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Lotus v. Borland: Copyright and Computer Programs

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Recommended Citation

Glynn S. Lunney Jr, *Lotus v. Borland: Copyright and Computer Programs*, 70 Tul. L. Rev. 2397 (1996).

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Lotus v. Borland: Copyright and Computer Programs

Glynn S. Lunney, Jr.*

Since Congress's express acknowledgment of copyright protection for computer programs in 1980, courts have faced the sometimes difficult task of deciding whether the admitted copying of some element from a copyright program constitutes infringement. In Lotus v. Borland, for example, the question was whether the admitted copying by Borland of the Lotus 1-2-3 menu structure constituted infringement. The district court held that it did; the First Circuit held that it did not; and the Supreme Court was unable to decide. This Essay suggests that the First Circuit's resolution is the correct one, but that the reasons the First Circuit articulated for its result are either illogical or insufficient to justify its outcome. In particular, copyright cannot deny protection to the Lotus menu structure because it is useful, as the First Circuit reasoned, because such an approach would deny copyright protection for computer programs generally. Rather, the decision whether to protect the Lotus menu structure should turn on whether leaving the menu structure unprotected would give competitors an undue advantage in copying the creativity embodied in the Lotus 1-2-3 program, when compared to the advantage available to competitors copying creativity embodied in the wide range of goods that copyright leaves unprotected. Because the empirical evidence suggests that leaving the Lotus menu structure unprotected would not give competitors such an undue copying advantage, copyright should not extend its protection to the Lotus menu structure.

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In 1879, the Court, in *Baker v. Selden*, ruled that Baker had not infringed the copyright in a work entitled "Selden's Condensed Ledger, or Book-keeping Simplified," by reproducing blank accounting forms substantially similar to those included in Selden's copyrighted work.¹ Out of this decision grew the perception of a basic dichotomy between patent and copyright: patent should protect useful things, and copyright should not.² Despite language in the Court's *Mazer v. Stein* opinion that appeared to repudiate this dichotomy,³ the notion that copyright ought not protect useful things remained a fixed feature of copyright, at least until 1980 when Congress chose to acknowledge copyright protection for computer programs.⁴ By doing so, Congress recognized that copyright should and did protect something that is literally nothing if not useful.

Because computer programs are inherently useful, some commentators decried the acknowledgment as a betrayal of the very nature of copyright, as if such a human construct could have a nature other than the one we choose to give it. Despite these cries, courts have had little difficulty accepting the general proposition that copyright protects computer programs as creative works of authorship, whether the program happens to be recorded in source code or object code, whether stored in a floppy disk, a magnetic tape, a read-only memory chip, or microcode, and whether intended to interact directly with the user (applications programs) or within the computer itself (operating system programs).⁵ The only real question courts have

1. 101 U.S. (11 Otto) 99, 107 (1879).

2. The Constitution's Patent and Copyright clause speaks of "Writings and Discoveries," U.S. CONST. art. I, § 8, cl. 8, and of "the Progress of Science and useful Arts," *id.*, neither of which suggests a useful/not useful dichotomy.

3. See 347 U.S. 201, 218 (1954) ("The dichotomy of protection for the aesthetic is not beauty and utility but art for the copyright and the invention of original and ornamental design for design patents.").

4. Act of Dec. 12, 1980, Pub. L. No. 96-517, 94 Stat. 3015, 3028-29 (codified as amended at 17 U.S.C. §§ 101, 117 (West 1994)).

5. See *Apple Computer, Inc. v. Formula Int'l, Inc.*, 725 F.2d 521, 525 (9th Cir. 1984); *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1249-53 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984); *NEC Corp. v. Intel Corp.*, 10 U.S.P.Q.2d (BNA) 1177, 1178-80 (N.D. Cal. 1989).

struggled with is not whether copyright protects computer programs, but whether, in a particular case, the admitted copying of some aspect, element, or level of a copyrighted program constitutes copyright infringement.⁶

This question arises because, while the plaintiff must establish actual copying by the defendant to establish infringement, not every instance of actual copying will trespass on the exclusive rights copyright accords a work's author. As a result, courts must determine not only whether the defendant has copied from the plaintiff's work, but also whether the copying that occurred went so far as to constitute an infringement. Even on this more difficult question, the concern has not been that courts have decided particular cases incorrectly, but that some of the language and reasoning the courts have used to reach admittedly correct outcomes might lead to an inappropriate outcome in some future case.⁷ Of course, in any new area, the courts usually require some time to work out vagaries and false steps in their reasoning, and so long as the results are essentially correct, flawed reasoning alone has not usually led the Court to intervene.

Yet, that is what the Court appeared ready to do when it granted certiorari in *Lotus Development Corp. v. Borland International, Inc.*⁸ To resolve the case, the Court had to decide whether Borland had gone too far, and thereby infringed Lotus's copyright⁹ in its Lotus 1-2-3 computer program, by copying the Lotus 1-2-3 "command

6. *Compare Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 705 (2d Cir. 1992) ("As we have already noted, a computer program's ultimate function or purpose is the composite result of interacting subroutines. . . . [E]ach subroutine is itself a program, and thus, may be said to have its own 'idea' . . .") with *Whelan Assocs. v. Jaslow Dental Labs, Inc.*, 797 F.2d 1222, 1236 (3d Cir. 1986) ("[T]he line between idea and expression may be drawn with reference to the end sought to be achieved by the work in question. In other words, the purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be part of the expression of the idea."), cert. denied, 479 U.S. 1031 (1987).

7. Of all the computer program copyright cases, probably none has drawn more criticism than *Whelan Associates*. Yet, the criticism has focused almost exclusively on the Third Circuit's approach to defining a computer program's idea(s), not on the finding of infringement itself. Apparently, no one disagrees with finding infringement in a case where someone, without authorization, takes copyrighted source code, and simply translates it into another computer language, as Rand Jaslow did in the *Whelan Associates* case. See *Whelan Assocs.*, 797 F.2d at 1226-27.

8. 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996).

9. As in *Baker v. Selden*, 101 U.S. 99 (1879), the validity of Lotus's copyright in its program is not disputed. See *Lotus Dev. Corp.*, 49 F.3d at 813 & n.5.

structure."¹⁰ The district court ruled that such copying established infringement.¹¹ The First Circuit reversed, ruling that such copying did not.¹²

While I believe that the First Circuit correctly resolved the infringement issue, its reasoning and language are troubling. Specifically, the First Circuit ruled that copyright did not protect the Lotus 1-2-3 command structure because the command structure was a "method of operation."¹³ In reaching this conclusion, Judge Stahl, writing for the panel, reasoned that the command structure constituted a method of operation because it "provides the means by which users control and operate Lotus 1-2-3."¹⁴

Yet, Judge Stahl's definition of "method of operation" is potentially too broad. Taken literally, Judge Stahl's language would seem to define every line of code in every computer program as a method of operation, and hence unprotected. Judge Stahl apparently recognized this difficulty with his language,¹⁵ and attempted to exclude program code from the reach of his ruling by noting that "while code is necessary for the program to work, its precise formulation is not."¹⁶ However, when Lotus offered a parallel argument for protecting its command structure,¹⁷ Judge Stahl rejected the argument as irrelevant to the "method of operation" issue.¹⁸ This internal inconsistency in Judge Stahl's reasoning leaves key aspects of his "method of operation" ruling unclear. While this inconsistency may not have led

10. The district court defined the term "menu" to refer "to a display on the computer monitor of a limited number of commands available to the user at a given moment." *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 799 F. Supp. 203, 206 (D. Mass. 1992), *adhered to* 831 F. Supp. 223 (D. Mass. 1993), *rev'd*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996). It defined the phrase "menu command" as "a command that appears in a menu." *Id.* It defined the phrase "command structure" as "the organization of the menus and menu commands." *Id.* I will use the same definitions of these terms in the course of this Essay.

11. *Lotus Dev. Corp.*, 799 F. Supp. at 221.

12. *Lotus Dev. Corp.*, 49 F.3d at 819.

13. *Id.* at 815.

14. *Id.* at 815-18.

15. *See id.* at 816 n.11.

16. *Id.* at 816.

17. Lotus argued that it could have, and indeed Borland did, design a different command structure for an electronic spreadsheet program. *Id.* at 819. Thus, "while [a command structure] is necessary for [an electronic spreadsheet] to work, its precise formulation is not." *Id.*

18. *Id.*

to an incorrect result in the *Lotus* case itself, it may lead to inappropriate results in future cases.

To resolve the *Lotus* case, the Court, therefore, faced not only the task of deciding whether Borland's copying constituted copyright infringement,¹⁹ but also of providing a coherent explanation for why certain elements in copyrighted works, although original, are not protected. Unfortunately, after Justice Stevens recused himself, the Court was unable to agree on either a proper resolution or rationale for the case, and ended up affirming the First Circuit's decision by an equally divided Court.²⁰ In a similar context, the Court has treated its summary dispositions as affirming the lower court's result, while neither accepting nor rejecting the lower court's reasoning,²¹ and presumably such treatment would be appropriate here. The Court's resolution, thus, effectively disposes of the *Lotus v. Borland* case itself, but leaves open broader questions concerning the proper scope of copyright protection for computer programs, and the reasons why copyright should leave some elements, although original, unprotected. These broader questions are the focus of this Essay.

I. IDENTIFYING UNPROTECTED ELEMENTS

At the outset, I begin with two basic propositions of copyright law. First, copyright does not protect those aspects of a work, even if original, that a court identifies as "idea"; it only protects those aspects that a court identifies as "expression." Second, once a court has

19. There are actually two aspects of Borland's program at issue. In its original program, Borland included a "Lotus Emulation Mode," which when activated by the user, would cause the Borland program to respond to the user's keystrokes in a manner identical to the way in which the Lotus 1-2-3 program would respond to those keystrokes. When the district court held that this mode constituted copyright infringement, Borland removed the Lotus Emulation Mode from its program, and added a "Key Reader" that would read and perform macros written for use with the Lotus 1-2-3 program. *See id.* at 811-12. I will not consider these issues separately, although I do not agree with the district court that a finding of infringement with respect to the Lotus Emulation Mode necessarily dictates a finding of infringement with respect to the Key Reader. *See Lotus Dev. Corp. v. Borland Int'l, Inc.*, 831 F. Supp. 223, 234-35 (D. Mass. 1993), *rev'd*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996). Instead, because of time and space limitations, I will focus solely on whether the Lotus Emulation Mode, and its reuse of the Lotus 1-2-3 command structure, constituted copyright infringement.

20. *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 116 S. Ct. 804 (1996).

