

Three Common Fallacies In the User Interface Copyright Debate

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Both proponents and opponents of copyright protection for the "user interface" of computer software commonly assume the truth of the following three propositions: 1) Section 102(b) of the Copyright Act is an exception to the general rule that copying is wrongful; 2) the difficulty and expense of creating an interface supports its copyrightability; and 3) the existence of multiple alternative interfaces implies that no one of them is an unprotected "idea." Each of these propositions is a fallacy.

Fallacy #1: Section 102(b) of the Copyright Act is an exception to the general rule that copying is wrongful.

It is easy to fall into the trap of thinking that copying is a bad thing—a sort of tort—that copyright is designed to deter and remedy. Nothing could be further from the truth. Copying is the rule, and not the exception, in our competitive society. Federal Express invents overnight delivery using a hub-and-spoke system, and is promptly imitated by UPS, Purolator, and even the United States Postal Service.[1] Christian Dior shows his new line of dresses in Paris, and copies of them appear within weeks on the racks of United States department stores.[2] Chanel expends energy and talent in creating a new fragrance, only to have imitations sold at a fraction of the price.[3] Stiffel no sooner designs a popular lamp, than Sears offers its customers a duplicate.[4] Chrysler Corporation designs and builds a phenomenally successful line of "minivans," only to be imitated by Ford, General Motors and the Japanese automakers. Short-order restaurants endeavor to make their french fries as much like McDonalds' as humanly possible. The copyists even advertise that their products are as close as possible to the originals.[5]

All of these forms of copying—and many more besides—are protected by federal and state law. The reason is that copying serves two fundamental purposes. First, it facilitates price competition. If others were not permitted to offer the same product or service, competition as to price would be confused and blunted by distinctions as to the goods or services offered. Where the competitor offers exactly the same thing, prices are driven down, and "efficiency" in the economic sense is maximized.

Second, copying transmits society's collective store of knowledge. We learn by imitation. Art students copy the works of the great masters. Auto manufacturers buy their competitors' products and disassemble them down to the last nut and bolt to learn improved techniques of design and construction. Young lawyers learn to draft agreements by "marking up"—that is, copying language out of—other agreements.

Without copying, it would be necessary for everyone to "reinvent the wheel" before marketing a product, writing a play, performing an experiment, producing a movie, preparing

a contract or undertaking any other creative activity. This would be inefficient and undesirable. In computer parlance, working from scratch creates “bugs.”[6] That is why lawyers work from forms and use “boilerplate”: otherwise, they would be sure to repeat the mistakes of their forebears. It would be the unsuccessful manufacturer of a screwdriver that did not start with the assumption that his screwdrivers should look and feel just about like ones already on the market. If they did not, customers might not know how to use them, and the screwdrivers might not fit the screws they are supposed to be used with.

For these reasons, the law has jealously guarded the right to copy. As Learned Hand put it, a competitor may copy any product “slavishly down to the minutest detail.”[7] In Justice Holmes’ words, a competitor “has a *right* . . .to get whatever share they can in the popularity of [another company’s] product by advertising that they are trying to make the same article, and think that they succeed.”[8] One of the most forceful statements of the right to copy appears in the very recent Supreme Court decision in *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*: “imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy.”[9]

At issue in *Bonito Boats* was a Florida statute that made it unlawful to duplicate products using the “plug-molding” process. That process represents the most “slavish” copying imaginable. The competitor uses the originator’s product to make a mold. and then uses the mold to make duplicates of the originator’s product. In the Hand/Holmes tradition, the Court found that the Florida attempt to outlaw plug-molding “[erodes] the general rule of free competition.”[10] The Court based its decision in part on the fact that (at least as to patentable subject matter) there is “a federal *right* to ‘copy and to use.’”[11] and that “[t]hat which is published may be freely copied as a matter of federal *right*.”[12]

Bonito Boats reflects an historical and deep-seated association between patents, copyrights and monopolies.[13] This association has been most pronounced in the field of patents. The beginning of modern patent law is usually traced to the “Statute of Monopolies,” enacted in 1623. Far from being a grant of patent-like rights, the Statute of Monopolies was a Parliamentary effort to curb exclusive “patents” granted by the Crown. Similarly, the first true copyright statute, the Statute of Anne, enacted in 1710, was intended in part to limit the monopolistic rights of publishers.[14] Prior to that statute, the common law had recognized few rights in authors, and rights in published works were controlled by the unpopular “Stationers’ Company’s monopoly.”[15]

