Lotus Development Corporation v. Borland International, Inc. — Brief Amicus Curiae of Copyright Law Professors

I
Purposes of the Brief

This brief amicus curiae sets forth the nature of copyright analysis that we, as professors who teach and write about copyright law, believe to be appropriate for determining the scope of copyright protection for computer programs.

The first substantive section of this brief will discuss the reasons for and the implications of the Congressional mandate that ideas, procedures, processes, systems, methods of operation, concepts, principles and discoveries are beyond the scope of copyright protection available to computer programs under 17 U.S.C. §102(b). This mandate should be taken quite as seriously as the provision expressing Congress's decision to treat computer programs as copyrightable subject matter. The District Court in its decisions in this case has failed to take sufficient account of the traditional principles of copyright law embodied in §102(b). The second substantive section will explain why the successive filtering test for determining copyright infringement in computer software cases that has been adopted by numerous Courts of Appeals is more consistent with copyright law and principles than the District Court's test of "copyrightability".

II
There are Two Congressional Mandates Courts Must Apply in Computer Program Copyright Cases.

The District Court in its *Paperback* and *Borland* decisions has given too much attention to one Congressional mandate pertinent to this case—that computer programs are to be protected by copyright law—and too little attention to another equally explicit mandate—that processes, procedures, systems, and methods of operation embodied in copyrighted works are beyond the scope of copyright pro-

tection in these works.[1] This section will explain the origins of and reasons for the copyright rule that excludes processes, procedures, systems, and methods of operation from the scope of copyright protection available to functional writings and the implications of these exclusions for cases involving computer programs.

A. The Text Of Section 102(b) And Its Legislative History

To understand the meaning of the copyright provision excluding such things as processes and systems from the scope of copyright protection, it is well to begin with an examination of the text of that section. Section 102(b) of Title 17 of the U.S. Code reads, in pertinent part: "In no case does copyright protection for an original work of authorship extend to any. . .procedure, process, system, [or] method of operation. . ., regardless of the form in which it is described, explained, illustrated, or embodied in such work."

The legislative history of this provision indicates that Congress had computer programs in mind when adopting this provision and meant for it to limit the scope of copyright protection available for computer programs. Concerns had been expressed at legislative hearings on revision of the copyright law about the need for such a provision so that copyright protection would not be construed too broadly for programs.[2] Both the House and Senate Committee reports plainly state: "Some concern has been expressed lest copyright in computer programs should extend to the methodology or processes adopted by the programmer, rather than merely to the 'writing' expressing his ideas. Section 102(b) is intended, among other things, to make clear that the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods embodied in the program are not within the scope of copyright law."[3]

The legislative history of section 102(b) also indicates that the provision was intended to reflect and be consistent with a long line of copyright cases, including Baker v. Selden, 101 U.S. 99 (1879), that had held that constituent elements of systems, processes, and the like were beyond the scope of copyright protection available to an original

1. The first of these mandates is evidenced in 17 U.S.C. §101 (definition of "computer program"); the second is evidenced in 17 U.S.C. §102(b).

2. Hearings on S. 597 Before the Senate Subcomm. on Patents, Trademarks, & Copyrights of the Comm. on the Judiciary, 90th Cong., 1st Sess. 197 (1967).

3. H.R. Rep. No. 1476, 94th Cong., 2d Sess. 57 (1976), reprinted in 1976 U.S.C.C.A.N. 5659, 5670 and S. Rep. No. 473, 94th Cong., 2d Sess. 54 (1976).

work of authorship.[4] The National Commission on New Technological Uses of Copyrighted Works (CONTU) made reference to section 102(b) and to functional writing cases such as Baker v. Selden and Continental Casualty Co. v. Beardsley, 253 F.2d 702 (2d Cir. 1958) as among the sources of guidance that courts would utilize in judging copyright infringement claims involving computer programs.[5] Congress relied on the CONTU Report in enacting the amendments to copyright law that defined computer program and provided for some special rules for programs,[6] thereby giving the report a measure of Congressional imprimatur.[7]

B. Baker v. Selden And Policy Reasons For The Exclusion Of Systems And Processes From The Scope Of Copyright Protection

Baker v. Selden is the seminal case out of which developed a long line of copyright cases in which courts have held that constituent elements of systems or processes are outside the scope of copyright protection. This aspect of Baker v. Selden is now codified in 17 U.S.C. §102(b).

Selden claimed copyright infringement because Baker included in his accounting book a set of sample ledger sheets that were substantially similar in selection and arrangement of columns and headings to those Selden had included in the book he wrote on the same bookkeeping system. The principal issue before the Court was whether someone besides Selden could "make or use similar ruled lines and headings, or ruled lines and headings made and arranged on substantially the same system, without violating the copyright." 101 U.S. at 101.

The Supreme Court concluded that Selden's copyright protected his explanation of the system, but not the system itself. Because the selection and arrangement of columns and headings were constituent parts of the system, they too were beyond the scope of copyright pro-

4. Id. (indicating an intent to restate the caselaw). Among the cases regarding section 102(b) as codifying the principal holding of Baker v. Selden are NEC v. Intel Corp., 10 U.S.P.Q.2d (BNA) 1177, 1179 (N.D. Cal. 1989) and Signo Trading Int'l v. Gordon, 535 F. Supp. 362, 365 (N.D. Cal. 1981).

5. See Final Report of the National Commission on New Technological Uses of Copyrighted Works 18-23 (1979) (cited hereinafter as "CONTU Report").

6. 17 U.S.C. §§101 (definition of "computer program"), 117 (providing privileges to copy programs to use them, to make backup copies, and to make some adaptations to programs).