21. *See Hicks v. Miranda*, 422 U.S. 332, 343-45 (1975) (the result reached in summary disposition is binding on lower courts).

identified a work's ideas, the court must also leave unprotected²² any elements that are "as a practical matter indispensable, or at least standard, in the treatment of" the work's ideas.²³ One way of approaching the *Lotus* case, therefore, is to ask, first, what are the unprotected aspects of the Lotus 1-2-3 program—its "ideas"—and to ask, second, whether a later work that borrows those ideas must necessarily incorporate the Lotus 1-2-3 command structure. If a later work that borrows the ideas contained in the Lotus 1-2-3 program must necessarily incorporate the Lotus 1-2-3 command structure, then taking the command structure should not constitute infringement.²⁴ On the other hand, if the command structure is only one of many ways of expressing those ideas, then taking the command structure should constitute infringement.

While this approach seems reasonably straightforward, the difficulty in using this approach lies in identifying those elements of a work that, although original, constitute unprotected idea. Consider, for example, the difference between the results the First Circuit and the district court reached in the *Lotus* case itself. If we put to one side Judge Stahl's "method of operation" language, which is neither necessary nor helpful,²⁵ both the First Circuit and the district court

22. By "leave unprotected," I mean that similarities between a copyrighted work and a later work in ideas, or elements that necessarily result from common ideas, can neither support an inference that the later work borrowed from the original, nor amount to an infringing or unlawful appropriation. See Glynn S. Lunney, Jr., *Reexamining Copyright's Incentives-Access Paradigm*, 49 VAND. L. REV. 483 (1996).

23. *Atari, Inc. v. North Am. Philips Consumer Elecs. Corp.*, 672 F.2d 607, 616 (7th Cir.) (quoting *Alexander v. Haley*, 460 F. Supp. 40, 45 (S.D.N.Y. 1978)), *cert. denied*, 459 U.S. 880 (1982).

24. See *Baker v. Selden*, 101 U.S. 99, 103 (1879) ("[W]here the art [*i.e.*, a work] it teaches cannot be used without employing the methods and diagrams used to illustrate the book, or such as are similar to them, such methods and diagrams are to be considered as necessary incidents to the art, and given therewith to the public; not given for the purpose of publication in other works explanatory of the art, but for the purpose of practical application.").

25. As Judge Keeton correctly noted, there is no indication that Congress intended the "method of operation" language it included in section 102(b) of the Copyright Act to affect a court's application of the idea-expression dichotomy. See *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 799 F. Supp. 203, 215-16 (D. Mass. 1992), *adhered to* 831 F. Supp. 223 (D. Mass. 1993), *rev'd*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996); see also H.R. REP. NO. 1476, 94th Cong., 2d Sess. 57 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5670 ("Section 102(b) in no way enlarges or contracts the scope of copyright protection under the present law. Its purpose is to restate, in the context of the new single Federal system of copyright, that the basic dichotomy between expression and idea remains unchanged.").

used similar approaches to resolving the infringement question. Both focused on whether reuse of the Lotus 1-2-3 program's ideas necessarily required use of the Lotus 1-2-3 command structure. Moreover, both attempted to define the program's idea(s) by applying, implicitly or expressly, the levels of abstraction approach that Judge Learned Hand articulated in *Nichols v. Universal Pictures Corp.*²⁶ The central and, to a large extent, only difference between the two decisions is the level of abstraction the respective courts identified as unprotected idea.

The district court identified the unprotected idea of Lotus's user interface as:

[a] user interface [that] involves a system of menus, each menu consisting of less than a dozen commands, arranged hierarchically, forming a tree in which the main menu is the root/trunk of the tree and submenus branch off from higher menus, each submenu being linked to a higher menu by operation of a command, so that all the specific spreadsheet operations available in [the program] are accessible through the paths of the menu command hierarchy.²⁷

Given this definition of the idea, it becomes obvious that the particular commands, the arrangement of those commands within particular menus, and the particular relationships between the various commands, menus, and submenus selected by Lotus to express this idea are only one of many ways of creating such a user interface. Borland could, therefore, reuse the identified idea without having to borrow Lotus's particular command structure. As a result, Borland's taking of the command structure, given its importance within the Lotus program, should establish infringement, and so the district court concluded.²⁸

The First Circuit, on the other hand, implicitly adopted a more concrete level of abstraction as the level where the work was unprotected. It identified the idea of the Lotus user interface as a user interface that consists of "that precise set of menu commands selected by Lotus, arranged hierarchically precisely as they appear in 1-2-3."²⁹

26. 45 F.2d 119, 121-22 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

27. *Lotus Dev. Corp.*, 799 F. Supp. at 216.

28. *Id.* at 218-22.

29. *See Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807, 815-19 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996). As mentioned, Judge Stahl actually discussed the issue in terms of "methods of operation," rather than in terms of "levels of abstraction," *see id.* at 816; as a result, I have used the district court's definition of

Given this definition of the idea, it becomes equally obvious that the particular commands, the arrangement of those commands within particular menus, and the particular relationships between the various commands, menus, and submenus that Lotus selected are part of the work's ideas, and, hence, are unprotected. As a result, Borland's taking of that structure should not establish infringement, and so the First Circuit concluded.³⁰

The key difference, then, that led the district court and the First Circuit to contrary conclusions regarding infringement is the differing level of abstraction each selected as the level where the Lotus 1-2-3 program interface became unprotected. To evaluate the two decisions, we turn, therefore, to the reasons each court gave for identifying a particular level of abstraction as unprotected idea.

II. SEPARATING IDEA FROM EXPRESSION

In addressing this issue, we should recognize that while the levels of abstraction approach presents a useful way of formulating the question to be answered, it does not itself define the level of abstraction at which a work becomes unprotected. The approach can help us identify more abstract, and more concrete, levels within a work, but it does not determine whether any given level is sufficiently abstract to warrant the label "idea," or sufficiently concrete to warrant the label "expression." To resolve that issue, courts must look outside the levels of abstraction approach itself to the policies that underlie copyright to determine whether protecting a particular level of abstraction would advance or disserve copyright's goals.

A. *The First Circuit's Approach*

The First Circuit, in its opinion, articulated three such policy concerns that it believed justified identifying Lotus's particular command structure as idea. First, after quoting *Baker v. Selden*, Judge Stahl suggested that because "Lotus wrote its menu command hierarchy so that people could learn it and use it," the command

the level of abstraction equivalent to the one that the First Circuit implicitly adopted. See *Lotus Dev. Corp.*, 799 F. Supp. at 216.

30. See *Lotus Dev. Corp.*, 49 F.3d at 819.

structure must be denied protection.³¹ Second, once a user has learned to use the Lotus command structure, she will be reluctant to switch to some other electronic spreadsheet because of the retraining costs involved.³² Copyright, therefore, must limit its protection of the Lotus command structure to avoid trapping users into a particular program, and must allow others to copy the Lotus command structure to the extent necessary to minimize the retraining costs Lotus users would incur in switching to another spreadsheet program.³³ Third, progress in computer programming depends more heavily on building on the work of others. To ensure progress in the computer programming field, copyright should therefore limit its protection for computer programs and allow later authors a degree of copying leeway with respect to programs, greater than the degree copyright allows for more traditional forms of literature.³⁴

While a number of courts and commentators have cited these policy concerns as justifications for denying or limiting copyright protection for useful things generally, and for computer programs specifically, none of them is persuasive.

1. Policy Concern #1: Copyright Must Limit Its Protection for Useful Works to Ensure That People Can Use Them

In articulating the first policy concern, the *Baker* Court began with the proposition that a copyright on a work describing a mathematical or scientific art did not prevent someone from using the art described:

A treatise on the composition and use of medicines, be they old or new; on the construction and use of ploughs, or watches, or churns; or on the mixture and application of colors for painting or dyeing; or on the mode of drawing lines to produce the effect of perspective . . . would be the subject of copyright; but no one would contend that the copyright of the treatise would give the exclusive right to the art or manufacture described therein.³⁵

31. *Id.* at 817. In *Baker v. Selden*, the Court stated: "But this object [use of the art described] would be frustrated if the knowledge could not be used without incurring the guilt of piracy of the book." 101 U.S. 99, 103 (1879).

32. *See Lotus Dev. Corp.*, 49 F.3d at 818.

33. *See id.* at 817-18.

34. *See id.* at 818.

35. *Baker*, 101 U.S. at 102.

As a starting point for the *Baker* Court's reasoning, this statement seems, at best, a bit odd. Neither *Lotus*, nor *Selden* before it, was seeking to prevent individuals from using the command structure, or the accounting system. Rather, both were attempting to prevent a competitor from marketing a competing product that had duplicated an important and original component of the copyrighted work.³⁶ Moreover, if *Lotus* or *Selden* had been attempting to prevent someone from using their respective works, such an attempt would fail, not because of the idea/expression dichotomy, but because copyright law, unlike patent law, does not forbid an individual from using a copyrighted work.³⁷ Aside from rights that are not relevant here,³⁸ copyright only forbids an individual from making an unauthorized reproduction of the copyrighted work. Simply applying the art taught, or using the program itself would not constitute infringement any more than would reading a traditional literary work, listening to a copy of a musical work, or viewing an audio-visual work.

The second step taken by both Judge Stahl and the *Baker* Court in explicating the first policy concern is equally troubling. Both suggest that "[t]he very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains."³⁹ As a factual matter, this assertion is almost certainly false. While there are undoubtedly those who create their works, whether entertaining or useful, solely so that others may enjoy or use

36. Cf. *id.* at 104 ("The use by another of the same methods of statement, whether in words or illustrations, in a book published for teaching the art, would undoubtedly be an infringement of the copyright.").

37. In the case of computer programs, an individual must make at least one, and typically two or more copies of the program, in order to use the program. For example, when I recently purchased Microsoft Office for my home computer, I had to make two additional copies in order to use the program. First, I had to copy the program to my hard drive, and second, whenever I ran the program, I necessarily created a second copy in the active memory of my computer. While I might argue that such copying is justified under either an implied license theory or as fair use of the copyrighted work should Microsoft object to my copies, CONTU proposed and Congress amended section 117 to authorize the making of such copies by the owner of a copy of a computer program. See NATIONAL COMM. ON NEW TECHNOLOGICAL USES, FINAL REPORT 12-13 (1979) [hereinafter CONTU, FINAL REPORT]; see also 17 U.S.C. § 117 (West 1994).

38. Copyright law also forbids the unauthorized creation of a derivative work, unauthorized public performance, and unauthorized public display of certain copyrighted works. 17 U.S.C. § 106 (2), (4), (5) (West 1994).

39. *Baker*, 101 U.S. at 103; see also *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807, 817 (1st Cir. 1995) ("Lotus wrote its menu command hierarchy so that people could learn it and use it."), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996).

them, both Lotus and Selden appear to have a more pecuniary motive in mind. For both Lotus and Selden, and for authors generally, the "very object of publishing a book" whether on a useful art, or as a form of entertainment, is to make money.

Finally, the *Baker* Court suggests that copyright should treat works explaining a useful art differently than "ornamental designs, or pictorial illustrations addressed to the taste,"⁴⁰ because the "teachings of science and the rules and methods of useful art have their final end in application and use."⁴¹ "[O]rnamental designs, or pictorial illustrations addressed to the taste," on the other hand, have as "their object, the production of pleasure in their contemplation."⁴² Yet, this suggestion, even if true, does not justify the Court's decision to limit copyright protection of useful works.