The American colonists shared this hostility; indeed, the colonists had rebelled in part because of excessive monopolies granted by the Crown. There was a strong sentiment among the founding fathers that any power in the federal government to grant monopolies,[16] and in particular monopolies in the nature of patents and copyrights, would be intolerable.[17] The most notable proponent of this view was Thomas Jefferson, who considered exclusive statutory monopolies such as patents to be an “embarrassment.”[18] Jefferson was himself, of course, a redoubtable inventor and thus might judge which legal system would best foster innovation.

Jefferson eventually came around to the view that “[m]onopolies may be allowed to persons for their own productions & their own inventions in the arts,” but only for limited times.[19] Thence the current constitutional provision, which empowers Congress “[T]o promote the Progress of Science and the Useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”[20]

It is noteworthy that, from both a constitutional and an historical standpoint, the concern about exclusive monopolization applies to patents and copyrights equally. Particularly in a climate in which copyright has been extended to such utilitarian creations as computer software, the Constitution therefore demands that the same policy considerations inform both copyright and patent adjudication. Otherwise, all of the limitations that the courts have strived to impose on patents to guard against unwarranted or exclusive monopolization might be lost through the medium of copyright protection.

The Patent Act implements the constitutional scheme—and protects the right to copy—in two ways. First, there is a high standard for patentability. If an invention is neither new nor nonobvious, it does not merit embarrassing Jefferson with yet another monopoly.[21] Second, the patent lasts only 17 years. At the end of that time, the invention (which must be fully disclosed in the patent itself) becomes available for all to copy and use.[22] The policy favoring copying is so strong that state statutes that purport to inhibit copying of an invention that does not meet the standard of patentability, or that purport to extend protection beyond the 17-year period, are preempted.[23]

Copyright has gone about the constitutional scheme in a different manner. Rather than pinning protection[24] of the right to copy on a high threshold for protection or on a short duration,[25] the courts and Congress have severely limited the sorts of things that might be copyrighted at all. The current statute exempts from its protection “any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated, or embodied in such work.” Section 102(b) was intended to codify the existing law regarding what might and might not be protected by copyright.[26] Thus, its compendious list must be understood and interpreted in light of historical and Constitutional limitations on excessive monopolies, which have produced the more general procompetitive federal policy described above. The list also must be understood as incorporating the myriad of specific exceptions to copyright protection that have arisen under that policy. It excludes from protection the design of wearing apparel;[27] business forms;[28] typefonts;[29] the titles of books;[30] the results of architectural designs;[31] the formats and designs used in maps such as boundary symbols and keys,[32] any object in which the copyrightable “expression” is not capable of existing independently of its utilitarian function,[33] and all the other items that courts have held are not subject to copyright protection.

In short, copyright is but one small part of a much larger body of federal and state law that serves a variety of important policies. One policy is the provision of incentive and reward for invention. Others are the avoidance of stifling monopolies and the preservation of competition. The right to copy is a central feature of this body of law. Thus, it is fair to say that section 102(b) of the Copyright Act is the rule, to which copyright protection is a limited exception.

Fallacy #2: The difficulty and expense of creating an interface supports its copyrightability.

The suggestion that a computer program’s “user interface” should not be protected frequently runs up against the following line of reasoning: “The plaintiff expended substantial time and effort in creating an interface that is one of the main reasons for the success of the plaintiff’s product. The defendant has imitated this interface at a fraction of the plaintiff’s effort. If we do not protect the plaintiff’s interface, there will be no incentive to create new and better interfaces, and society will consequently suffer. Therefore, the plaintiff’s inter-

face must be protected against imitation or unauthorized use by the defendant. The greater the protection, the greater the potential reward, and therefore the greater the innovation.”

This line of reasoning rests on three fallacies, one philosophical, one legal, and one factual. The philosophical error is that the argument implicitly assumes that copyright is a matter of natural right: if you create something by your own labors, it is yours, and others may not use it without your permission.[34] This argument has a powerful emotional appeal that no plaintiff’s lawyer has failed to exploit. It is, nevertheless, erroneous. As the Supreme Court observed in *Graham v. John Deere*, the “natural right” theory of intellectual property rights was rejected by Jefferson in favor of a “social and economic rationale”[35] under which protection is granted by society as an inducement to new creation. Thus, the protection is a means to an end, not an end in itself.[36] When protection would interfere with the creation of new works, it defeats the purpose and should be denied.