7. Computer Associates Int'l, Inc. v. Altai, Inc., 982 F.2d 693, 703 (2d Cir. 1992)(giving deference to CONTU Report). See also Sega Enterprises, Ltd. v. Accolade, Inc., 977 F.2d 1510, 1524 (9th Cir. 1992) and Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240, 1251 (3d Cir. 1983).

tection. Selden's copyright gave him no more of an exclusive right to the bookkeeping system than the copyright on a book about the composition or use of medicines would give its author an exclusive rights to the medicinal compounds or uses of them discussed in the book. The Supreme Court explained: "[T]o [give] the author of the book an exclusive property in the [useful] art described therein, when no examination of its novelty has ever been officially made, would be a surprise and a fraud upon the public. That is the province of letters-patent, not of copyright." Id. at 102.[8]

Having apparently failed to secure a patent on his bookkeeping system,[9] Selden was, in the Court's view, trying to get indirectly—through a copyright infringement action—a kind of protection which he had failed to get directly from the Patent Office, namely, an exclusive right in the system. Id. at 104-05. Selden was trying to get this exclusive right without satisfying the rigors of the patent system. To allow Selden to accomplish his goal through copyright protection would subvert and undermine the patent system, for it is a fundamental principle of the patent system that advances in the useful arts that do not meet patent law's novelty and nonobviousness standards or otherwise fail to satisfy patent law requirements are, if revealed in a publicly circulated product, freely available to be copied by competitors.[10]

8. In Lotus Dev. Corp. v. Borland Int'l, Inc., 788 F. Supp. 78 (D. Mass. 1991) (Borland I), the District Court stated that "[t]he mere fact that patent law allows a means of legal protection for a process. . .does not establish that there is not also some protection in copyright law." Id. at 91. It cited the Supreme Court decision in Mazer v. Stein, 347 U.S. 201 (1954) as a precedent recognizing an overlap of copyright and patent protection. *Mazer*, however, involved a subject matter that was potentially eligible for both copyright and design patent protection. The statuette in that case was eligible for copyright protection as a sculpture. Because it was intended for sale as a lamp base, it was also potentially eligible for protection as a new and original ornamental design for an article of manufacture under design patent law, 35 U.S.C. §171. We do not read *Mazer* as recognizing an overlap of copyright and utility patent subject matter, and we know of no precedent which recognizes the coexistence of copyright and utility patent in the same aspect of the same work. We do know of some cases applying the principles of Baker v. Selden in which owners of expired utility patents have been unsuccessful in claiming copyright in the same work. See, e.g., Taylor Instrument Co. v. Fawley-Brost Co., 139 F.2d 98 (7th Cir.1943), cert. denied, 321 U.S. 785 (1944) (involving a chart for use in a temperature recording machine; expressing the view that utility patents and copyright do not overlap in subject matter). See also *Sega*, 977 F.2d at 1526 and *Atari Games*, 975 F.2d at 842 (expressing concern that copyright law not be construed to give patent-like protection to functional elements of programs).

9. The Lawyers Edition synopsis of the arguments of Baker's lawyer suggests that Selden had tried to patent this system. See 25 L.Ed. 841-842. The Supreme Court opinion indicates that Selden didn't get a patent on it. *Baker* v. *Selden*, 101 U.S. at 104.

10. See, e.g., Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989).

The principles of Baker v. Selden have been applied in a long line of cases sanctioning the right of competitors to reproduce functional content regardless of the tangible medium in which it was first fixed.[11] Competitors have, for example, been allowed to copy such things as the design of a three-dimensional boiler or article of clothing, even though to do so may require the making of a schematic representation of it which will look very much like the plaintiff's design document.[12] This line of cases, now codified in 17 U.S.C. §113(b), reflects the general principle laid down in Baker v. Selden that the exclusive reproduction rights of copyright cannot prevent—directly or indirectly—the use of unprotected ideas or utilitarian features of functional works.

In Baker v. Selden, the Supreme Court explicitly stated that this principle applies to functional works regardless of whether they are expressed in a literary or graphic form:

> The fact that the art described in the book by illustrations of lines and figures *which are reproduced in practice in the application of the art*, makes no difference. . . .Had he used words of description instead of diagrams. . .there could not be the slightest doubt that others, applying the art to practical use, might lawfully draw the lines and diagrams. . .*which he [the author] thus described by words in his book.*
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> The copyright of a work on mathematical science cannot give. . .an exclusive right to the methods of operation. . .or to the diagrams which he employs to explain them, *so as to prevent an engineer from using them whenever occasion requires.*[13]

Later commentators, including Professor Benjamin Kaplan of Harvard, understood this statement to establish a kind of fair use applicable to scientific and functional works.[14]

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11. See, e.g., Pamela Samuelson, Computer Programs, User Interfaces, and Section 102(b) of the Copyright Act of 1976: A Critique of Lotus v. Paperback, 55 Law & Contemp. Probs. 311, 324 n.61 (1992), republished in 6 High Techn. L.J. 209, 226, n. 73 (1992) (cited hereinafter as "Critique of *Paperback*") for a partial listing of Baker v. Selden's progeny.

12. See, e.g., Combustion Eng'g, Inc. v. Murray Tube Works, Inc., 222 U.S.P.Q. (BNA) 239, 244 (E.D. Tenn. 1984); Muller v. Triborough Bridge Auth., 43 F. Supp. 298 (S.D.N.Y. 1942); National Cloak & Suit Co. v. Standard Mail Order Co., 191 F. 528 (S.D.N.Y. 1911).

13. 101 U.S. at 103 (emphasis added).

14. See, e.g., Benjamin Kaplan, An Unhurried View of Copyright 63-66 (1967) (stating that "the [*Baker*] privilege extends to exact copies"); H. Ball, The Law of Copyright and Literary Property 125-28, 274-78 (1944); A. Weil, American Copyright Law 191, 209, 411-12 (1917) (emphasizing the role of Baker v. Selden as a limitation on the reproduction right and not as a test of copyrightability). One eminent commentator has deviated from this historical tradition in recent years. See Melville B. Nimmer & David Nimmer, 3 Nimmer On Copyright §2.18[A], [B] (1993) (cited hereinafter as "Nimmer on Copyright"), criticized in J. H. Reichman, Computer Programs As Applied Scientific Know-How: Implications of Copyright Protection for Commercialized University Research, 42 Vand. L. Rev. 639, 693 n. 288 (1989) (cited hereinafter as "Programs as Know-How"), Samuelson, Cri-

The very fact that such functional ideas are so valuable explains why copyright law, with its low standards for obtaining protection and its long duration of exclusive rights, will not protect them. As Professor Goldstein has observed:

> Functional works [such as architectural plans, legal forms, and computer programs] depend for their value primarily on the ingenuity, accuracy, and efficiency—the utility—of their underlying system, concept or method. As a result, enforcement of copyright in these works inevitably threatens the fundamental precept that copyright protection shall not extend to any "idea, procedure, process, system, method of operation, concept, principle, or discovery." Copyright in functional works is in this respect like copyright in fact works, which pose the similar danger of monopolizing elements that should be available for free use by all. The important difference is that in protecting works that are essentially functional in nature, copyright may contradict the principle that protection for these utilitarian elements is better left to the more exacting standards of patent and trade secret law.[15]

In short, Baker v. Selden has consigned functional works to a regime of "thin" protection in order to defend the line of demarcation between patent and copyright law.[16]

A weakening of Baker v. Selden's limitations on the scope of protection available to functional writings would run counter to two recent Supreme Court opinions. In Feist Publications, Inc. v. Rural Telephone Service Co. the Court ruled that a competitor could copy valuable but unprotectable facts from the plaintiff's directory, relying in part on the principles of Baker v. Selden.[17] The Court observed in *Feist* that the right to copy unprotected material from copyrighted works is not an unforeseen byproduct of the statutory scheme of copyright, but rather of its essence.[18] In Bonito Boats, Inc. v. Thunder Craft Boats, Inc.,[19] the Court ruled that a state "plug-mold" statute conflicted with the Congressional purposes underlying the federal patent system because the state law would have removed from the public

tique of *Paperback*, supra note 11, 6 High Tech. L. J. at 228-29, n81-82, and Ralph S. Brown, Eligibility for Copyright Protection: A Search for Principled Standards, 70 Minn. L. Rev. 579, 600-06 (1985).