For either category of work, more extensive copyright protection will impose more extensive constraints on the freedom of others to copy, without authorization, from the original work. Such protection will both: (i) limit the ability of others to offer competing substitutes for the original work; and (ii) increase the expense such competitors must incur to create their substitutes. Together, these two effects will limit the ability of later authors to offer perfect or near-perfect substitutes⁴³ for the earlier copyrighted work, and will increase the price competitors must charge to cover the costs of creating and

40. *Baker*, 101 U.S. at 103.

41. *Id.* at 104.

42. *Id.* at 103-04; see also *id.* at 105 ("The object of the one is explanation; the object of the other is use.").

43. Some commentators have become excessively casual in their use of the word "perfect substitute." See, e.g., Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2319 & n.29 (1994) (suggesting that clones of Lotus 1-2-3 were perfect substitutes for Lotus 1-2-3). By definition, one product is a perfect substitute for another only if all of the relevant consumers would instantly switch to the second product given any increase in the price of the first product. Because of uncertainty, information costs, and a host of other factors, perfect substitutes are extremely rare outside of economic theory. As a result, if a clone were, in fact, a perfect substitute for the original, then the author of the original could charge no more for copies of the original than the clone-maker was charging for copies of the clone. Yet, even when Paperback and Mosaic were selling their "clones" of Lotus 1-2-3, Lotus was able to price its product profitably at a point well above the prices at which Paperback and Mosaic were selling their programs. Of course, the Paperback and Mosaic clones did reduce, to some extent, Lotus's profit-maximizing price for copies of its programs. From this, we can infer that at least some consumers considered the clones acceptable substitutes, given the price discount, for a copy of the higher priced Lotus 1-2-3 program. But the clones were not perfect substitutes.

publishing their competing works. Because the author of the original work will face less-perfect substitutes and less intense price competition, more extensive copyright protection allows the original author to charge somewhat more for copies of her work. But this increase in price would occur with respect to either useful works or entertaining works, and would render the end use of either sort of work more expensive.

For example, if copyright prohibited competitors from making unauthorized blank forms compatible with Selden's accounting system, then users of Selden's system will have to turn to Selden for such forms. Such an absence of direct competition may allow Selden to charge users a somewhat higher price for the accounting forms than he could charge if competitors, such as Baker, could reproduce and sell copies of Selden's blank accounting forms without Selden's authorization. Interpreting copyright to prohibit copying of the blank accounting forms may,⁴⁴ therefore, make use of Selden's accounting system somewhat more expensive. But copyright protection of ornamental designs has the same effect. Specifically, if copyright prohibited competitors from reproducing and selling copies of a popular author's latest best-seller, or a popular artist's latest creation, then consumers of that author's or artist's work would be forced to turn to the author or artist for copies of her works. Such an absence of direct competition would allow either author or artist to charge consumers somewhat more for copies of her work, than she could charge if competitors could, without authorization, reproduce and sell copies of her work. Such copyright protection would, therefore, make "the production of pleasure in [such work's] contemplation" more expensive.⁴⁵

Thus, the mere fact that useful works are intended to be used in one way, to perform some specific task, while entertaining works are meant to be used in another, "the production of pleasure in their contemplation," does not, on its own, justify varying the scope of protection copyright accords the two categories of works. More

44. Unless the author can inappropriately increase her market power by switching her monopoly surcharge from the initial work, which hooks consumers, to her later works that are necessary to continue using the system, simply switching her surcharge from the initial work to later works necessary to use the system would not necessarily increase the total price a consumer would pay for the work and the supplies or later works necessary to use the system taught in the original work.

45. *Baker*, 101 U.S. at 103-04.

extensive protection may render the end use of either type of work somewhat more expensive, but it does so for either type of work. The *Baker* Court's analysis of the first policy concern cannot, therefore, justify narrowing the protection for the Lotus 1-2-3 program simply because the program is intended to be used.

Nevertheless, before leaving this policy concern, three arguments concerning useful works that the *Baker* Court could have made, but did not, might complete the link between the first policy concern and the need to limit protection for useful works. First, extensive copyright protection of useful works might arguably impose greater deadweight losses on consumers than extensive protection of entertaining works because consumers are more likely to need a useful work. Second, extensive copyright protection of useful works might arguably impose greater deadweight losses on consumers than extensive protection of entertaining works because of the greater costs incurred when a user switches from one useful work to another. Third, without regard to the relative deadweight losses involved, the higher price that broader copyright would enable an author to charge is arguably more problematic when associated with a useful work, than with an entertaining work, because useful works are necessities, while entertaining works are luxuries. Because Judge Stahl articulated the second of these three arguments as an independent policy concern, I will consider it in the next section. Before getting there, however, the first and third arguments warrant brief discussion.

With respect to the first scenario, the argument here is essentially that because a consumer may more realistically be said to "need" a useful work, whereas she, at best, really "wants" an entertaining work, the author of a useful work can more easily force the consumer to pay the price she demands. As a result, if copyright were to provide equivalent protection for both useful and entertaining works, such protection would enable the authors of useful works to force consumers to pay a price for access to their respective works much higher than the price that the authors of entertaining works could charge for access to their works. This higher price would, in turn, impose a more substantial deadweight loss on consumers. As a final step, the argument concludes by suggesting that because of the greater deadweight losses such protection would entail, copyright should limit its protection of useful works.

One difficulty with this argument is that it rests upon the unproven empirical assertion that equivalent protection of useful and entertaining works would impose greater deadweight losses with respect to useful works than it would with respect to entertaining works. Neither the *Baker* Court, nor Judge Stahl, nor any commentator I have seen has undertaken to establish this empirical assertion. Moreover, when commentators do approach the issue, they often take a decidedly slanted approach to measuring the deadweight losses involved. A mark-up in price of four hundred percent over the price of allegedly competing works is routinely treated as no indication of market power when discussing entertaining works.⁴⁶ Yet, for these same commentators, a similar four hundred percent mark-up with respect to a useful work would establish monopoly.

The third argument avoids this empirical issue of the relative deadweight losses imposed by simply asserting that the exact magnitude of the deadweight losses involved does not matter. Useful works are, if not necessities, far more like necessities, than entertaining works. Moreover, by definition, people can do without luxuries. As a result, limiting access to a necessity will always be a more serious concern, without regard to the particular dollar value involved, than limiting access to a luxury. We must, therefore, more carefully circumscribe copyright's protection of useful works, than of entertaining works, precisely because they are useful, or so the third argument concludes.

Yet, both this argument and the first argument are ultimately self-defeating. Take the first argument, and assume that we can show empirically that the deadweight losses associated with protecting useful works is greater than the losses associated with protecting entertaining works. Greater deadweight loss alone should not serve, however, as a justification for limiting protection. Given similar protection against imitators, if the deadweight loss associated with one work is greater than that associated with another, that difference will usually indicate a greater demand for, and hence social value associated with, the first good as compared to the second. In other words, given similar protection against imitators, the more valuable a

46. See Paul Goldstein, *Copyright*, 55 LAW & CONTEMP. PROBS. 79, 84 (1992) (noting that popular authors can sell copies of their works at a price four times that of "paperback reprints of the classics"; yet dismissing it as no indication of market power).

work, the greater the deadweight loss that such protection will create.⁴⁷ As a result, if we limit protection to minimize deadweight losses, we will necessarily reduce the protection we provide more valuable works. Such reduced protection will, in turn, reduce the incentive for investing in the more valuable class or category of works, relative to the incentive available for investing in the less valuable class or category of works, and will effectively encourage individuals to invest in the less valuable works. At the margins, such a skewed incentive system will lead individuals to invest in admittedly less valuable works, rather than admittedly more valuable works, because we have provided greater protection against imitation for the less valuable works.

Such a result is not only inefficient and unfair, it is also contrary to the purported objective these two arguments sought to achieve. Specifically, both arguments sought to limit protection, after-the-fact, in order to ensure access to a useful or necessary work once the work has been created. But if the arguments convince us to limit protection for useful or necessary works, then we will necessarily reduce the incentives, before-the-fact, for future authors to invest their efforts in creating such works. As a result, limiting protection is likely to lead to fewer such works being created, and thereby to reduce access to such necessitous works as a whole.

2. Policy Concern #2: Copyright Should Limit Its Protection for Useful Works to Avoid Imposing Undue Switching Costs

As a second policy concern that would justify limiting protection for the Lotus command structure, Judge Stahl argued that requiring the command structures of programs to differ would lead to the "absurd" result that users would have to learn a new command structure each time they used a different program.⁴⁸ While not well articulated, Judge Stahl's concern appears to be that users who become trained in the Lotus 1-2-3 command structure will be reluctant to incur the retraining

47. As a result, Judge Boudin's suggestion that the benefit of protecting useful and entertaining works is the same, while the cost of protecting useful works is higher, *see Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807, 819 (1st Cir. 1995) (Boudin, J., concurring), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996), is wrong. If the cost of providing a given degree of protection for useful works is higher, then necessarily the benefit of providing such protection will also be correspondingly higher.

48. *See Lotus Dev. Corp.*, 49 F.3d at 818.

expenses necessary to switch to another spreadsheet if that other spreadsheet incorporated a different command structure. Because of the difficulty and expense such retraining would require, protecting the Lotus command structure would enable Lotus to extract from its existing users an excessive price for future upgrades of its program, just as protecting Selden's accounting system would enable Selden to extract an excessive price from existing users for the forms necessary to use his system. Further, the argument concludes, because an author's ability to charge excessive⁴⁹ prices for future upgrades of the program, or for the materials necessary to use a system, will depend on the switching costs involved, copyright can and should allow competitors to copy, without authorization, those elements necessary to keep switching costs to a minimum.

This policy concern, however, is also unpersuasive as a justification for denying protection to the Lotus 1-2-3 command structure, specifically, or for limiting protection for useful works more generally. Initially, before protection of the Lotus 1-2-3 command structure will implicate this policy concern at all, three preconditions must be satisfied. First, competition for new consumers and potential consumers of its program must not effectively limit Lotus's ability to exploit consumers who have already purchased, learned the command structure of, and thereby become locked into the Lotus 1-2-3 program. The Court has previously addressed a similar issue in *Eastman Kodak Co. v. Image Technical Services, Inc.*⁵⁰ In *Eastman Kodak Co.*, the Court ruled that information costs and uncertainty may prevent competition in the market for new and potential consumers from effectively limiting a company's market power over a locked-in consumer.⁵¹ As a result, a company may have market power over such locked-in consumers, even though it did not have market power in the initial entry, or new user, market.⁵² While the markets for programs

49. In *Eastman Kodak Co. v. Image Technical Servs., Inc.*, the Court discussed this issue in terms of whether the lock-in effect enabled a user to charge a "supracompetitive" price. 504 U.S. 451, 472-78 (1992). Because copyright, by prohibiting copying, ordinarily and intentionally enables an author to charge a "supracompetitive" price (*i.e.*, a price above marginal cost) for copies of her work, *see, e.g.*, CONTU, FINAL REPORT, *supra* note 37, at 23, the lock-in effect is objectionable with respect to a copyrighted work only if it would enable an author to charge a price in excess of the supracompetitive price copyright would ordinarily enable authors to charge.