The fallacy of law is that the difficulty or expense of creating a thing makes it a proper subject of copyright or patent protection. There is no such legal principle. The most potent counterexample is discovery of a law of nature. It probably can be fairly said that the effort, genius, and creativity required to discover new laws of nature is unrivaled in any other field of human endeavor. Einstein’s $E = mc^2$ is the most famous example, but others abound. In many cases, millions of dollars, years of effort, and unparalleled individual application are required to make the most modest advance in human scientific knowledge. Nevertheless, the law accords no protection whatsoever against the exploitation of that discovery by others.[37] The reason is that such discoveries are simply too important to the common good to allow their monopolization by any one owner.[38]

The fallacy of fact is twofold. It is, in the first place, an error to assume that financial incentives are necessary or even sufficiently to motivate creative effort. Scientists devote their lives to the discovery of new laws of nature, without the slightest hope that they will have exclusive rights in the discoveries they publish.[39] What motivates them? Curiosity, a desire to be remembered as the discoverer of something valuable and important, and professional recognition, are powerful motivators for many.

On the other hand, works that are motivated solely by a need to make money are frequently of inferior quality and value to the society at large. “Potboilers” are not as a rule the best examples of great literature. An occasional excellent book is written solely for the purpose of making money (U.S. Grant’s *Memoirs* comes to mind), but it is probably outnumbered 100 to 1 by good books that were written in spite of the author’s sure knowledge that they would not be best-sellers.

The second error of fact is the assumption that legal protection is necessary if one is to profit from an intellectual creation. Innovations in business methods such as the Federal Express method of express delivery, and designs such as Parisian fashions and the Chrysler minivans, are neither patentable nor copyrightable. Nevertheless, they can be enormously profitable.

It thus appears that business innovations and new non-patentable designs are in fact regularly created, from which the innovators do get rich, even though there is no legal protection for them whatsoever. One important explanation for this is lead time. The first person to bring a new product to the market will have the jump on competitors; this jump can be extended by brand identification and product improvement, while the competitors are playing catch-up.[40]

This is not to say that legal protection is never required for financial reward. One of the key determinants is whether the creator provides any benefit or value other than the intellectual creation itself. In the case of an original Parisian dress, the designer's trademark has a high value. In the case of the Chrysler minivan, the particular implementation of the idea seems to be as significant as the basic idea itself. In the case of Federal Express, the clever idea for overnight delivery must be matched by near-perfect execution for the service to be a success. On the other hand, once a book is published, the author has little else to offer a potential buyer; for this reason, unrestricted copying of a book effectively eliminates the author's possibility of meaningful recovery. The lead time an author of a book would have over copyists would probably be insufficient to return any substantial recovery to the author.[41] Similarly, an unlimited right to copy the programming code of an "off the shelf" computer program would probably deprive its owner of any meaningful recovery. But the title of a book (however clever) is not protected by copyright,[42] in part for fear of creating an overly broad impediment to the creation of future books, and in part because the title alone will not sell the book: it has to read well also, just as the computer program must work well if it is to sell, even if it borrows the "user interface" of another program.

For present purposes, a vital question, therefore, is whether the creators of user interfaces are more like Chrysler with its minivan, or more like an author with his or her book, in their need for legal protection in order to earn a living. The evidence seems strong that they fall more into the Chrysler category. Like the overall concept of a minivan, the interface of a computer program is but one determinant of commercial success. The program must have features that consumers want, it must be relatively free of bugs, and it must be backed up with a credible and effective support staff, to name but a few other determinants of the commercial success of a computer program. Unlike the copyist of a book, the copyist of a user interface must add new value to the underlying program in order to compete effectively with the creator of the interface.

The conclusion seems inevitable that the creators of computer program interfaces will be—and indeed have been—able to profit handsomely, without any legal protection for their programs' "look and feel" whatsoever, just as Chrysler has been able to profit handsomely without any protection against other auto manufacturers marketing products that "look and feel" much like the Chrysler minivans.