15. Paul Goldstein, Copyright Principles, Law & Practice §8.5 at 116-17 (1989).

16. 101 U.S. at 102; see also Kepner-Tregoe, Inc. v. Carabio, 203 U.S.P.Q. 124, 130 (E.D. Mich. 1979) (thin protection of functional works is an "open secret"); *Sega*, 977 F.2d at 1524 (discussing reasons why functional writings have a thinner scope of protection than other classes of works); *Altai*, 982 F.2d at 704 ("compared to aesthetic works, computer programs hover even more closely to the elusive boundary line described in § 102(b)").

17. 111 S.Ct. 1282, 1290, 1297 (1991).

18. Id. at 1289-90.

19. 489 U.S. 141 (1989).

domain functional designs that had not undergone the patent examination process.

C. The District Court's Misapplication Of Baker v. Selden And Principles Embodied In Section 102(b)

In Lotus Dev. Corp. v. Paperback Software Int'l, 740 F. Supp. 37 (D. Mass. 1990), the District Court described Baker v. Selden as having held that "the text of a book describing a special method of double-entry accounting on paper spreadsheets. . .was copyrightable *expression*, but that the. . .*idea* of this particular kind of double-entry bookkeeping, was not." Id. at 54 (emphasis in the original). The Supreme Court's statement of its holding in that case was importantly different than this. The Court stated that Selden's copyright protected his "explanation" of the useful art it described but not the "useful art" itself, which, as we have said, was the bookkeeping system and its constituent parts that were embodied in the sample ledger sheets in Selden's book. 101 U.S. at 105.

This correct formulation of the rule of Baker v. Selden makes clear something that courts today sometimes forget about Baker v. Selden: that it is fundamentally a case about the unprotectability of the functional content of written works and the right of others to copy that content in order to make use of it.[20] To speak of Baker v. Selden as a case that concerns the unprotectability of abstract ideas, as the District Court has done, is to miss the main point of the case.

Although the District Court has repeatedly rejected Borland's interpretation of Baker v. Selden and its arguments about the implications of that case for a proper understanding of the exclusions of section 102(b), the District Court in its *Borland* decisions has not stated its own understanding of the ruling of the case. Instead, the District Court has tried to distinguish Baker v. Selden by saying that the case had been decided before computer programs were invented and before Learned Hand formulated the "patterns of abstractions" approach in the *Nichols* case.[21] *Borland I*, 788 F. Supp. at 92-93. Concerning section 102(b), the District Court's principal point has been that the terms "process" or "system" cannot be taken too literally or else computer programs would be unprotectable by copyright law. Id. at 91. The District Court seems to believe that section 102(b)'s exclusions of "processes" and "systems" are merely restatements of the unprotectability of abstract ideas. Id.

20. See, e.g., Reichman, Programs As Know-How, supra note 14, at 693, n.288; Samuelson, Critique of *Paperback*, 6 High Tech. L. J. at 228.

21. Nichols v Universal Pictures, 45 F.2d 119 (2d Cir. 1930)

Even after the Second Circuit in Computer Associates Int'l, Inc. v. Altai, Inc. emphasized the essentially utilitarian nature of computer programs and cited the pertinence of cases like Baker v. Selden for determining the proper scope of copyright protection for computer programs,[22] the District Court still refrained from stating its interpretation of Baker v. Selden, *Baker*'s progeny, or other cases applying section 102(b). Disappointingly few such cases are even mentioned in the District Court's *Borland* opinions.[23] The District Court's most recent response to Borland's argument that the command hierarchy of Lotus 1-2-3 is beyond the scope of copyright protection as an inseparable part of Lotus's macro system was the Court's statement in Lotus Dev. Corp. v. Borland Int'l, Inc., 831 F. Supp. 223 (D. Mass. 1993) (*Borland IV*) that "Gone With The Wind" could also be characterized as a "system," by which the court signaled its unwillingness to consider the matter further. See *Borland IV*, 831 F. Supp. at 230-231. This simply does not comport with the Congressional mandate to exclude processes, systems, and the like from the scope of copyright pro-

22. *Altai*, 982 F.2d at 704-05.

23. In its *Paperback* and *Borland* decisions, the District Court does discuss one line of Baker v. Selden's progeny, namely the "useful article" cases. We agree with the District Court that principles from cases involving useful articles and drawings of useful articles can usefully be brought to bear in computer program cases, although we think the court is mistaken about what those cases hold. Contrary to the District Court's impression in *Borland I* and elsewhere, see, e.g., 788 F. Supp. at 97, Brandir Int'l, Inc. v. Cascade Pacific Lumber Co., 834 F.2d 1142 (2d Cir. 1987), does not hold that a shape must be solely dictated by function to be unprotectable by copyright law. In *Brandir*, seemingly minor changes had been made to the configuration of a sculptural form. Brandir charged Cascade with copyright infringement because it copied this derivative design. The court in *Brandir* observed that the changes in design had been made in order to make the "sculpture" more suited to use as a bicycle rack. The intermixture of form and function in the modified design caused the work to be considered a "useful article" which was unprotectable by copyright law. See 17 U.S. C. §101 (definition of "useful article"). The court's ruling of uncopyrightability of the derivative design was not based on the design being solely dictated by function.