50. 504 U.S. 451 (1992).

51. *Id.* at 465-78.

52. *Id.*

and copiers differ in potentially material ways, the *Eastman Kodak* Court's ruling suggests at least the possibility that Lotus may have inappropriate⁵³ market power over locked-in consumers, even if it lacks inappropriate market power in the new user market. Nevertheless, before applying this policy concern to deny protection to the Lotus command structure, a court would need evidence that would support a finding that protecting Lotus's command structure would give Lotus a degree of market power over its locked-in consumers in excess of the market power copyright customarily provides an author.

Second, there must be some showing that the switching costs involved, if copyright protected the Lotus command structure, are significant. If we assume that the first precondition has been satisfied, we can estimate the extent of the additional market power that protecting the Lotus command structure would give Lotus over its existing users by examining the extent of the switching costs involved. If we put to one side other market imperfections that will remain however the Court resolves the copyright issues raised in the *Lotus* case,⁵⁴ an existing user will switch to some other spreadsheet program if Lotus should attempt to incorporate in the price for its upgrades a "locked-in surcharge" greater than the costs that the user would incur to switch to another program.⁵⁵ As a result, we should worry about a "lock-in" effect only when the switching costs involved rise to a

53. Because copyright intentionally awards an author some degree of market power in order to ensure the creation of sufficient works, Lotus will undoubtedly have some market power in both the new user and established user markets. The issue, then, is not whether Lotus has market power, but whether information costs or other market imperfections grant Lotus additional, and therefore inappropriate, market power over its established users because of the costs involved in switching to another electronic spreadsheet program. As a result, a court should not look simply for "supracompetitive" prices, as the *Eastman Kodak* Court suggested, but for prices in excess of the supracompetitive price copyright customarily ensures.

54. For a variety of reasons, consumers may remain reluctant to switch to another program, even if the program offers equivalent functionality. See Caroline A. Duffy, *Big 3 Strive for Spreadsheet Dominance*, PC WEEK, Dec. 14, 1992, at 133 (noting that some users "will always stay with 1-2-3").

55. Such switching costs would include the cost of retraining to use the other program, and the cost of transferring existing data files that the consumer will need to use the new program. It will also include the price of any additional hardware or software required for the switch, but keep in mind that the consumer is presumably deciding to switch because of the excessive surcharge incorporated into the price of a Lotus 1-2-3 upgrade. As a result, a proper measure of switching costs must also consider the money saved by not having to buy the overpriced Lotus 1-2-3 upgrade.

significant level.⁵⁶ If they are trivial, in comparison to the price of the program being purchased, then the additional market power Lotus might receive, even assuming the first precondition is satisfied, is probably not worth worrying about.

Third, even if the switching costs are significant, they must also be disproportionate to the switching costs a consumer would experience with respect to more traditional copyrighted works before they can justify limiting copyright's protection for computer programs as a class. Some commentators readily assume that such switching costs are more substantial in the case of useful works than in the case of entertaining works for reasons similar to those previously discussed in addressing the first policy concern. However, no one has taken the time to establish this empirical proposition.

Moreover, a cursory examination of practices with respect to entertaining works suggests that copyright imposes substantial switching costs on those who purchase entertaining works. Consider the case of sequels to popular works. If a consumer purchases and enjoys the first work in a fictional series, she will often purchase the second work as well. Two reasons account for this. First, a consumer is likely to respond to the second work in a series in a manner similar to her response to the first work. If she liked the first work, that suggests she is likely to enjoy the second work as well, and helps her to distinguish the second work in a series from all of the other works she might read. By providing such information, the first work reduces the uncertainty involved in purchasing the second work, and thereby makes the second work more valuable to the consumer. Second, in addition to the quality-certification function, a consumer who has read and enjoyed the first work may, and the author hopes will, become emotionally and intellectually involved with the characters that appear in the first work. Having become emotionally and intellectually involved with those characters, the consumer will want to share the future experiences of those specific characters to see how things turn

56. Indeed, given that such switching costs are ubiquitous in our economy, even the presence of substantial switching costs were copyright to protect the Lotus command structure would not, on its own, justify denying protection to the command structure. See R.G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 22 REV. ECON. STUD. 11, 16-17 (1956) (arguing that if monopolistic elements are present in one sector of an economy, presence of monopolistic elements in other sectors of the economy may be required to enhance overall welfare).

out. The experience of other characters, or the events in other works, will not do.

Because of these two considerations, consumers are "willing" to pay more for, or endure a lower quality work, in order to obtain a sequel, rather than settle for some other work available on the market. Moreover, their decision to do so appears, in part, to be the result of network externalities or switching costs similar to those locked-in Lotus 1-2-3 users might experience if copyright protected the Lotus command structure. Consumers have become emotionally involved with the specific characters presented in the first work; copyright prohibits others from copying those specific characters;⁵⁷ and a consumer is therefore "locked into" the sequels that the original author writes or chooses to authorize. If we use the network analogy some commentators have suggested as a way of thinking about this policy concern, the specific characters found in the first work define a relevant network. Works that do not share those specific characters are, in a sense, not on the relevant network, and therefore suffer a competitive disadvantage. As a result of this lock-in effect or network externality, sequels usually command a higher price, or sell a greater quantity, than a stand-alone work of otherwise equivalent quality would.

57. Compare *Kouf v. Walt Disney Pictures & Television*, 16 F.3d 1042, 1046 (9th Cir. 1994) (noting that "genius kid with thick-rimmed glasses in [the plaintiff's work] is not distinctive enough to be a protectible character") and *Olson v. National Broadcasting Co.*, 855 F.2d 1446, 1453 (9th Cir. 1988) (stating that characters of Cargo "were drawn [too] thinly") and *Warner Bros. v. American Broadcasting Cos., Inc.*, 654 F.2d 204, 208-10 (2d Cir. 1981) (explaining that protection of Superman character did not extend to that level of abstraction where his characteristics became common "in the superhero genre") and *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930) (stating that "it would not be enough [to infringe Shakespeare's *Twelfth Night* if it were copyrighted to] cast a riotous knight who kept wassail to the discomfort of the household, or a vain and foppish steward who became amorous of his mistress."), *cert. denied*, 282 U.S. 902 (1931) with *Mattel, Inc. v. Azrak-Hamway Int'l, Inc.*, 724 F.2d 357, 360 (2d Cir. 1983) (*per curiam*) (noting that "accentuat[ion of] certain muscle groups relative to others" distinguishes plaintiff's superhero toy from other superhero musclemen) and *Detective Comics, Inc. v. Bruns Publications, Inc.*, 111 F.2d 432, 433-34 (2d Cir. 1940) (referring to a preexisting public domain character, "benevolent Hercules," in defining limits of copyright's protection) and *Anderson v. Stallone*, 11 U.S.P.Q.2d 1161, 1166-67 (C.D. Cal. 1989) (extending protection to main characters from the Rocky films as a group, and to Rocky Balboa character individually) and *Silverman v. CBS, Inc.*, 632 F. Supp. 1344, 1355 (S.D.N.Y. 1986) (stating that personifications of "Amos 'n Andy" characters sufficiently distinctive to warrant protection) and *Ideal Toy Corp. v. Kenner Prods. Div. of Gen. Mills Fun Group, Inc.*, 443 F. Supp. 291, 301 (S.D.N.Y. 1977) (finding "Star Wars" characters sufficiently distinctive to warrant protection).

Further, given our analysis of the first policy concern, we cannot simply assert that switching costs are necessarily more troubling for useful works than for entertaining works.⁵⁸ Instead, we must examine, as best we can, the empirical magnitude of the switching costs copyright presently imposes for entertaining works, with the likely magnitude of the switching costs copyright would impose if it protected the Lotus 1-2-3 command structure. While a detailed empirical examination of this issue is beyond the scope of this Essay, readily available figures suggest that copyright, by granting an author a monopoly over her characters, creates a substantial network externality. Figures associated with the sequel to *Gone with the Wind*,⁵⁹ for example, suggest that as between two otherwise equivalent works, a work "on the network" (*i.e.*, one that includes the desired characters) may earn more than eleven times the earnings of an otherwise equivalent work not on the network (*i.e.*, one that does not include the desired characters).⁶⁰ Nothing I have seen suggests that protecting Lotus's command structure would create a more substantial

58. The argument that others can create their own characters and thereby develop their own networks is similarly irrelevant, unless the availability of alternative networks limits an author's market power over locked-in users of her network.

59. This work is one of the most popular of this century, and may create more substantial network externalities than less popular entertaining works. Nevertheless, to the extent Lotus 1-2-3 was once one of the most popular computer programs, it is appropriate to compare the magnitude of the network externality protecting its command structure would create with the network externalities copyright creates for entertaining works of comparable popularity.

60. Consider, for example, the works of Alexandra Ripley, who Margaret Mitchell's heirs chose to write the sequel to *Gone with the Wind*. Presumably, Ripley's writing has remained of reasonably consistent quality; the difference between the sales volume and the price charged for *Scarlett*, her *Gone with the Wind* sequel, and her other Southern romance works, should give some indication of the network externality associated with copyright's protection of the *Gone with the Wind* characters. On her first work after *Scarlett*, *From Fields of Gold*, her publisher had to offer a six-dollar credit to retailers for every hardbound copy of *Fields* they could sell, and suggested that retailers charge \$12.50 for the \$24.95 title, in order to move hardbound copies of the work. See David Streifeld, *Good News, Bad News*, WASH. POST, Feb. 12, 1995, at X15. Similarly, Ripley's novels prior to *Scarlett* had become best-sellers only in paperback. See Edwin McDowell, *Writer Named to Turn Out "Gone with the Wind" Sequel*, CHI. TRIB., Apr. 21, 1988, at 13G. Thus, Ripley was able to sell copies of the sequel at between two and four times the price at which she could sell copies of her nonsequel works. Moreover, if we look to sales volume, Ripley sold more than two-and-a-half million hardbound copies of *Scarlett*, while only 900,000 paperback copies of her work *New Orleans Legacy* were printed. See Edwin McDowell, *Sequel to Auction of 'Gone with the Wind' Sequel*, N.Y. TIMES, Apr. 27, 1988, at C24. If we compare gross sales value for these two Ripley works, *Scarlett* grossed more than eleven times *New Orleans Legacy* on its hardbound publication alone.