Fallacy #3: The existence of multiple alternative interfaces implies that no one of them is an unprotected "idea."

The Copyright Act's list of the things that may not be protected by copyright is commonly referred to as "the idea/expression dichotomy." After a lifetime of unparalleled contribution to the law of intellectual property, Learned Hand declared, "[N]o principle can be stated as to when an imitator has gone beyond the 'idea,' and has borrowed its 'expression.'" [43] Similarly, in his *Unhurried View of Copyright*, (which should be required reading for any court addressing a question of copyright protection) Benjamin Kaplan referred to the distinction between "idea" and "expression" as "abracadabra." However, accepting this supposed "dichotomy," courts and commentators labor endlessly to define what constitutes the "idea," and what the "expression," of a screen display, or of another element of a program's "user interface."

One of the most pernicious "tests" currently in vogue for distinguishing ideas and expressions is the "Doctrine of Merger." Under this supposed "doctrine," one asks whether

there is only one way of doing whatever it is that the plaintiff has done. If so, then the “idea” and its “expression” are said to have “merged,” and copyright protection is denied. If not, the plaintiff wins.[44] The plaintiff almost always wins.[45] A slightly less overbroad variant on the theme is to say that protection will be denied if there are only a few ways of “expressing” the “idea.”[46]

The problem with this bogus “doctrine” is that it begs the question. Is something that can be expressed in only one way necessarily an “idea” for purposes of copyright protection? Sometimes yes; sometimes no. “Its spring and the world is mudluscious/the goatfooted balloon man whistles far and wee.” Could anyone honestly say that he or she had found another way to express what ee cummings expressed in this poetry? Does the fact that the idea can be expressed in only one way imply that cummings’ poem may not be copyrighted? Of course not. On the other hand, each expression of something that can be expressed in an unlimited number of ways is not necessarily “expression” for purposes of copyright protection. There are undoubtedly a vast number of ways of designing a dress,[47] or a building,[48] or of structuring the input formats of a computer program,[49] or of preparing an accounting form,[50] or of writing a conditional sales agreement;[51] yet no one of them is entitled to copyright protection. The “Doctrine of Merger” is hopelessly inadequate to explain or elucidate these results.

The fact is that for most copyrighted works, it is impossible to speak intelligently about their “ideas” as distinguished from their “expressions.”[52] Not only is it impossible to make this distinction for many works; it is not necessary to do so. The Copyright Act does not state the “dichotomy”; it is entirely judge-made. While it may be a useful distinction for some works, different intellectual tools are likely to be required for most other works if courts are to succeed in implementing the underlying copyright and competitive policies.

A different vocabulary helps: focusing on the question whether elements of an interface constitute methods of operation” or “function” is probably more illuminating than inquiring whether they constitute “ideas.” Even more importantly, though, the courts should more directly confront the underlying policy questions. Some suggestions for improved copyright analysis are put forward below.

The Debate Without the Fallacies

For the reasons described above, the argument that improvements and creativity require financial incentives, the emotional “natural rights” argument, and the “idea/expression dichotomy,” are not useful tools in the debate over copyright protection for the “user interface” of computer programs. But if these are not useful tools, what are?

One must begin with thoughtful consideration of the policies of the Copyright Act in particular, and the federal law of competition, monopolization and copying in general. There is nothing all that mysterious or difficult about these underlying policies or their application. One important policy, encountered in contexts as diverse as patent cases, trademark cases. and unfair competition cases, is the preservation of competition. Another is the encouragement of innovation. A third is reward to authors for their labors.

If there is a general rule that can be distilled from the patchwork of exceptions, judge-made rules. and constitutional policies incorporated into the Patent and Copyright Acts, it is this: legal protection should be granted only when it is necessary to provide financial reward to the innovator, and when it will not substantially diminish competition, innovation or other important goals. Thus, an author can make money from a published book only if

there is protection against unauthorized copying. The same is true of programming code. On the other hand, legal protection has been denied whenever the innovator can obtain a substantial financial reward without it (e.g., innovative business methods) or when there is a substantial risk that protection would materially diminish competition and innovation (as would protection for laws of nature), interfere with the standard means of creating new products (as would protection for *scènes a faire* and legal forms),[53] or conflict with other social goals such as the readability of maps (as would protection for standard map symbols, formats and designs).[54]

Applying these general principles to the user interface example, one must first inquire whether the persons who create user interfaces will be prevented from obtaining a recovery for their labors without legal protection. On this question, the balance tips against legal protection in most cases. The reason is that the interface is invariably sold as part of a computer program, and few consumers buy a program solely for its interface. The program must also operate well, and it must be backed up with a reputable company that can provide updates and other services. For these reasons, the company that creates a program with a new interface can profit from its investment even if the interface is unprotected.[55] The company's profits might not be as large as they would be if the interface were protected—but that is a good thing, not a bad thing: monopoly profits are disfavored in a competitive economy.