When computer programs generate pictures or text as elements of user interfaces, copyright law will have no more difficulty in protecting such expressive elements of the interface than it would have in protecting a tiny sculpture of a parrot that might be used as part of the user interface of a lamp machine (i.e., a device with which to turn on the lamp's light bulb). The parrot can be copyrighted because of its capacity to exist as a work of art separate from its role as an element of the user interface of a lamp. Other parts of the user interface of the same lamp in which the functionality of the user interface and the design were intermixed would not, however, be protectable by copyright law under the useful article doctrine. From the standpoint of copyright law, it would be immaterial how many alternative functional designs might available to the competitor. The proper test for judging whether a design of this sort is copyrightable is *not* whether the form is dictated solely by its function, but rather whether its expressive aspects are separable from its functional aspects. If a form has *any* function beyond conveying information or displaying an appearance, it is uncopyrightable. See 17 U.S.C. §101 (definition of "useful article").

tection available to computer programs, nor with the Baker v. Selden tradition of according "thin" protection to functional writings.

To illustrate differences between the District Court's analysis in the *Borland* opinions and the Supreme Court's analysis in Baker v. Selden, we think it instructive to apply the District Court's "copyrightability" test to the facts of Baker v. Selden.

The first step of the District Court's method of analysis seems to involve construction of a hierarchy of abstractions for the aspect of the work whose "copyrightability" is to be determined.[24] If one constructed a hierarchy of abstractions for the ledger sheet portion of Selden's accounting book, the selection of certain words as headings and the arrangement of them and the columns under which entries would be made would seem to be at the lowest level of abstraction. Under the District Court's methodology, this would suggest that these aspects of the ledger sheets were expressive.

Consistent with the second step of the District Court's methodology, one would not inquire whether this selection and arrangement was a constituent element of a system, but rather whether the idea of an accounting system and Selden's expression of it were merged. To discern whether this was so, a court would likely examine other accounting books available in the marketplace, just as the District Court considered the market availability of other spreadsheet programs in *Paperback* and *Borland*.[25] A study of these other accounting books would likely reveal that Selden's particular selection and arrangement of elements were not essential to every expression of the idea of an accounting system[26] or solely dictated by the accounting functions they were to perform.[27] Insofar as Selden had freedom of choice about which words to use and in what order to arrange them, under the District Court's methodology, they would likely be treated as ex-

24. The District Court's methodology is discussed in greater detail in Section III.

25. See, e.g., *Paperback*, 740 F. Supp. at 65-69.

26. See, e.g., Lotus Dev. Corp. v. Borland Int'l, Inc., 799 F. Supp. 203, 217 (D. Mass. 1992) (*Borland II*) (using the "not essential to every expression of that idea" test).

27. We see nothing in the Supreme Court's opinion in Baker v. Selden to suggest that the Court's ruling depended on whether Selden invented his system *before* selecting and arranging the columns and headings in the ledger sheets or developed the system and the ledger sheets simultaneously or even developed the ledger sheets first and then decided later that they would permit people to do better accounting in accordance with a system they suggested. The District Court in this case seems to suggest that merger can only be found if the system existed first and dictated the arrangement of elements. See *Borland II*, 799 F. Supp. at 212-13 ("I assume in Borland's favor that. . .the macro language. . .evolved simultaneously with the menu commands that delimit it. Nevertheless, it is beyond dispute that the macro language did not evolve *first*," id. at 213 (emphasis in the original)). The caselaw, including the "useful article" caselaw discussed supra note 23, does not support this distinction .

pressive rather than being merged with the idea of an accounting system.

In line with the third step of the District Court's methodology, one would next inquire whether the ledger sheets were a substantial or nontrivial component of Selden's book. The answer to this question would almost certainly be yes. Since Baker's ledger sheets were substantially similar to Selden's, infringement would probably have been found under the District Court's methodology as applied to Baker v. Selden. As we have shown, this is not what the Supreme Court ruled in Baker v. Selden.

We are troubled not only by the District Court's misapplication of Baker v. Selden and its progeny, but also by the court's characterization of the Lotus command hierarchy as "a fundamental part of the functionality of keystroke sequences and the macro language." *Borland II*, 799 F. Supp. at 207.[28] This evokes in us the same kind of concern that the previous copyright law professor amicus brief expressed about statements in *Paperback* to the effect that the command hierarchy of the Lotus 1-2-3 user interface was a fundamental part of the functionality of the Lotus macro facility.[29] It would appear to us that a macro language and fundamental parts of its functionality would be beyond the scope of copyright protection under principles deriving from Baker v. Selden and the "shorthand system" cases decided some years ago.[30] Not only the abstract rules for the shorthand system, but also the vocabulary of the system are beyond the scope of protection available to the owner of the copyright in the first book explaining the system. The District Court has not addressed these cases or other cases giving a narrow scope of copyright protection to functional writings.

We are also troubled that the District Court seems to be more bothered by functional uses of the Lotus commands or the hierarchy

28. See also *Borland II* at 213 ("It is no doubt true that the macros have functional significance. Moreover, as this court found in *Paperback*, the menu 'system' is a fundamental part of the functionality of the macro language and the macros.") and 219 ("The menu command hierarchy is an integral part of the functionality of the macros and of the keystroke sequences.").

29. Brief Amicus Curiae of Copyright Law Professors, Lotus Devl. Corp. v. Borland Int'l, Inc., Civ. No. 90-11662-K (Sept. 1991), at 8, citing *Paperback*, 740 F. Supp. at 65.

30. See, e.g., Brief English Systems, Inc. v. Owen, 48 F.2d 555 (2d Cir.), cert. denied, 283 U.S. 858 (1931) and Griggs v. Perrin, 49 F. 15 (N.D.N.Y. 1892). A number of academic commentators have questioned the availability of copyright protection for languages. See sources cited in Samuelson, A Critique of *Paperback*, supra note 11, 6 High Tech. L. J. at 238, n122.

than by informative displays of them.[31] From the standpoint of traditional principles of copyright law, this strikes us as backwards.

In *Paperback* the District Court seemed to say that it would have been lawful for a competing spreadsheet product to display the Lotus commands on a help screen to inform users what the equivalent command would be in the competing product, or to have a macro conversion facility such as that provided in Microsoft's Excel product.[32] Yet in *Borland IV*, the District Court found infringement based on Borland's use of a "key reader" feature that permits users to execute the same commands to perform the same functions as the Lotus program. Execution of program functions through use of this feature does not involve any display of the Lotus commands or any part of the Lotus command hierarchy.[33] In *Borland IV*, the court seems to have found infringement based on similarities in the selection and arrangement of executable functions.[34]

Finding infringement based on similarities in executable functions comes perilously close to finding infringement based on the fact that the two programs perform the same functions. This is not consistent with our understanding of what Congress intended by section 102(b).[35] Nor does it comport with what Congress expected when enacting the computer program-related amendments to the copyright statute in 1980. Congress had been reassured by CONTU that as long

31. See, e.g., *Borland II*, 799 F. Supp. at 219 (emphasis added). ("The menu command hierarchy is an integral part of the functionality of the macros and of the keystroke sequences. Nevertheless, the fact that the macros and keystroke sequences incorporate the menu command hierarchy into their functionality does not remove the menu command hierarchy from the scope of copyright, if otherwise subject to copyright protection. Moreover, the macros and keystroke sequences are protected *to the extent that it is necessary to infringe a copyright to use them.*")

32. *Paperback*, 740 F. Supp. at 69.