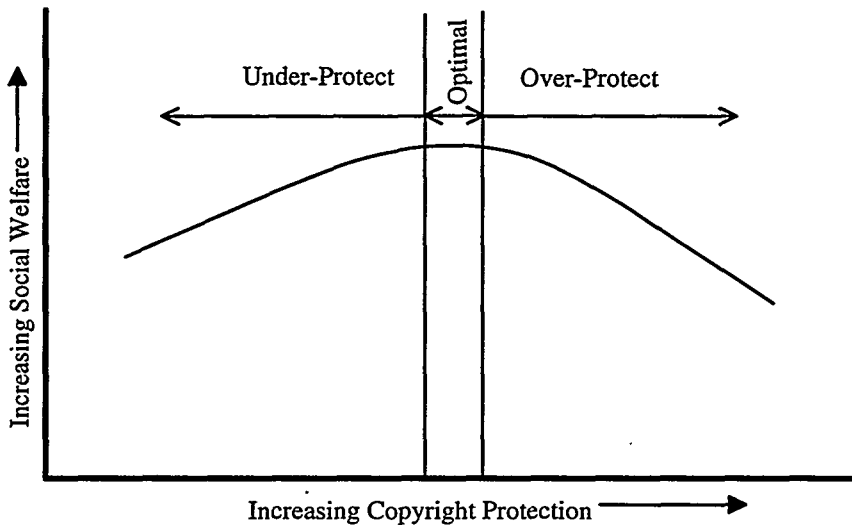
network externality. On the contrary, prices for upgrades to an existing Lotus 1-2-3 program, which is where the lock-in surcharge would appear, are usually far less than the price of acquiring the Lotus 1-2-3 program initially.⁶¹ In any event, unless empirical evidence has demonstrated that the lock-in surcharge is greater than the parallel surcharge we tolerate given copyright's extensive protection of entertaining works, the second policy concern cannot justify extending less copyright protection to useful works or computer programs than we give to entertaining works.

Establishing these three preconditions presents considerable difficulty for commentators or courts who would rely on the second policy concern as a justification for limiting the protection copyright affords useful works and computer programs. Nevertheless, for the sake of argument, let's assume that all three preconditions have been satisfied, and that protecting Lotus's command structure would give Lotus the ability to exploit its locked-in users to an extent both substantial and significantly greater than the comparable exploitation ability copyright gives the authors of entertaining works. Even under such assumptions, the second policy concern does not, on its own, justify limiting protection for the Lotus command structure.

As Figure 1 illustrates, there is some degree of copyright protection that will lead to the optimal production of copyrighted works.

61. See, e.g., Randy Ross, *A Bit of Windows in 1-2-3- release 4*, PC WORLD, Jan. 1994, at 74 (estimating street price of upgraded package to be \$350 for new users and \$100 for existing Lotus users). To compete for existing users of other spreadsheets, Lotus, Borland, and Microsoft, the big three among spreadsheets, have offered competitive upgrades, where they will sell the present version of their spreadsheet to users of one of the other spreadsheets at a substantial discount off the full price of their programs. See Duffy, *supra* note 54, at 133.

Figure 1. Social Welfare as a Function of Copyright's Scope of Protection



As Figure 1 suggests, providing either too little protection or too much protection can generate a suboptimal level of social welfare. As a result, even if protecting the Lotus command structure would "overprotect" the Lotus program, such overprotection on its own cannot justify limiting protection for the Lotus command structure. A court would first have to determine whether denying protection to the Lotus command structure would provide the Lotus 1-2-3 program with too little protection. If it would, which is an issue that I will address later in this Essay,⁶² then the court must choose between overprotecting and underprotecting the Lotus program. Depending on the relative degrees of overprotection and underprotection involved, protecting the Lotus command structure may come closer to achieving the optimal level of copyright protection than refusing to protect the command structure, even if protecting the command structure would give Lotus excessive market power over its locked-in users.

As a result, identifying a network externality or switching cost that protection would create cannot justify limiting copyright's protection for particular elements of a copyrighted work. Even if

62. See *infra* text accompanying notes 101-08.

protection would create such an externality, and thereby overprotect a work, extending protection may represent a closer-to-optimal choice than denying protection. As a result, the second policy concern, while it may prove relevant to deciding whether copyright should protect the Lotus command structure, cannot, on its own, justify denying protection to the Lotus command structure.

3. Policy Concern #3: Incremental Progress Requires Copying

As a third policy concern that would justify limiting protection for the Lotus command structure, Judge Stahl argued that "[i]n the context of [computer programs] . . . , 'building' requires the use of the precise method of operation already employed; otherwise, 'building' would require dismantling, too."⁶³ While his physical construction metaphor is not particularly apt to the task of computer programming, Judge Stahl appears to be articulating a concern other courts and commentators have shared: Because progress in technological fields is incremental, copyright must allow later authors greater copying leeway to assure the desired progress. Again, however, this policy concern does not justify limiting protection for the Lotus command structure.

Incrementalism is not unique to functional works. As an engineer and a lawyer, I have created both functional and entertaining works, and have found that the ability to copy earlier works smoothes my authorship path for either type of work both in similar ways and to a similar degree. Nor do I believe that my experience in that regard is unique. Even if one acknowledges that incrementalism is more common with respect to technological and functional works than it is in literature and the arts, that still proves nothing with respect to copyright's proper scope. It establishes only that creative workers in the respective industries have adapted to copyright's historic practice of protecting entertaining works extensively, while protecting useful works narrowly, if at all.⁶⁴

Further, even if incrementalism is essential to progress in fields such as computer programming, no reason appears why later authors could not license the elements they find themselves in need of

63. *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807, 818 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996).

64. See Glynn S. Lunney, Jr., Note, *Copyright Protection for ASIC Gate Configurations: PLDs, Custom and Semicustom Chips*, 42 STAN. L. REV. 163, 197-200 (1989).

reusing.⁶⁵ Patent law, for example, expressly protects the useful arts, yet it has no compulsory licensing provision, or "necessary to reuse" defense, even in cases where it appears that the patent holder is suppressing the patented invention.⁶⁶ In the typical case, if an individual wants to add a "bell or whistle," or some other improvement, to an existing patented invention, and market the result as a new product, she must obtain the permission of the patent holder before she makes, uses, or sells her improved version of the invention.⁶⁷ While sufficiently radical improvements can avoid a finding of infringement, and hence the need for a license from the patent holder,⁶⁸ even an improvement that is itself novel and nonobvious, and hence entitled to its own patent, may still require permission from the original patent holder before a device or process incorporating the improvement can be made, used, or sold.⁶⁹ Patent law's decision to require licenses before improvements can be made to a patented invention, and the underlying premise that voluntary licensing adequately addresses the incremental nature of progress in the useful arts, suggests that copyright can also rely on voluntary licensing to ensure access to those elements that later authors need to ensure that progress in the useful arts may continue.⁷⁰

65. See *id.* at 199-200.

66. See *Special Equip. Co. v. Coe*, 324 U.S. 370, 378-80 (1945); see also *Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147, 1185-87 (1st Cir. 1994) (refusing to license unilaterally copyrighted or patented goods is presumptively lawful even if it gives the copyright or patent holder market power in a relevant antitrust market).

67. See, e.g., *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.*, 750 F.2d 1569, 1580 (Fed. Cir. 1984); *Radio Steel & Mfg. Co. v. MTD Prods., Inc.*, 731 F.2d 840, 847-48 (Fed. Cir.), *cert. denied*, 469 U.S. 831 (1984).

68. See, e.g., *Texas Instruments, Inc. v. United States Int'l Trade Comm'n*, 805 F.2d 1558, 1571 (Fed. Cir. 1986).

69. See *Atlas Powder Co.*, 750 F.2d at 1580.

70. Commentators have articulated a number of differences between patent and copyright law that they believe make patent better suited to the protection of useful articles. See, e.g., Dennis S. Karjala & Peter S. Menell, *Applying Fundamental Copyright Principles to Lotus Development Corp. v. Borland International, Inc.*, 10 JURIMETRICS J. 177, 183-86 (1995). First, they argue that patent law has higher standards for protection, requiring an invention to be not merely original, but novel and nonobvious. See, e.g., *id.* at 185-86. However, the nonobvious standard only ensures that patents are awarded to those inventions that are most creative, difficult, and valuable, which are also the same inventions that others are likely to want to license to reuse. Second, they argue that patent has a much shorter term than copyright. See, e.g., *id.* While this has somewhat more persuasive force, very little that was done more than seventeen years ago in the field of computer programming is worth copying today. Thus, whether protection lasts seventeen years or seventy-five years, either system of protection extends well beyond the "copying" life of computer programs. As a

Moreover, the third policy concern, like the first policy concern, is ultimately self-defeating. If useful works can progress only incrementally, then ensuring the (timely) creation of each necessary step along the way becomes that much more important for a field to advance. If we deny copyright protection for "intermediate" or "step" elements, because they are necessary for future works, then we undermine the incentive to create such elements, and risk not having the elements when we need them.

Finally, whatever merit there may be in granting later authors some additional copying leeway when they have improved a useful work, the policies supporting such an exception should play little role in the *Lotus* case. Borland has not copied the Lotus command structure because Borland wanted to build on, and improve, the Lotus command structure, or because such copying was necessary to

result, the extra fifty-eight years that copyright provides, as compared to patent, is largely immaterial. Third, some commentators have argued that the scope of copyright and patent, respectively, are tailored to allow and to provide the sorts of variety in their respective protected subject matters that consumers desire. See 1, 2 PAUL GOLDSTEIN, COPYRIGHT §§ 2.15, 8.5 (2d ed. 1996) (suggesting that consumers desire more variety with respect to works of authorship than with respect to inventions, and that the patent and copyright systems are tailored to provide the desired variety); Karjala & Menell, *supra*, at 185 (suggesting that consumers desire more variety with respect to inventions than with respect to works of authorship, and that the patent and copyright systems are tailored to provide the desired variety). This, however, is both wrong and illogical. It is wrong because both patent and copyright prohibit some forms of variety consumers would desire. It is illogical because consumers' preferences for variety ought to be irrelevant to the scope of protection either provides. For example, if consumers do not want a certain form of variety, ten versions of *War and Peace* for example, then the law need not prohibit such variety because given a lack of demand for such variety, there is no incentive to create it. Similarly, if consumers want a certain form of variety, for example, ten later works detailing different events in the life of Scarlett O'Hara, then the law should prohibit others from providing such variety only if such prohibition is necessary to ensure an appropriate incentive for the creation of the original work in which the characters first appeared. Fourth, some commentators have asserted that patent law's use of claims to define the scope of the patent monopoly provides greater certainty than copyright's infringement test, and therefore allows later inventors to proceed with their work without fear of infringing the earlier patented inventions in the field. See, e.g., Karjala & Menell, *supra*, at 185. Given the doctrine of equivalents, however, this notion that patent claims provide certainty in determining infringement is false. See *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 19 (Fed. Cir. 1984) ("[That] argument is based on the utopian belief that a copier 'should be able to look to the patent claims and know whether his [or her] activity infringes or not.' Although this may be a desirable goal for the patent laws, it is *not* the law as it exists. In particular, the doctrine of equivalents has been judicially created to ensure that a patentee can receive full protection for his or her patented ideas by making it difficult for a copier to maneuver around a patent's claims. In view of this doctrine, a copier rarely knows whether his product 'infringes' a patent or not until a district court passes on the issue.").

improve and create more efficient electronic spreadsheets. Rather, what Borland copied, it copied exactly, as a competitor, in order to render its product a more perfect substitute for the original Lotus 1-2-3 program.

