a fee of  $(c - p(t))x(p(t))$  for higher  $t$ ;
- (c) the utility  $U_{NS}(t)$  of authors (exclusive of writing cost) from the contracts they choose rises with  $t$ ; also,  $U_{NS}(t) = U_N(t) + f$ ; and
- (d) authors choose to write and publish when  $U_{NS}(t) \geq d$ . ■

**A.4. Social Welfare in the Presence and in the Absence of Copyright**

Under copyright, if an academic writes and publishes, social welfare is

$$\int [tu(x(p(t))) + w(x(p(t))) - (f + cx(p(t))) - d] dF(t, d) \cdot \{(t, d) | U_C(t) \geq d\}
 \tag{20}$$

Note that the integrand, social welfare, must be positive whenever the author decides to write and publish. To see this, observe that  $U_C(t) \geq d$  means that  $tu(x(p(t))) + p(t)x(p(t)) - (f + cx(p(t))) - d \geq 0$ . But  $w(x(p(t))) > p(t)x(p(t))$ ,<sup>97</sup> so that social welfare must be positive. The explanation is that the author captures less than the readers' surplus, so that if the author decides to publish, it must be that that adds to social welfare.

Under the regime of no copyright and no subsidy of publication fees, social welfare is

$$\int [tu(x(p_N(t))) + w(x(p_N(t))) - (f + cx(p_N(t))) - d] dF(t, d). \quad (21)$$

$$\{(t, d) | U_N(t) \geq d\}$$

Here too social welfare must be positive when the author writes and publishes, for  $U_N(t) \geq d$  implies that  $U_C(t) \geq d$ .

Under the regime of copyright and payment of  $f$  as a publication fee, social welfare is

$$\int [tu(x(p_N(t))) + w(x(p_N(t))) - (f + cx(p_N(t))) - d] dF(t, d). \quad (22)$$

$$\{(t, d) | U_{NS}(t) \geq d\}$$

In this case, however, social welfare is not necessarily positive when authors write and publish. For example, suppose that  $c = 0$ . Then the author will write and publish if  $tu(x(0)) > d$ , whereas it is socially desirable to do only if  $tu(x(0)) + w(x(0)) > d + f$ . The former may hold even though the latter does not. The problem here is that the author does not incur the publication cost in deciding whether to write and publish.

Now I wish to explain why any of the three regimes might be best. To do so, it will be useful to make reference to Figures 1 and 2, which have been explained by what has been discussed above, except for  $t_0$  in Figure 2. The point  $t_0$  is defined to be that where  $U_{NS}(t)$  and  $U_C(t)$  intersect, which we know must occur between 0 and  $t_2$  because  $U_{NS}(0) < U_C(0)$  and  $U_{NS}(t_2) > U_C(t_2)$ .<sup>98</sup> To show that  $t_0 < t_1$ , observe that for any  $t$  in  $(t_1, t_2)$ , we have  $U_C(t) \leq tu(x(t)) < tu(x(c)) = U_{NS}(t)$ .

First, copyright might be the best of the regimes. Consider a  $t < t_0$  in Figure 2, that is, in region C. Here  $U_C(t)$  exceeds both  $U_N(t)$  and  $U_{NS}(t)$ .

97 This follows because, for any  $x$

$$w(x) = \int_0^x w'(z) dz > \int_0^x w'(x) dz = px.$$

98 The point of intersection need not be unique, but taking that possibility into account would be tedious and would not affect the conclusions. Hence, I will assume above that it is unique.

Hence, there exists a  $d$  such that  $U_C(t) > d > U_N(t)$  and  $U_C(t) > d > U_{NS}(t)$ . For this  $(t, d)$ , social welfare is positive under copyright, for the author would write and publish (see the discussion following (20)), whereas the author would not be induced to write under either of the no copyright regimes. Since the distribution over  $t$  and  $d$  might be discrete—just the  $(t, d)$  that was discussed could be the only pair—copyright might be the best regime.

Second, no copyright might be the best regime. Consider  $t_a < t_2$  in Figure 2, that is, in region A. Choose  $d_a$  such that  $U_N(t_a) > d_a$ , so that the author will elect to write and publish. The author will also choose to write and publish under the other two regimes, as utility under them exceeds  $U_N(t)$  in region A. Social welfare at  $(t_a, d_a)$  under no copyright is higher than under copyright because the price is lower; the price is  $c$  rather than  $p(t_a)$ , and thus readership is higher. In particular, the difference in social welfare is  $[t_a u(x(c)) + w(x(c)) - cx(c)] - [t_a u(x(p(t_a))) + w(x(p(t_a))) - cx(p(t_a))]$ , which is positive because social welfare (4) is concave in  $x$  and, from (5), is maximized at  $x > x(c)$ . Social welfare at  $(t_a, d_a)$  under no copyright is the same as under no copyright/subsidy. Let  $t_b > t_0$  and choose  $d_b$  such that  $U_{NS}(t_b) > d_b$  and social welfare is negative as a result of the author writing and publishing (along the lines explained after (21)). The author would not write under copyright or no copyright, for as noted, under these regimes, an author chooses to write only if that would result in positive social welfare. If we have a discrete distribution, with some probability mass at  $(t_a, d_a)$  and the rest at  $(t_b, d_b)$  then no copyright is best: at  $(t_a, d_a)$ , no copyright is tied with no copyright/subsidy, and no copyright is superior to copyright; at  $(t_b, d_b)$ , no copyright is superior to no copyright/subsidy, and no copyright is tied with copyright.

Third, no copyright/subsidy might be the best regime. That would be so if social welfare would be positive if the author would write under no copyright/subsidy but the author would not write under either of the other two regimes. This situation is possible. Let  $t > t_0$  and suppose that  $U_C(t) = d$ . Then at  $(t, d)$ , we know that it must be strictly socially desirable for the author to write (see the discussion following (20)). Consider  $d + \varepsilon$ , where  $\varepsilon > 0$ . At  $d + \varepsilon$ , the author will not write under copyright, but it will still be strictly socially desirable to do so if  $\varepsilon$  is sufficiently small. Also, note that since we know that  $U_{NS}(t) > U_C(t)$  (because  $t > t_0$ ),  $\varepsilon$  can also be chosen small enough that  $U_{NS}(t) > d + \varepsilon$ . In addition, note that  $U_C(t) \geq U_N(t)$ . Hence, the author would publish under no copyright/subsidy but not under copyright or no copyright, as claimed.

*Proposition 4:*

- (a) Social welfare under the three different regimes—copyright, no copyright, and no copyright/subsidy—are given in (20)–(22).
- (b) Any of the three regimes might be socially best. ■

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