33. The District Court speaks of the key reader feature as presenting a "phantom menu" to users. *Borland IV*, 831 F. Supp. at 229. Finding infringement based on a "phantom menu" is like saying that it would infringe the copyright in a drawing of a typewriter keyboard for someone to make a typewriter that would cause an "a" to be produced when a particular key of the typewriter's user interface was struck and a "b" to be produced when another key was struck even if the typewriter did not visually indicate that this key was the "a" key and that was the "b" key. This example illustrates how far away from traditional copyright analysis the District Court's approach has taken it.

34. Id. at 231 ("[T]he structure of the menu tree including its designated keys for invoking commands (i.e., what Borland copied into the phantom menus) may also be viewed, in a light favorable to Borland, as a type of selection and arrangement of executable operations in Lotus 1-2-3.").

35. The District Court in *Altai* characterized the functional behavior produced when computer program instructions are executed in the computer's hardware as an unprotectable process under 17 USC §102(b). Computer Associates Int'l, Inc. v. Altai, Inc., 775 F. Supp. 544, 560 (E.D.N.Y. 1991). This portion of the *Altai* trial court decision is cited approvingly in the Second Circuit's opinion, *Altai*, 982 F.2d at 706.

as programmers wrote their own code, it should not infringe copyright for two programs to perform the same functions.[36]

There is, of course, no question that copyright law provides protection to the literal code of computer programs, that is, to the set of statements and instructions that can be used in a computer to bring about certain result under the definition of computer program in the copyright statute. 17 U.S.C. §101. The courts have enforced this Congressional mandate, and the protection copyright has provided to computer program code has been very meaningful for software developers. Copyright has also provided protection to some detailed elements of the internal structure of programs.[37]

But there is nothing in the copyright definition of computer program or in the legislative history of the 1976 Act or of the 1980 computer program-related amendments to indicate a Congressional intent to extend copyright protection to the results obtained when program instructions are executed. The results achieved when program instructions are executed are often highly functional in nature, such as controlling the operations of a nuclear power plant or performing spreadsheet functions.[38] They will often be the kind of functional process that Congress intended to exclude from the scope of copyright protection by enactment of section 102(b). Courts should closely scrutinize claims of infringement based on similarities in the results achieved when program instructions are executed.[39] When the results achieved by execution of program instructions are textual (an electronic book, for example) or pictorial (such as videogame graphics) in nature, courts can be expected to have no serious difficulty applying traditional copyright principles when charges of infringement arise.[40]

36. CONTU Report, supra note 5, at 21-22.

37. See, e.g., *Altai*, 982 F.2d 702-03.

38. We are concerned that what the District Court calls "the feel" of the Lotus program and regards as an expressive aspect of the work in *Borland IV* may really be the functional behavior of the Lotus program which should be beyond the scope of copyright protection available to the work.

39. Courts should also be circumspect about extending copyright protection to "user interfaces" of computer programs, that is, to elements of program interfaces beyond "screen displays" of text or graphics. Non-display elements of user interfaces of computer programs may be highly functional in nature. The "user interface" for a flight simulation program, for example, might very well include airplane cockpit accouterments (such as knobs, dials, and switches) that under traditional principles of copyright law, are beyond the scope of copyright protection under the "useful article doctrine." See supra note 23.

40. See, e.g., Atari, Inc. v. North American Philips Consumer Elec. Corp., 672 F.2d 607 (7th Cir. 1982) (finding infringement because of similarities in pictorial details of two videogames). The issue of whether the output of a program should be regarded as a categorically distinct work from the underlying program that generates it is one on which courts have disagreed. See generally Samuelson, Critique of *Paperback*, 6 High Tech. L. J. 264-69. See also *Altai*, 982 F.2d at 703.

But we see no Congressional mandate for extending copyright protection to other kinds of program results. Rather, we think other kinds of results are likely to be processes of the sort that Congress meant to exclude from the scope of copyright protection by its enactment of section 102(b).

The highly functional nature of programs and the results they generate that computer programs makes programs an unusual subject matter for copyright protection. As Professor Randall Davis of the Massachusetts Institute of Technology has put it, "software is a machine whose medium of construction happens to be text."[41] Courts have come to recognize that computer programs have a hybrid nature that must be taken into account in determining the scope of protection available to the program from copyright law.[42] This is why we regard section 102(b) which excludes procedures, processes, systems and methods of operation from the scope of protection available to programs to be an equally important Congressional mandate to that which extended copyright protection to computer programs.

The District Court in this case did not pay sufficient attention to the Congressional mandate embodied in section 102(b), seemingly because it so much admired the "extraordinarily sophisticated" macro language feature of Lotus 1-2-3[43] which the court regarded as having required substantial creativity to develop and as constituting a substantial improvement over the functional features available in previous spreadsheet programs.[44] As we have shown, the functional content embodied in copyrighted works is often the most creative or valuable aspect of the work, yet this does not make that functional content protectable by copyright law.

41. Randall Davis, Intellectual Property and Software: The Assumptions Are Broken, Proceedings of WIPO Worldwide Symposium on the Intellectual Property Aspects of Artificial Intelligence at 101, 110 (1991).

42. See, e.g., *Sega*, 977 F.2d at 1524 ("computer programs are, in essence, utilitarian articles"). The Second Circuit's decision in *Altai* to rule that elements of programs necessary to achieve interoperability were unprotectable by copyright law recognizes that the machine-like nature of programs which often need to interconnect, very much like other machines do, to perform their functions.

43. *Borland II*, 799 F. Supp. at 207.

44. Id. at 219. See also *Paperback*, 740 F. Supp. 56-58. Inventive improvements in the technological arts may, of course, be patented. See 35 U.S.C. §101.