4. Summary

This analysis suggests that, of the three policy concerns articulated by Judge Stahl, two are self-defeating in that they try to ensure access after-the-fact by denying protection to the Lotus command structure, without considering how that denial of protection will reduce the incentive to create, and hence the supply of, original command structures in the future. While the second may prove relevant to defining a work's unprotected ideas, it relies upon unproven, and questionable, empirical propositions, and cannot, in any event, justify the First Circuit's decision without a careful consideration of two additional questions. These two additional questions are: first, whether denying protection to the "lock-in" element would lead to the underprotection of such works, and second, if it would, whether, given a choice between protecting or denying protection to the lock-in element, underprotection or overprotection would come closer to providing the optimal level of copyright protection. Thus, while the First Circuit may have, and in my opinion did, reach the correct conclusion, its reasoning does not justify or even explain its conclusion, and cannot therefore serve as an adequate basis for denying protection to the Lotus command structure.

B. *The District Court's Approach*

As discussed, the district court, in its decision, identified a higher level of abstraction as the relevant idea behind the Lotus user interface, and thereby ensured protection for Lotus's particular command structure.⁷¹ Yet, in doing so, the district court provided little justification for the level of abstraction it selected as the program's relevant idea. Parsing the district court's opinion suggests three potential justifications. First, the district court argued that because the Lotus command structure came first, the desire of users to have other

71. See *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 799 F. Supp. 203, 217-18 (D. Mass. 1992), *adhered to* 831 F. Supp. 223 (D. Mass. 1993), *rev'd*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996).

spreadsheets that were compatible with the commands of, and data files and macros created for use with, the Lotus spreadsheet was not relevant to defining the Lotus program's idea.⁷² Second, the district court reasoned that, if it selected a more concrete level of abstraction as the program's idea, "[no aspect of a useful work] would be copyrightable."⁷³ Third, the district court repeatedly emphasized that "[a] very satisfactory spreadsheet menu tree can be constructed using different commands and a different command structure from those of Lotus 1-2-3."⁷⁴

Yet, all three of these potential justifications are contrary to the Court's decision in *Baker v. Selden*.⁷⁵ Like Lotus's work, Selden's accounting system came first, and the desire of consumers for blank forms that would work with Selden's specific system were the result of Selden's initial creation of his particular accounting system. The *Baker* Court nevertheless ruled that Selden's system, and the forms necessary to use that system, were unprotected. Similarly, even though selecting a more concrete level of abstraction as the relevant idea effectively incorporated all of the elements that Selden selected for his particular accounting system as part of his works' idea, and thereby denied protection for any aspect of Selden's approach to accounting, the *Baker* Court selected Selden's *particular* accounting system, not a higher level of abstraction, as the relevant idea of Selden's work. Third, if the *Baker* Court had selected a higher level of abstraction, such as "accounting system" or "double-entry accounting system" or even "double-entry accounting system arranged to convey information that displays accounts for a relevant time period on a single page" as the relevant idea of Selden's work, then Selden's particular version of a double-entry accounting system would have been only one of many ways to express such idea. Selecting such a higher level of abstraction as the works' idea would have left room for others to create their own double-entry accounting systems without using the elements Selden selected for his particular version, and would have suggested that Selden's particular accounting system should be considered expression. Nevertheless, the *Baker* Court concluded that Selden's particular accounting system was unprotected, even if there were other,

72. See *id.* at 212-14.

73. *Id.* at 217-19.

74. *Id.* at 217.

75. 101 U.S. 99 (1879).

equally useful accounting systems available.⁷⁶ The *Baker* Court's ruling would, therefore, seem to undermine substantially the district court's proffered justifications.

In a separate case, *Lotus Development Corp. v. Paperback Software International*,⁷⁷ the same district judge had previously addressed the level of abstraction issue with respect to the Lotus user interface and had articulated several additional reasons for selecting a higher level of abstraction as the relevant idea of the Lotus interface. Although the district court appeared at times to misunderstand that "idea" and "expression" are simply labels that courts should apply in a manner that best fulfills copyright's objectives,⁷⁸ it articulated three policy concerns that would support its identification of a more abstract level as the work's relevant idea. First, the district court correctly noted that narrowing protection for a particular class of works to ensure after-the-fact access, will reduce the before-the-fact incentive to create such works. Such an approach will necessarily encourage investment in less valuable and less useful works, instead of encouraging investment in the more valuable, more useful works.⁷⁹

Second, the district court argued that other companies, including Borland, had created electronic spreadsheets without duplicating the Lotus command structure.⁸⁰ While the district court used the existence of other, noninfringing spreadsheets simply to establish that there were many ways to express the Lotus program's idea, that was a truism given the district court's identification of the work's relevant idea. Nevertheless, the existence of other noninfringing spreadsheets also suggests: (i) that there is a competitive market for new users; and (ii) that the costs for an established Lotus user of switching to another spreadsheet program may not be substantial. If either suggestion were true, then the existence of other, noninfringing spreadsheets would provide a basis to infer that protecting the Lotus command structure would not grant Lotus an undue degree of market power over the

76. See *id.* at 103-04.

77. 740 F. Supp. 37 (D. Mass. 1990).

78. See *id.* at 52-54, 58-61, 65 (identifying the most abstract level of work as an "electronic spreadsheet," and adopting that as the work's idea without further discussion).

79. *Id.* at 58.

80. *Id.* at 66-68; see also *Lotus Dev. Corp. v. Borland Int'l, Inc.*, 799 F. Supp. 203, 214 (D. Mass. 1992) (noting that Borland could have created a program "for use in the Quattro programs' native modes"), *adhered to* 831 F. Supp. 223 (D. Mass. 1993), *rev'd*, 49 F.3d 807 (1st Cir. 1995), *aff'd by an equally divided Court*, 116 S. Ct. 804 (1996).

electronic spreadsheet "market" generally, or over existing Lotus users specifically.

Third, the district court chose to "credit the testimony of expert witnesses [who asserted] that the bulk of the creative work is in the conceptualization of a computer program and its user interface, rather than in its encoding."⁸¹ As a result, the district court argued, if copyright allowed competitors to copy a computer program's concept and user interface so long as they wrote their own code to implement the concept and interface, such a result would substantially undermine the incentives to invest in original works, and would be "fundamentally inconsistent with the mandates of the copyright law."⁸²

Yet, the fallacy of this third argument is that copyright often fails to protect a work's most creative and valuable elements. Indeed, copyright often expressly refuses to protect a work's most creative and valuable elements. For example, in addressing infringement in the context of a traditional literary work, Judge Hand in *Nichols v. Universal Pictures Corp.* assumed that the defendant had copied elements from the plaintiff's work that were both original to the plaintiff and the basis for "her amazing success."⁸³ Nevertheless, despite the value of these elements, and the creativity they reflected, Judge Hand ruled that the taking of such elements was not copyright infringement—"[t]hough the plaintiff discovered the vein, she could not keep it to herself."⁸⁴ Similarly, in *Baker v. Selden*, there can be little doubt that Selden's system itself represented the most creative and valuable aspect of his works. Yet, the Court ruled that the particular system that Selden created was free for the taking.⁸⁵

Given these decisions, the mere taking of something creative and valuable is not, on its own, sufficient to establish copyright infringement. By failing to reconcile his ruling with these two earlier decisions and the principles of copyright law they embody, Judge Keeton also omitted a critical step in his analysis.

81. *Paperback Software Int'l*, 740 F. Supp. at 56.

82. *Id.*; see also *Engineering Dynamics, Inc. v. Structural Software, Inc.*, 26 F.3d 1335, 1344 (5th Cir. 1994); *Autoskill, Inc. v. National Educ. Support Sys., Inc.*, 994 F.2d 1476, 1495 n.23 (10th Cir.), *cert. denied*, 114 S. Ct. 307 (1993). Mitch Kapor, the founder of Lotus and designer of Lotus 1-2-3, has joined with several other authors to reiterate his views on this issue in a recent copyright article. See Samuelson et al., *supra* note 43.

83. 45 F.2d 119, 122 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

84. *Id.*

85. 101 U.S. 99, 103-05 (1879).

III. COPYRIGHT INFRINGEMENT, REASONING, AND RESULTS

If the reasoning of neither the district court nor the First Circuit is fully adequate, there remains the task of suggesting how a court should approach the infringement issue, and how it should decide whether particular copying establishes infringement. To begin that task, we return to Figure 1. In Figure 1, we assumed that there was some level of copyright protection that would lead the market to produce the optimal quantity and variety of copyrighted works. Defining what we mean by optimal production is easy: Production of copyrighted works is optimal when committing additional or fewer resources to the production of such works would reduce social welfare. Getting from there to a workable legal rule, however, has proven more problematic, with phrases such as "free-riders," "externality," "public goods," "market failure," and "suboptimal production" often substituted for reasoned analysis.

At the heart of copyright lies a reasonably simple problem: In the absence of copyright, competitors may more quickly, more easily, and more exactly duplicate the creativity embodied in the average work of authorship, than they can duplicate the creativity embodied in the average nonwork product. Because of the greater ease with which a competitor may copy creativity embodied in a work of authorship, an individual who invests her creativity in a work of authorship will receive a lower price for her creativity than she would receive for investing it in a nonwork product that is otherwise comparable. The lower price received, in the absence of copyright, for creativity invested in an otherwise comparable work of authorship would lead an individual to invest, at the margins, in an additional nonwork product, even though the resources could have been invested in an additional work of greater value to society. This dedication of resources to a less valuable nonwork product, rather than a more valuable work, is the "underproduction" that copyright aims to remedy.

Yet we must be careful not to push this underproduction rationale too far. The difference between works of authorship and nonwork products is not that works of authorship embody creativity while nonwork products do not, nor is it that competitors can copy the creativity embodied in a work of authorship, but cannot copy the creativity embodied in a nonwork product. Rather, the difference is that, in the absence of copyright, competitors can copy the creativity

embodied in a work of authorship *more easily* than they can copy the creativity embodied in nonwork products. It is a difference in degree, not in kind. As a result, copyright's task is not to prohibit copying of any sort, or even to prohibit the copying of any creative (*i.e.*, original) element. Rather, copyright's task is to prohibit only that copying that would enable a competitor to duplicate the creativity embodied in a work of authorship more quickly, more easily, and more exactly, than she could copy the creativity embodied in one of the wide range of creative products copyright leaves unprotected.⁸⁶

Only when the advantages a competitor can obtain by copying become significantly greater with respect to works of authorship than they are with respect to creative nonwork products generally is there a risk that individuals will invest too little creativity in such works. As a result, copyright should concern itself only when, given the nature of the creative product at issue, and the extent and nature of the copying involved, a competitor could obtain an "undue" copying advantage in the absence of legal protection. Considering the issues in terms of whether a competitor can obtain such an undue advantage by copying illuminates two key aspects of the *Lotus* case. First, it explains why creative, useful things have historically been dealt with principally under the rubric of patent, rather than copyright, law. Second, it provides a standard by which we can determine whether particular copying has gone too far.