The second inquiry is the effect of copyright protection on competition. It seems virtually certain that copyright protection for interfaces favors monopolization by the most dominant software companies. The simple reason is that interfaces take time to learn, and once one learns a particular interface, one is reluctant to invest the additional effort required to learn another one. As a result, protection for the interface of a successful program creates a powerful barrier to entry. By contrast, the success of one novel does not threaten competition among novelists because readers are not reluctant to read novels having new characters and plots.

The third policy consideration is the effect of protection on innovation. It is frequently argued that broad protection for software interfaces is valuable because it will compel programmers to invent completely new interfaces that will be better than the existing ones. Without the broad protection the industry will stagnate at a lower level than it might otherwise have attained.

The famous example of the “QWERTY” typewriter keyboard debunks this reasoning. As is widely known, the standard QWERTY keyboard was devised in the late 19th century as a means of preventing typewriter keys from jamming.[56] As a typewriter/human interface, the QWERTY keyboard is far from ideal. It loads most of the effort onto the left hand, its most frequently used keys are not in the center row, and it compels the typist to make awkward jumps and reaches between common letter combinations. QWERTY was never protected by patent, copyright or otherwise. It nevertheless became the standard, largely as the result of a nationwide string of typing schools established by the Remington typewriter company, and the commercial success of its typewriters.

Despite QWERTY's wide acceptance, radically different and much more efficient keyboards have been devised and patented—most notably the “Dvorak simplified keyboard.”[57] This proves two points. First, the lack of any legal protection for a standard “user interface” such as QWERTY does not prevent innovators from creating new and

improved keyboard designs. Second, the existence of legal protection for an interface has little to do with the ability of its creator to earn a reward. QWERTY was never protected, but Remington and others made plenty of money selling typewriters. On the other hand, none of the patented or unpatented keyboard designs that followed QWERTY has achieved any commercial success.[58]

The “broad protection favors innovation” line of reasoning also makes a false assumption about the nature of development in the software industry. It assumes that important innovations in software interfaces are revolutionary and not evolutionary in nature. This is wrong. It is impossible to point to a single element of any current mass-market program’s interface that did not have a progenitor in one or more prior programs. Software interfaces are means of communication between programs and their users. Like other languages, they evolve over time. But each language depends on an accumulation of conventions about meaning and syntax that were established by prior languages. Extending copyright protection to any particular language would prevent others from building on its conventions of meaning and syntax and retard its evolutionary development.[59]

For all these reasons, courts should be reluctant to extend copyright protection to any part of a computer program that potential buyers would prefer not to relearn before buying a competitive product.[60] Many user interface elements—command terms, syntax, organization of command terms in a menu, to name a few—fall into this category. By contrast, many other parts of computer programs—most notably the programming code itself—can be protected without serious harm to competition and innovation in the industry.

To draw the line between what will foster the creation of improved competitive programs and what will not, it will be necessary for courts to distinguish the needs of computer programmers and users from the needs of the authors and readers of more traditional literary works. It has been all too easy for courts to assume that the same copyright principles will protect the rights of authors and programmers alike. They will not. Software is radically different from books, poems and plays. The “interface” of a book is a natural language; the “interface” of software is an artificial language. A program is written in a different language from the language by which it “interfaces” with the user; a book is not. The purpose of a book is to be read and quoted; the purpose of software is to perform functions. A court that fails to accommodate these profound differences is bound to render decisions that are unhelpful at best, and disastrous at worst, for this important industry.