III
The Proper Test for Infringement in Computer Software Copyright Cases

A. The Genesis of the *Paperback/Borland* Test

Courts in computer software copyright cases have found it difficult to articulate a test with which to judge infringement that is both be true to traditional principles of copyright law and extends the proper degree of protection to computer program expression. In the *Paperback* case, as in Whelan Assoc. v. Jaslow Dental Lab., Inc.,[45] the defendants proposed a test that would have limited copyright protection for computer programs to the "literal" elements of programs, that is, to the source and object code of the program. In *Whelan*, the Third Circuit Court of Appeals rejected this proposed test for copyright infringement for computer programs and adopted in its stead a test for infringement that regarded "the idea" of a program as its general purpose or function and all else about the program as "expression" unless there was only one or a very small number of ways to perform that function in which case "idea/expression merger" would be found.[46]

Although Paperback made essentially the same claim as the defendant in *Whelan*, Paperback framed the issue in a somewhat different way. Jaslow claimed not to have infringed the copyright in Whelan's program because the scope of copyright protection for programs was, in its view, limited to program code. Paperback, however, claimed that the user interface of a computer program was "uncopyrightable" because the user interface of the program was a "nonliteral" element of the work and copyright protection was only available for the "literal" code of the program. This difference in the way the issue was framed in *Paperback* may explain why the District Court in *Paperback* developed a "test of copyrightability" which drew upon the *Whelan* test in a number of respects, although restating aspects of this test in a "copyrightability" framework.[47]

The first step of the District Court's "copyrightability" test in *Paperback* defined as "idea" that the Lotus program was an electronic spreadsheet.[48] Some more specific elements of the work, such as the inverted "L" of the Lotus spreadsheet grid, were viewed as "idea," but not because they were too abstract to be protected by copyright law,

45. 797 F.2d 1222 (3d Cir. 1986), cert. denied, 479 U.S. 1031 (1987).

46. Id. at 1236.

47. Similarities between the *Whelan* and *Paperback* tests are discussed at length in Samuelson, Critique of *Paperback*, supra note 11, 6 High Techn. L. J. at 221-225.

48. *Paperback*, 740 F. Supp. at 65.

but because there was such a limited number of ways to design a spreadsheet grid that, in the second step of the *Paperback* test, idea/expression merger was found.[49] Other detailed elements of the Lotus interface, such as the menu command hierarchy, were not found to be so limited in expressive possibilities that idea/expression merger should be found.[50] The *Paperback* test went beyond the *Whelan* test in having a third step which inquired whether the non-merged expression was a substantial component of the work.[51] Through use of this test, the District Court ruled that many detailed elements of the Lotus user interface were "copyrightable" and found infringement based on Paperback's copying of them.

In a previous brief amicus curiae of copyright law professors, a number of us expressed the view that the test the District Court used in judging the "copyrightability" of the Lotus 1-2-3 user interface in *Paperback* was overbroad and "inconsistent with the copyright statute, the copyright caselaw, and traditional principles of copyright law."[52] That brief urged that the *Paperback* test not be used in the Lotus v. Borland case because it did not permit adequate consideration of traditional principles of copyright law embodied in section 102(b) and the caselaw properly interpreting that section.[53]

At the time the District Court was considering what test to use in the Lotus v. Borland case, the only appellate court to have expressly declined to follow *Whelan* or use its test for infringement was the Fifth Circuit Court of Appeals.[54] Although the *Whelan* test had by then been the subject of extensive cogent criticism,[55] a few district court

49. Id. at 66-67.

50. Id. at 67-68.

51. Id. at 68.

52. Copyright Law Professor Amicus Brief, supra note 29, at 2.

53. Id. at 1-9.

54. Plains Cotton Co-op. Ass'n v. Goodpasture Computer Service, Inc., 807 F.2d 1256 (5th Cir.), cert. denied, 484 U.S. 821 (1987).

55. See, e.g., Goldstein, supra note 15, §2.15.2; Nimmer on Copyright, supra note 14 at §13.03 [F]; J. Dianne Brinson, Copyrighted Software: Separating the Protected Expression From Unprotected Ideas, A Starting Point, 22 Boston Col. L. Rev. 803 (1988); Dennis S. Karjala, Copyright, Computer Software, and the New Protectionism, 28 Jurimetrics J. 33 (1987); LasT Frontier Conference Report on Copyright Protection of Computer Software, 30 Jurimetrics J. 15 (1989); Arthur Levine, Comment on *Bonito Boats* Follow-up: The Supreme Court's Likely Rejection of Nonliteral Software Copyright Protection, 6 Computer Lawyer 29 (July 1989); Peter S. Menell, An Analysis of the Scope of Copyright Protection for Application Programs, 41 Stan. L. Rev. 1045 (1989); Raymond Nimmer & Patricia Krauthaus, Copyright and Software Technology Infringement: Defining Third Party Development Rights, 62 Ind. L.J. 13 (1986); Reichman, Programs As Know-How, supra note 14; Pamela Samuelson, Reflections on the State of American Copyright Law and the Perils of Teaching It, 13 Colum. J. L. & Arts 61 (1988); Alfred Yen, A First Amendment Perspective on the Idea/Expression Dichotomy and Copyright in a Work's

decisions had employed it.[56] The District Court in its *Borland I* decision decided to adhere to its *Whelan*-like test, although it added the terms "process," "procedure," "system," and "method of operation" to each of the three steps of the *Paperback* copyrightability test. *Borland I*, 788 F. Supp. at 90. In its three subsequent *Borland* decisions, the District Court employed this modified *Paperback* test.

Notwithstanding the court's nominal placement of excluded elements in each of the three steps of its test, the defects of the *Paperback* test have not been cured, for the *Borland* opinions still seem to equate the section 102(b) exclusions with high level abstractions. In *Borland I*, for example, the District Court states that"'[p]rocess,' like 'idea,' is an abstraction. . . ." *Borland I*, 788 F. Supp. at 91. As we have shown in Section II, there was much in the copyright caselaw, the legislative histories of the Copyright Act of 1976 and of the 1980 amendments to the copyright statute concerning computer programs, as well as the work of other copyright authorities, that the District Court should have examined to understand both the content of section 102(b)'s exclusions from the scope of copyright and the underlying policy reasons for these exclusions.

Shortly after the District Court's *Borland I* decision, the Second Circuit Court of Appeals announced its adoption of the successive filtering test for judging copyright infringement in computer software cases in Computer Associates Int'l, Inc. v. Altai, Inc., 982 F.2d 693 (2d Cir. 1992). This test had been recommended by the authors of a distinguished copyright treatise.[57] Since then, there has been a substantial tide of decisions endorsing *Altai* and its successive filtering method test for judging software copyright infringement. This has in-

"Total Concept and Feel," 38 Emory L.J. 393 (1989). See also Steven R. Englund, Note, Idea, Process, or Protected Expression? Determining the Scope of Copyright Protection of Structure of Computer Programs, 88 Mich. L. Rev. 866 (1990) and Thomas Gage, Note, Whelan Associates v. Jaslow Dental Laboratories: Copyright Protection for Computer Software Structure—What's the Purpose, 1987 Wisc. L. Rev. 59 (1987). But see Arthur R. Miller, Copyright Protection For Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?, 106 Harv. L. Rev. 977 (1993).