A. *The Line between Patent and Copyright*

In comparing patent and copyright, even a casual observer will observe that the two regimes require quite different levels of creativity before they will extend their protection to a creative effort. Patent requires an invention to be both novel and nonobvious in order to receive protection.⁸⁷ In contrast, copyright will extend its protection so long as a work is original.⁸⁸ While commentators have articulated a

86. Alternatively, we might prohibit the copying of creativity in any form. However, as I have explained elsewhere, such an approach would not only stifle growth in the "Science and the useful Arts," it would also be both inefficient and unfair. See Lunney, *supra* note 22.

87. See *Graham v. John Deere Co.*, 383 U.S. 1, 12 (1966).

88. As Judge Hand explained, "[I]f by some magic a man who had never known it were to compose anew Keats's Ode on a Grecian Urn, he would be an 'author,' and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats's." *Sheldon v. Metro-Goldwyn Pictures*, 81 F.2d 49, 54 (2d Cir.), *cert. denied*, 298 U.S. 669

number of reasons for this difference, I would suggest that the differing standards turn almost entirely on the practical differences involved in copying the creativity embodied in an invention rather than a work.

Specifically, the creativity embodied in an invention is usually more difficult to copy as a practical matter, than the creativity embodied in a work of authorship. Compare, for example, two creative endeavors: the design of an automobile and the writing of a novel. Even if we assume that both the car and the novel embody similar absolute levels of creativity, a competitor will, in the absence of any intellectual property protection, face a far more difficult task copying the creativity embodied in the car. While a competitor can obtain some cost and time savings by copying someone else's car design, the competitor would still have to purchase the steel, plastic, and many other materials required, and hire the skilled labor necessary, to construct her cars. As a result, the savings a competitor can obtain by copying a car design are likely to represent a trivial share, perhaps five percent, of the resulting per vehicle cost. In contrast, copying the novel will usually present a far less difficult task. A competitor need only place the novel on a photocopying machine, or use a scanner to replicate the text. Even a competitor seeking to produce trade-quality copies could use high-quality photographic reproduction and thereby achieve a substantial cost savings in creating competing copies of the work.⁸⁹

Because of this difference in the materials from which they are made, and the skill, time, and effort required to copy the creativity embodied, a competitor could, in the absence of any legal protection, obtain a significant copying advantage with respect to an invention only when the creativity embodied in the invention represented a substantial advance in the art. If the advance in question was minor, or "obvious," usually the material cost, skilled labor, and time required to

(1936); see also *Scholz Homes, Inc. v. Maddox*, 379 F.2d 84, 86 (6th Cir. 1967) (holding that constructing a building using copied plans is not copying); *Harold Lloyd Corp. v. Witwer*, 65 F.2d 1, 4 (9th Cir.) (holding that "[s]ince there can be no infringement of copyright without some copying, the mere fact of similarity . . . does not of itself make one an infringement of the other" (internal quote omitted)), *cert. dismissed*, 296 U.S. 669 (1933).

89. Empirical evidence that Justice Breyer gathered suggests that a second publisher employing high-quality photographic reproduction techniques could, in the absence of copyright, create copies of an original work at less than half the cost of the first publisher. See Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281, 294-99 (1970).

replicate the machine or process in which the advance appeared would, as a practical matter, prevent a competitor from obtaining a significant advantage over the originator, even if we leave competitors free to copy such minor advances. For such minor advances, the advantages associated with being the first in a market to offer the advance, including the lead-time monopoly and consumer recognition a first mover obtains, ensure that, despite the possibility of copying competitors, the originator will receive compensation appropriate to the creativity invested. In recognition of this, patent law uses the nonobviousness requirement to separate those substantial, or "nonobvious," advances in the art that warrant protection, from the more minor advances that do not. In contrast, because the creativity embodied in traditional works of authorship is practically easier to copy, a competitor can obtain a significant copying advantage, even for works that embody only a minimal level of creativity.⁹⁰ Indeed, so long as the original author did her own work, the ease with which a competitor can mechanically copy a traditional work of authorship would give the competitor a significant advantage over the original author even if the work copied embodied nothing more than a minimally creative rearrangement or compilation of well-known elements.⁹¹ For that reason, copyright sets a much lower threshold for its protection, and uses the originality standard to ensure that even minimally creative works receive protection.

Historically, patent, not copyright, better defined the degree of creativity required with respect to useful articles before legal protection of the creativity embodied in such an article was justified. Until recently, the utility of a creative endeavor provided a reasonably accurate way of estimating the ease with which a competitor could copy the embodied creativity. Useful articles were more likely to be made of steel, concrete, and other physical substances that made the practical task of copying the creativity embodied in them more difficult.⁹² Because of the material expense and skilled labor typically

90. See *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 250 (1903); Breyer, *supra* note 89, at 294-99.

91. See 17 U.S.C. § 103 (1994) (extending protection to compilations of preexisting materials).

92. I realize that copyright protects sculptural works that may be created from steel and concrete, and that this creates some difficulty for a theory of copyright based entirely upon the ease with which competitors may practically copy works of authorship. See Lunney, *supra* note 22, at nn.24, 386; see also William M. Landes & Richard A. Posner, *An*

required to reproduce the creativity embodied in a useful article, competitors could obtain a significant advantage by copying only when such useful articles represented a substantial advance over the prior art. As a result, the nonobvious standard of patent law better captured the level of creativity required before the copying advantage available to competitors with respect to creative useful articles rose to a level that would justify legal protection.

Utility, then, was not the underlying policy justification for applying patent's nonobviousness standard, rather than copyright's originality standard, to determine whether a creative product warranted legal protection against copying. Rather, a product's utility served as an effective proxy for the relative ease with which a competitor could copy the creativity embodied in the product. As a proxy, utility suggested whether, given the practical difficulties involved in copying, patent's nonobviousness or copyright's originality standard better identified the degree of creativity required before a competitor's copying advantage became sufficient to warrant legal intervention.⁹³ Historically, then, a court could relegate useful articles to patent protection without worrying that such a choice would allow competitors to obtain an undue copying advantage with respect to the creativity embodied in the article.

Economic Analysis of Copyright Law, 18 J. LEGAL STUD. 325, 329 (1989). However, the exception does not disprove the rule. But see Samuelson et al., *supra* note 43, at 2323 (arguing that protection of statues made from steel and concrete proves that material of manufacture is irrelevant to question whether copyright should protect a creative endeavor). Congress routinely enacts statutes that are under- and over-inclusive, either unintentionally or in response to disproportionate interest group pressure. As a result, that government has enacted certain laws in no way proves that such laws are just or desirable. Moreover, protection for such statues is based principally upon the need to protect such works, not from copying competitors, but from unauthorized derivative works. See, e.g., *Community for Creative Non-Violence v. Reid*, [1991-92] Copyright L. Dec. (CCH) ¶ 26,860 (D.D.C. 1991) (parties disputing ownership of copyright in statue under works-for-hire doctrine in order to determine who could authorize creating scale models from the original); see also Lunney, *supra* note 22, at n.386.

93. Courts, for example, have historically protected blueprints as copyrighted works, and have prohibited the duplication of such blueprints, but have refused to protect the structures themselves, or to prohibit someone from building a structure using someone else's copyrighted blueprints. See *Donald Frederick Evans & Assocs., Inc. v. Continental Homes, Inc.*, 785 F.2d 897, 904-05 (11th Cir. 1986) (copying plans themselves constitutes infringement, while building home using the plans does not); *Scholz Homes, Inc. v. Maddox*, 379 F.2d 84, 86 (6th Cir. 1967) (suggesting that unauthorized copies of plans is infringement even if building constructed using copied plans should not be considered a copy); see also *Imperial Homes Corp. v. Lamont*, 458 F.2d 895, 899 (5th Cir. 1972) (same); *Demetriades v. Kaufmann*, 680 F. Supp. 658, 664-65 (S.D.N.Y. 1988) (same).

While utility was once an effective proxy for the practical difficulties associated with copying embodied creativity, modern technology, particularly computer programming, has reduced the accuracy with which the useful/entertaining line predicts the relative ease with which a competitor may copy the creativity embodied in a product. As a result, for certain useful goods, the useful/entertaining dichotomy no longer accurately suggests the degree of creativity required before a competitor's copying advantage becomes sufficient to warrant legal intervention. As the National Commission on New Technological Uses recognized, computer programs, unlike many useful goods, are exceptionally easy and require little skill to copy. As a result, competitors can obtain a substantial copying advantage even with respect to those computer programs that embody only a minimal level of creativity.⁹⁴ Because of the tremendous ease with which the creativity embodied in a program can be copied, copyright's originality standard, rather than patent's nonobviousness standard, better defines the level of creativity the law should require before it protects the typical computer program from copying.⁹⁵

B. When Copying Goes Too Far

Turning from this issue to the scope of protection issue, a focus on undue copying advantage suggests a general standard for identifying when a defendant's copying of a copyrighted work has gone too far: Copying constitutes infringement when, given the nature of the work copied, the nature and amount of material taken, and the use which is made of the material taken, the copying would provide a competitor with a copying advantage significantly greater than the copying advantage we tolerate for the wide range of creative goods copyright leaves unprotected.⁹⁶ I have used empirical evidence to suggest that copyright can satisfy this standard simply by prohibiting competitors from engaging in mechanical, and near exact duplication,

94. See CONTU, FINAL REPORT, *supra* note 37, at 10-11.

95. Even after we provide copyright protection for computer programs generally, certain substantial advances in the art of computer programming may warrant patent protection as well.

96. It is no coincidence that this general standard duplicates much of the fair use analysis. As I have explained elsewhere, *see* Lunney, *supra* note 22, courts originally devised the fair use standard to address this precise issue, to determine whether the copying at issue had gone so far as to amount to an unfair, and hence illegal, use of the copyrighted work.

of a copyrighted work,⁹⁷ and I do not want to revisit that issue here. Rather, I would like to use this general standard, and the notion of undue copying advantage, both to explain the results in *Baker v. Selden* and *Nichols v. Universal Pictures Corp.*, and to suggest how courts should approach the question of whether any given instance of actual copying constitutes infringement.