Knowledge of the industry must be combined with a thoughtful and candid balancing of the underlying policies. In balancing the policies, courts need not fear treading on ground already occupied by Congress. The Copyright Act’s section 102(b), its definition of “pictorial, graphic and sculptural” works, and traditional exclusions such as that of *Baker v. Selden*[61] and *scenes a faire*, give courts extraordinary latitude to decide what should and should not be copyrightable, particularly in the case of works as utilitarian as computer programs. Courts should seize this opportunity to fashion principles that will advance the science and art of computer programming. Only in this way can the constitutional purpose of copyright protection be achieved.

NOTES

1. Such copying is entirely lawful. See *Holding Security checking Co. v. Lorraine Co.*,

- 160 F. 467 (2d Cir. 1908) (“the law is settled that a method of doing business can be rejected as not being within the statutory classes” protected by patent law).
2. This too is lawful. See *Russell v. Trimfit, Inc.*, 425 F. Supp. 91 (E.D. Pa. 1977). See also *Societe Comptoir de L’Industrie Cotonniere Etablissements Boussac v Alexander’s Department Stores, Inc.*, 299 F.2d 33, 36 (2d Cir. 1962) (“‘pirating’ of the design is lawful and proper”).
 3. *Smith v. Chanel, Inc.*, 402 F.2d 562, 563 (9th Cir. 1968).
 4. *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 231(1964), reh’g denied, 376 U.S. 973 (1964) (holding Sears’ manufacture and sale of lamps almost identical to Stiffel’s not actionable).
 5. See e.g., *Saxlehner v. Wagner*, 216 U.S. 375, 380 (1910) (Holmes, J.); *Societe Comptoir*, note 2 supra, at 35; *Smith v. Chanel*, note 3 supra, at 563.
 6. It has been suggested that the OS/2 operating system contains many programming shortfalls precisely because it was created using “clean room” techniques that prevented its designers from avoiding their predecessors’ mistakes.
 7. *Crescent Tool Co. v. Kilborn & Bishop Co.*, 247 F. 299, 301 (2nd Cir. 1917). Of course, the competitor may not pass off its good as those of another. *Id.*
 8. *Saxlehner v. Wagner*, 216 U.S. 375, 380 (1910) (emphasis added). (“[T]he plaintiff has no patent for the [‘bitter’] water, and the defendants have a right to reproduce it as nearly as they can”). *Id.* at 380.
 9. 109 S.Ct. 971, 975 (1989).
 10. *Id.* at 983.
 11. *Id.* at 985 (referring to material covered by expired patents and by potentially patentable ideas that have been “fully exposed to the public”) (emphasis added).
 12. *Id.* at 984, quoting *Bailey v. Logan Square Typographers, Inc.*, 441 F.2d 47, 51 (7th Cir. 1971) (emphasis added). The Court quoted similar language from *Inwood Labs., Inc. v. Ives Labs., Inc.*, 456 U.S. 844, 863 (1982) (“[r]eproduction of a functional attribute is legitimate competitive activity,” when an unpatented item is in general circulation). *Bonito Boats* at 984.
 13. Many patent attorneys chafe at the suggestion that a patent is a form of monopoly, preferring to think of it as a form of property instead. This effort to clothe the wolf in lamb’s clothing as *Bonito Boats* shows, has not spread to the Supreme Court.
 14. *Nutshell*, Intellectual Property 279.
 15. B. Kaplan, *An Unhurried View of Copyright* 3 (1967) (hereinafter, *Unhurried View*).
 16. James Madison felt government was instituted to protect the “use of their physical and mental faculties” A just government would “not permit citizens to suffer under arbitrary restrictions, exceptions, or monopolies.” Madison on “Property,” *National Gazette*, Mar. 29, 1792, cited in *Adrienne Koch, Jefferson and Madison, The Great Collaborators* 109 (Oxford University Press, N.Y. 1950). Jefferson felt similarly, writing in 1787 to Madison from Paris decrying the omission of certain concepts from the plans for a new government: “I will tell you now what I do not like. First, the omission of a Bill of Rights, providing . . .for freedom of religion, freedom of the press,. . .restriction of monopolies. . . .” Koch and William Peden, eds., *The Life and Selected Writings of Thomas Jefferson* 437 (Random House, N.Y. 1972).