56. Broderbund Software, Inc. v. Unison World, Inc., 648 F. Supp. 1127 (N.D. Cal. 1986); Pearl Sys., Inc. v. Competition Electronics, Inc., 8 U.S.P.Q.2d 1520 (S.D. Fla. 1988).

57. 3 Nimmer on Copyright, supra note 14, at §13.03 [F]. This test had first been recommended in David Nimmer, Richard L. Bernacchi, & Gary N. Frischling, A Structured Approach to Analyzing the Substantial Similarity of Computer Software in Copyright Infringement Cases, 20 Ariz. St. L. J. 625 (1988). The successive filtering test had also been recommended to the District Court by the eleven copyright law professors who were signatories of the previous amicus brief submitted in the *Lotus* v. *Borland* case. See Copyright Law Professor Amicus Brief at 7-8.

cluded decisions by the Courts of Appeals for the Ninth,[58] Tenth,[59] and Federal Circuits,[60] as well as decisions by District Courts in a number of other cases.[61] *Altai* and its progeny have also joined the Fifth Circuit Court of Appeals in criticizing *Whelan* and the overbroad scope of copyright protection it would have afforded to computer programs.[62]

The only trial court decision since the Second Circuit's *Altai* decision—other than the District Court's *Borland* decisions—to have questioned *Altai*'s successive filtering methodology and to have employed a *Whelan*-like approach to determining copyright infringement in a computer software case was recently overturned on appeal in a decision that endorses the successive filtering methodology of *Altai*.[63] No court has ever adopted the *Paperback/Borland* test, except the District Court in this case.

Notwithstanding the District Court's efforts in *Borland II*, 799 F. Supp. at 214-220, to reconcile the *Paperback/Borland* test with the successive filtering methodology adopted in *Altai*, we do not believe the two approaches are reconcilable for reasons we set forth in the next subsection. This section will also show why the *Altai* test is more consistent with traditional principles of copyright law than is the *Paperback/Borland* test.

58. *Sega*, 977 F.2d at 1524. See also Brown Bag Software v. Symantec Corp., 960 F.2d 1465 (9th Cir.), cert. denied, 113 S.Ct. 198 (1992) (using a filtering methodology in a software case) and Harper House, Inc. v. Thomas Nelson, Inc., 889 F.2d 197 (9th Cir. 1989) (using filtration in another kind of functional writing case).

59. Gates Rubber Co. v. Bando Chemical Ind. Ltd., 28 U.S.P.Q.2d (BNA) 1503 (10th Cir. 1993)

60. Atari Games Corp. v. Nintendo of America, Inc., 975 F.2d 832, 839 (Fed. Cir. 1992). See also Comprehensive Techn. Int'l, Inc. v. Software Artisans, Inc., 3 F.3d 730, 734-35 (4th Cir. 1993) (finding it unnecessary to decide whether to adopt the *Altai* test but citing *Altai*'s criticism of the *Whelan* test).

61. See, e.g., Apple Computer, Inc. v. Microsoft Corp., 821 F. Supp. 616 (N.D. Cal. 1993) and CMAX/Cleveland, Inc. v. UCR, Inc., 804 F. Supp. 337 (M.D. Ga. 1992). A recent English High Court of Justice opinion in John Richardson Computers v. Flanders & Chemtec Ltd. (Chanc. Ct. 1993), has cited *Altai* approvingly. See Jonathan Band, Bryan A. Schwartz, & Thomas C. Vinje, *Computer Associates* Crosses the Atlantic: *John Richardson Computers v. Flanders & Chemtec Ltd.*, 7 Int'l Computer Lawyer 2 (June 1993).

62. *Altai* was critical of *Whelan* for extending the scope of protection for programs too far in order to give strong incentives for investing in software development, saying that this sort of argument was inconsistent with the Supreme Court's decision in Feist Publications, Inc. v. Rural Telephone Service Co., 111 S.Ct. 1282 (1991). *Altai*, 982 F.2d at 711-12. As the District Court acknowledged in its *Borland II* decision, *Altai* was critical of *Paperback* for much the same reason. *Borland II*, 799 F. Supp. at 212.

63. Gates Rubber Co. v. Bando American, Inc., 798 F. Supp. 1499 (D. Colo. 1992), rev'd in part sub nom., Gates Rubber Co. v. Bando Chemical Inds. Ltd., 28 U.S.P.Q.2d 1503 (10th Cir. 1993).

B. The Successive Filtering Test For Infringement Endorsed In *Altai* Is More Consistent With Traditional Principles of Copyright Law Than Is The *Paperback/Borland* Test.

Although there is a superficial resemblance between the *Paperback/Borland* test and *Altai*'s successive filtering test,[64] upon closer examination, the resemblance between the tests becomes more syntactic than substantive. We will now proceed to explain this on a step-by-step basis.

The first step of *Paperback/Borland* and of the *Altai* test call for an abstractions analysis, but they abstract different things for different purposes. The District Court in *Borland* builds a hierarchy of abstractions only for the element of the work that the defendant was alleged to have copied, that is, for a subset of the work, not for the work as a whole. *Altai*, by contrast, directs construction of a hierarchy of abstractions for the whole of the copyrighted work.

The abstractions analysis in *Paperback/Borland* also has a different purpose than the abstractions analysis in *Altai*. The truncated abstractions analysis in *Paperback/Borland* is done to test the "copyrightability" of that element. It aims to separate a particular element of the work and judge its "copyrightability" in isolation from its context in the work as a whole. In *Altai*, the abstractions analysis is done on the program as a whole as a preliminary step in an infringement analysis to aid the court's understanding as to where the similarities between the plaintiff's and defendant's programs lie. That is, *Altai*'s abstractions analysis aims to gain a richer perception of the work as a whole and to understand the place of the allegedly copied element in context of the work as a whole.