From the viewpoint of undue copying advantage, the outcomes in both *Baker* and *Nichols* are consistent with an approach that asks whether the copying at issue would give the copier an undue copying advantage in creating a competing work. For example, if we focus on Baker's actions, he read Selden's works,⁹⁸ internalized Selden's analysis and his system, and understood Selden's works well enough to create his own independent explanation of that system.⁹⁹ Even given his independent effort, Baker undoubtedly obtained some advantages by copying Selden's system and the accounting form associated with it, rather than creating his own. But given that Baker read, understood, and explained in his own words Selden's system, the extent of the copying advantage he obtained was not likely to be significantly greater than the copying advantages we allow competitors to obtain with respect to the wide range of creative goods copyright leaves unprotected, or with the copying advantages patent law permits competitors to obtain.¹⁰⁰ Similarly, Universal Pictures may have taken the conflicts, characters, and play of emotions that made Nichols's work popular, and thereby saved considerable time, effort, and money in producing its film. But again, despite the copying and the advantages Universal Pictures thereby obtained in creating a competing work, Universal Pictures had to add substantial effort of its own before it could turn what it had taken into a marketable work. The effort required of Universal Pictures ensured that whatever copying advantage it may have obtained, that copying advantage was not likely to be significantly greater than we tolerate generally for the

97. See Lunney, *supra* note 22.

98. Because it appears that Baker, like most copiers, purchased the copies of Selden's works that he relied upon in creating his own work, the label "*free-rider*" is literally inaccurate and should be avoided.

99. See *Baker v. Selden*, 101 U.S. 99, 100 (1879).

100. As the Court explained, "the proof fails to show that [Baker] has violated the copyright of Selden's book, regarding the latter merely as an explanatory work." *Id.* at 101. For a discussion of the extent of the copying advantages the patent law permits competitors to obtain, see *infra* note 103.

many creative goods copyright leaves unprotected, or with the copying advantages patent law permits competitors to obtain.

From this perspective, the central issue raised in the *Lotus* case is whether allowing competitors to copy the Lotus command structure would enable a typical competitor to obtain a copying advantage with respect to the Lotus program significantly greater than the copying advantage we tolerate generally with respect to other forms of creativity.¹⁰¹ Certainly, Borland, Paperback, and others may have saved substantial time and money in attempting to create electronic spreadsheets by copying the Lotus command structure.¹⁰² Yet, substantial savings are not enough. Even given the availability of patent protection, we allow competitors to obtain substantial copying advantages with respect to creative nonwork products.¹⁰³ Despite these copying advantages, we have concluded that the advantages associated with being the first in a market, including the lead-time monopoly and consumer recognition a first mover obtains, ensure that creative individuals will receive adequate recompense for their efforts, rendering additional legal protection unnecessary.¹⁰⁴ Given this

101. While I have considered the issue solely in terms of whether copying the command structure constitutes infringement and have not considered the differing circumstance between, for example, Borland's copying and Paperback's copying, the Court might want to draw a distinction between copying of the command structure by a competitor who has their own interface, and a competitor who copies the command structure to create a clone of Lotus 1-2-3.

102. See Samuelson et al., *supra* note 43, at 2337-91; see also *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 58, 66-68 (D. Mass. 1990).

103. Professors Mansfield, Schwartz, and Wagner have gathered empirical evidence on copying advantages that suggests that, even with the availability of patent protection, the copying advantages we allow competitors outside the field of copyright enables competitors to expend on research and development less than sixty percent of the amount spent on research and development by the originator in a field, in bringing competing products to market. See Edwin Mansfield et al., *Imitation Costs and Patents: An Empirical Study*, 91 *ECON. J.* 907, 907-10 (1981).

104. Some have argued that such protection is necessary, or at least desirable, for creative designs and would suggest that narrowing copyright to match the protection available for creative designs, for example, or other creative efforts is undesirable. Instead, we should expand the protection available for these other forms of creativity to match that copyright presently provides creativity embodied in works of authorship. I must disagree. In a representative democracy, Congress is most likely to act to promote the interests of society as whole when it considers an issue that pits a concentrated group against a concentrated group. See, e.g., Glynn S. Lunney, Jr., *A Critical Reexamination of the Takings Jurisprudence*, 90 *MICH. L. REV.* 1892, 1946-54 (1992). Historically, proposed design legislation, patent protection, to a certain extent, and the proposal to tax videocassettes and videocassette recorders sales have represented such concentrated-concentrated disputes. In each of these cases, Congress has refused to enact the requisite protection, strongly

treatment of creativity embodied in nonwork products, a risk of underproduction with respect to works of authorship arises only when a failure to prohibit certain copying would allow competitors to obtain a significantly greater copying advantage than that we ordinarily tolerate for creativity embodied in nonwork products. The question then is whether a competitor, by copying the Lotus command structure could obtain an advantage in producing a competing product significantly greater than that available with respect to creative nonwork products.

From the available evidence, it does not appear that Lotus has established¹⁰⁵ that copyright, by allowing the copying of the Lotus command structure, would permit a competitor to obtain a significantly greater copying advantage than we tolerate for creative goods generally.¹⁰⁶ As in the *Baker* case, by the time a competitor has purchased a copy of the Lotus program, taken the time to learn and understand the command structure, and written her own code to replicate the functionality of the Lotus 1-2-3 program, the copying advantage the competitor will obtain is probably not sufficient to justify legal intervention.¹⁰⁷ The copying advantages may be sub-

suggesting that such protection would not serve society's interests as a whole. In contrast, an expansion in copyright protection generally represents a dispersed-concentrated conflict. Such expansions principally benefit a concentrated, well-organized group, authors and publishers, at the expense of consumers generally. Given such a conflict, we should expect over time that copyright will come to serve the interest of the special interest group involved at the expense of society as a whole. As a result, political process concerns suggest that copyright presently provides excessive protection for works of authorship, while the protection available for nonwork products is likely set at an appropriate level.

105. While the Court has flip-flopped on who bears the burden of proof under the fair use analysis, compare *Campbell v. Acuff-Rose Music, Inc.*, 114 S. Ct. 1164, 1177 (1994) (placing fair use burden of proof on defendant) with *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 447, 451 (1984) (placing fair use burden of proof on plaintiff), I believe fair use is properly understood as the test for determining whether copying has gone too far. Because proof that the copying has gone too far has always been part of the plaintiff's case, and for a number of other reasons, I believe the Court should place the burden of proof on this issue on the plaintiff claiming infringement.

106. Because I conclude that copying of the command structure does not "underprotect" the Lotus program, I need not balance the risks presented by under- and over-protection that might arise where the Court must choose between over- or under-protecting a work. See *supra* text accompanying note 62.

107. In a recent law review article, Professor Samuelson et al. suggested that the costs to a competitor of writing her own code that would duplicate the Lotus command structure were trivial. See Samuelson et al., *supra* note 43, at 2337-39. I must, respectfully, disagree. The costs are certainly not trivial in the ordinary sense of the word. The cost of using my television remote to change the channel is trivial; the effort involved in writing any

stantial in some sense, but the available empirical evidence suggests that they are not likely to be significantly greater than the copying advantages we tolerate generally for creative goods.¹⁰⁸ As a result, the copying of the Lotus 1-2-3 command structure should not constitute infringement.

IV. COPYRIGHT AND COMPUTER PROGRAMS

This analysis suggests that the issues surrounding copyright's protection of computer programs are not materially different than the issues surrounding copyright's protection of more traditional works of authorship. In determining whether actual copying has gone too far

marketable program, let alone one that would duplicate every function performed by Lotus 1-2-3, is not. Even in comparison to the cost to the original author, the costs are not trivial. On this issue, some of the points Professor Samuelson et al. make are just plain odd. They suggest that having seen the Xerox interface, the cost to Steve Jobs and Apple of creating the Macintosh operating system were trivial. Presumably, then, the cost to Microsoft to create Windows, having seen the Macintosh, were also trivial. And having seen Windows itself, the cost of creating Windows '95 must also have been trivial. As a factual matter, these assertions are simply untrue. My own information suggests that Apple spent more on its Mac operating system than Xerox spent on its Lisa operating system; that Microsoft spent more on its initial Windows operating system than Apple spent on its initial Mac operating system; and that Microsoft spent more on its Windows '95 operating system than it had on the earlier versions of its Windows operating system. Moreover, as the division between patent and copyright discussion makes clear, we should not isolate the cost savings available with respect to design alone, but must focus on the cost savings that occurs as a percentage of the per-copy cost of the program as marketed. Thus, even if copying allowed a competitor to save the design costs entirely, legal prohibition against such copying would nevertheless be unnecessary if the physical costs of reproducing that design in a marketable form were substantial.

108. Since it introduced the first version of Lotus 1-2-3 in 1983, Lotus has sold more than twelve million copies of the spreadsheet program. See Ross, *supra* note 61, at 74 (estimated sales of 6 million DOS-based spreadsheets from 1992 to 1995, with Lotus holding a 70% market share, or sales of roughly 4.2 million over that period); Marc Ferranti, *Borland Woos Corporate Users with QPro 4.0*, PC WEEK, Mar. 2, 1992, at 37 (Lotus sold 9 million copies of 1-2-3 program since program was introduced in 1983). Even if we assume that Lotus reasonably spent more than \$120 million on deciding the particular set of menu commands and their hierarchical arrangement within the Lotus 1-2-3 program alone, and that a competitor such as Borland could save that entire sum by copying Lotus's particular command structure, the millions Lotus invested on the command structure would represent only ten dollars of the cost associated with each of the twelve million copies of the program Lotus has sold. Given that Lotus has sold copies of its programs at a price of more than \$300 for new users, and a price of \$100 for upgrades, the ten dollars in cost Borland can save as a result of its copying represents only ten percent of the cost of upgrades, and less than four percent of the cost for new users. Given that we routinely permit competitors to obtain cost savings on the order of forty percent by copying, the copying advantage Borland may have obtained by copying the Lotus command structure is not sufficient to justify legal intervention.

and thereby become an infringement, the central issue in either case is whether the copying would enable a competitor to obtain a savings in terms of the time and money required to create and market a competing work significantly greater than the savings we tolerate for creative nonwork products generally. Only if such a disproportionate or undue copying advantage would otherwise result should copyright step in and prohibit the copying at issue.

Over the last century, since *Baker v. Selden*, courts have lost sight of the copying advantage issue which is the central, and, indeed, only sensible, justification for copyright. Instead of focusing on that issue, courts have taken to dividing works into the useful and the not useful, and with the paradoxical suggestion that they are thereby promoting access to the useful, extended minimal protection to the useful, and expansive protection to the not useful. The necessary result of such an approach is to encourage production of the not useful, at the expense of the useful. Such an approach is not only at odds with its purported justification, but it is also inefficient and unfair to those whose flair for creativity lies in authoring useful works.

Whatever merits the useful/not useful dichotomy may once have had, changing technology has rendered it inadequate, and indeed counterproductive, as a tool for determining eligibility for, and the scope of, copyright's protection today. As a result, to avoid the internal conflicts inherent in the dichotomy, and to provide a more sensible approach to copyright's key issues, courts should turn away from the useful/not useful dichotomy, and refocus copyright on the disproportionate ease with which a competitor can copy the creativity embodied in a work of authorship.