17. Jefferson's contribution to the Constitutional provision governing patents and copyrights, Article 1, sec. 8, cl. 8, was reviewed by the Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (1966).
18. *Id.* at 8-9.
19. *Id.*, at 8, quoting Jefferson's August 1789 letter to Madison, as cited in *V Writings of Thomas Jefferson* 113 (Ford, ed. 1895).
20. U.S. Const., art. I, sec. 8, cl. 8. Some delegates to the Constitutional Convention suggested an even greater governmental role in fostering the arts and sciences. Pinckney suggested Congress should have the power to establish public institutions, rewards, and immunities for the promotion of agriculture, commerce, trades and manufacture." 3 *Notes of James Madison of the Federal Convention*, August 18, 1789 at 325.
21. *Graham v. John Deere* at 9.
22. *Bonito Boats*, supra, at 978.
23. *Id.* at 978, discussing *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225 (1964); *Compco Corp. v. Day-Brite Lighting Inc.*, 376 U.S. 234 (1964).
24. It is usually said that copyright does not require newness (novelty), and that the copyright standard of originality is minimal. See *Sheldon v. Metro Goldwyn Pictures Corp.*, 81 F.2d 49 (2d Cir.) cert. denied, 298 U.S. 669 (1936) (L. Hand, J.). However, protection has been denied in certain circumstances that look suspiciously like lack of novelty. See, e.g., *Donald v. Zack Meyer's T.V. Sales and Service*, 426 F.2d 1027 (5th Cir. 1979), cert. denied, 400 U.S. 992 (1971).
25. The duration of copyright has always been lengthy; the current statute's lifetime of the author plus 50 years (or 75 years for a work made for hire) is essentially forever in the case of a computer program
26. *H.R.Rep. (Judiciary Committee) on the Copyright Act of 1976*, No. 1476, 94th Cong., 2d Sess. 57, reprinted in *1976 U.S. Code Cong. and Admin. News* 5670.
27. See note 2 supra.
28. *Baker v. Selden*, 101 U.S. 99 (1880).
29. *Eltra Corp. v. Ringer*, 579 F.2d 294. 298 (4th Cir 1978); see also *H.R.Rep. 1476*, note 26 supra, at 55 (a typeface is not a copyrightable "pictorial, graphic or sculptural work" within the meaning of the bill).
30. *Becker v. Loew's, Inc.*, 133 F.2d 889, 891 (7th Cir 1943).
31. *DaSilva Construction Corp. v. Herrald*, 213 F Supp. 184, 195-196 (M.D.Fla. 1962).
32. *United States v. Hamilton*, 583 F.2d 448 (9th Cir. 1978); see also *Andrews v. Guenther*, 60 F.2d (S.D.N.Y. 1932).
33. 17 U.S.C. sec. 101 (definition of "pictorial, graphic and sculptural" works).
34. The Berne Convention tends to assume that a copyright is the "natural right" of an author. One might argue whether U.S.'s decision to comport with the requirements of Berne undermines the historical and constitutional rejection of the "natural rights" theory of copyright.
35. *Graham v. John Deere*, supra note 17, 383 U.S. at 8-9.
36. Jefferson felt that rights in intellectual property should be limited to their usefulness to society. One did not "lose" by sharing an idea. "He who receives an idea from me,

receives instruction himself without lessening mine, as he who lights his taper at mine. receives light without darkening mine.” The free movement of ideas was essential to man’s development; therefore, “[i]nventions. . .cannot, in nature. be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility,” but within limits. Letter of Thomas Jefferson to Isaac McPherson, cited in Federico, “Operation, of the Patent Act of 1790,” *18 J. of the Pat. Off. Soc’y* 237, 241-242 (April 1936).

37. *Diamond v. Diehr*, 450 U.S. 175, 185-186 (1981) A new discovery of, e.g., a law of nature, can in principle be protected as a trade secret, but in fact few scientific discoveries are ever protected in this manner
38. *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (“He who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”).
39. As noted above, a scientist could in principle protect a law of nature as a secret. Yet how many instances have there been of scientists choosing this route, rather than publishing and receiving credit for their discoveries?
40. Stephen Breyer, “The Uneasy Case For Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs,” *84 Harv. L. Rev.* 281, 299-301 (Dec. 1970).
41. See Breyer, note 40 supra, at 302 (referring to books with heavy fixed costs and lengthy pre-recoupment periods).
42. *Becker v. Loew’s, Inc.*, 133 F.2d 889, 891 (7th Cir. 1943)
43. *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487, 489 (2d Cir. 1960).
44. This so-called doctrine is usually traced to the “jeweled bee pin” case, *Herbert Rosenthal v. Kalpakian*, 446 F.2d 738 (9th Cir. 1971). In that rather poorly- reasoned decision, the court denied protection for a pin that was in the shape of a bee, on the ground that there was only one way to make such a pin. The premise of this argument—that one can make a jeweled bee pin in only one way—seems so manifestly incorrect that one must question the validity of the court’s holding.
45. See *Whelan Associates v. Jaslow Dental Laboratory*, 797 F.2d 1222, 1236 n.28 (3rd Cir. 1986), cert. denied, 479 U.S. 1031 (1987). The merger doctrine’s resultant overbroad protection has been noted and questioned. See, e.g., Comment, “Does Form Follow Function? The Idea/Expression Dichotomy in Copyright Protection of Computer Software,” *35 U.C.L.A. L. Rev.* 723, 741 (April 1988) (noting that courts frequently find that alternative methods of expression exist “regardless of their impracticability.”)
46. *Morrissey v. Procter & Gamble Co.*, 379 F.2d 675, 678 (1st Cir. 1967).
47. *Jack Adelman, Inc. v. Sonners and Gordon, Inc.*, 112 F. Supp. 187, 190 (S.D.N.Y. 1934); *Russel v. Trimfit, Inc.*, 478 F. Supp. 91 (E.D. Pa. 1977)
48. *DaSilva Construction Corp.*, note 31 supra.
49. See *Synercom Technology, Inc. v. University Computing Co.*, 462 F. Supp. 1003 (N.D. Tex. 1978).
50. *Baker v. Selden*, 101 U.S. 99 (1880).
51. *Donald v. Zack Meyer’s T.V. Sales and Service*, note 24 supra.

52. Kaplan found further support for this conclusion in modern music and visual art. It is senseless to attempt to distinguish intelligently between the “idea” and expression” of a work of modern music that is lacking in melody, or of an abstract painting that is lacking in representation. Kaplan, *An Unhurried View*, 52-53.
53. *Donald v. Zack Meyer’s T.V. Sales and Service* notes 24 and 51, *supra*.
54. *United States v. Hamilton*, 583 F.2d 448 (9th Cir. I 978).
55. To the extent that there are some independent persons or companies engaged solely in the creation of interface elements, they can protect their recovery through contract with the companies that market the combined program interface.
56. For an excellent discussion of the history of the QWERTY keyboard, see C. Blanchard, *The Early Word Processors* (Research Rpt. 3, Educators: Project IV, Lake George, NY 1981). See, generally, A. Dvorak, N. Merrick, W. Dealey and G. Ford, *Typewriting Behavior* (American Book Co. 1936).
57. See Dvorak, August and Dealey, “Simplified Keyboard Arrangement,” U.S. Pat. Off. Ser. No 612738 (1932). The world’s record for typing speed (about 240 words per minute) was set on a Dvorak keyboard.
58. Dvorak first patented his keyboard, and then dedicated it to the public domain in hopes of encouraging its dissemination. Other inventors have retained their patent claims. See, e.g., references in Dvorak patent, cited in note 57 *supra*.
59. Drawing on the seminal work of Professors Robert Merges and Richard Nelson, one can describe computer software in general, and interfaces in particular, as a “cumulative” technology like aircraft, as opposed to an iterative one like pharmaceuticals. Each improvement in a cumulative technology necessarily accumulates and builds upon prior improvements. For such technologies, Merges and Nelson have found strong evidence that intellectual property protection can retard rather than enhance industry development. See Merges and Nelson, “On the Complex Economics of Patent Scope” (manuscript, to be published in the *Columbia Law Review* in Spring 1990).
60. This consideration may explain the Digital Communications court’s otherwise inexplicable distinction between the rule that one chooses an item from a menu by depressing the keys that correspond to letters in the command term that are capitalized on the screen, and the choice of which letters to capitalize. The rule has to be learned and remembered, whereas the capitalized letters can be read off of the screen. *Digital Communications Assoc., Inc. v. Softklone Distributing Corp.*, 659 F. Supp. 449, 459 (N.D. Ga. I 987).
61. 101 U.S. 99 (1880).