Differences in the abstractions analyses called for by the two tests can be seen by comparing how they would decompose the Lotus 1-2-3 program. In *Borland II,* the District Court built a five-level hierarchy to test the "copyrightability" of the Lotus command hierarchy.[65] At the peak of this hierarchy was the general purpose of the work, namely, that it was an electronic spreadsheet. The next level of the court's abstractions hierarchy described it as a menu-driven electronic spreadsheet. The third level was said to be a user interface involving a system of menus, each menu consisting of fewer than a dozen commands arranged hierarchically in which the main menu is the root or

64. See *Borland I*, 788 F. Supp. at 89-93 (setting forth both the original *Paperback* test and the modified *Paperback/Borland* test) and *Altai*, 982 F.2d at 706-11.

65. As applied in *Borland II*, one can question whether the District Court was really constructing an abstractions hierarchy or just dissecting certain program elements into component parts.

trunk of the menu tree. The fourth level was a restatement of the third with an additional reference to the linkage of submenus by operation of a command, so that all of the spreadsheet's operations would be accessible through the paths of the menu command hierarchy. "Finally, one may conceive of the interface as that precise set of menu commands selected by Lotus, arranged hierarchically precisely as they appear in 1-2-3." *Borland II*, 799 F. Supp. at 216. At this point, the *Paperback/Borland* abstractions analysis ends.

Given that the District Court had previously characterized the Lotus user interface and its command hierarchy as "nonliteral" elements of the Lotus program,[66] one would have thought it apparent that a hierarchy of abstractions that stopped at this "fifth" level was incomplete. The "literal" text of the work, after all, is the complete set of statements and instructions that constitute the computer program as a whole. The first step of the *Altai* test would involve constructing a hierarchy of abstractions for the Lotus 1-2-3 program. This hierarchy would show that the command hierarchy of the Lotus user interface was actually quite high in the abstractions hierarchy for the Lotus program as a whole.[67]

Although the District Court claims to have derived its abstractions analysis from Learned Hand's opinion in Nichols v. Universal Pictures, 45 F.2d 119 (2d Cir. 1930), the District Court's abstractions analysis is, in fact, not consistent with Judge Hand's formulation of the abstractions approach.[68] Judge Hand, like his brethren in *Altai*, contemplated construction of an abstractions hierarchy on the whole of the copyrighted work,[69] not on subparts of it,[70] and did so with a view

66. See, e.g., *Paperback*, 740 F. Supp. at 51-53.

67. See also Ashton-Tate Corp. v. Ross, 916 F.2d 516 (9th Cir. 1990) (holding that a command hierarchy for a spreadsheet program was unprotectable under 17 U.S.C. §102(b)).

68. *Paperback*, 740 F. Supp. at 60.

69. "*Upon any work, and especially upon a play, a great number of patterns of increasing generality* will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his 'ideas,' to which, apart from their expression, his property is never extended." *Nichols*, 45 F.2d at 121 (emphasis added).

70. Had the *Paperback/Borland* test been employed in the *Nichols* case, that case might well have been decided differently than Judge Hand decided it. Under the *Paperback/Borland* first step, one would begin with a characterization of the most general statement of Nichols' play as a love story; at the next level, as a love story between a man and a woman of different ethnicities; at the next level, as a love story between a man and woman of not only different ethnicities but of different faiths; at the next level, as a love story between a man and a woman not only different ethnicities and different faiths, but of Jewish and Irish Catholic backgrounds specifically; at the next level, as a love story between a

to determining where in the hierarchy of the work as a whole the similarities between the plaintiff's and defendant's works might lie, as does *Altai*.

Nor is the *Paperback/Borland* second step consistent with *Altai*'s second step or with traditional principles of copyright law. The sole focus of the *Paperback/Borland* second step is the idea/expression merger doctrine.[71] We agree with the District Court that if there is such a narrow range of expression that to protect a particular aspect of a program would effectively give a monopoly on an unprotectable idea, copyright protection should not extend to that aspect of the program under copyright's merger doctrine.[72] But we do not agree with the District Court's conclusion that merger is the only limiting principle of copyright law applicable in computer program cases, nor with the District Court's conclusion that an aspect of a work must be "solely dictated by function" to be unprotectable under the merger doctrine of copyright law.[73]

The *Altai* second step filters out not only abstract ideas and merged material, but also aspects of programs that are to be expected given the kind of program involved, features that have become commonplace in the industry, other things that are not original to the plaintiff or are otherwise in the public domain, and aspects of programs constrained in design by considerations of efficiency and externalities, such as the hardware with which the program is to be compatible.[74] In *Altai*, most of the similarities between the two programs at issue were either to be expected in programs of that kind or pertained to that which was necessary to achieve compatibility with other programs. Because neither kind of similarity was protectable by

Jew and Irish Catholic heterosexual couple with bigoted fathers; and so on, until one reached the most detailed statement of what the two plays had in common in *Nichols*. At this point, under the *Paperback/Borland* test, one would stop construction of the hierarchy and proceed to the next step to judge whether at this level of detail, idea and expression had merged. If they had not, one would go on to ask if the aspect copied was a substantial or nontrivial element of the work. If so, that aspect would be "copyrightable" under the *Paperback/Borland* test, and the copying of it would be infringement.

As this example reveals, notwithstanding the seeming similarity between the *Altai* first step and the *Paperback/Borland* first step, the first steps of these two tests are, in practice, very different.

71. *Paperback*, 740 F. Supp. at 61; *Borland I*, 788 F. Supp. at 93.

72. See, e.g., Morrissey v. Proctor & Gamble Co., 379 F.2d 675 (1st Cir. 1967).

73. See, e.g., *Borland II*, 799 F. Supp. at 214, and Lotus Dev. Corp. v. Borland Int'l, Inc., 831 F. Supp. 202 (D. Mass. 1993) (*Borland III*). The "solely dictated by function" issue is discussed at length supra notes 23 and 27 and accompanying texts.

74. *Altai*, 982 F.2d at 707-10.

copyright law, the similarities were filtered out by the second *Altai* step.[75]

In cases that have followed *Altai*'s lead, including Apple Computer, Inc. v. Microsoft Corp., 799 F. Supp. 1006 (N.D. Cal. 1992) and Gates Rubber Co. v. Bando Chemical Inds., Ltd., 28 U.S.P.Q.2d 1503 (10th Cir. 1993), application of the *Altai* second step has also included the filtering out of aspects of programs that are processes, procedures, systems, or methods of operation within the meaning of section 102(b).[76] The Tenth Circuit in *Gates Rubber*, for example, vacated the trial court's ruling of infringement that had been based in part on the defendant's use of the same algorithm, instructing the trial court on remand to consider whether this algorithm was the sort of procedure that Congress had meant to exclude from the scope of protection by enactment of §102(b). By carefully filtering out these kinds of unprotectable elements before the infringement determination is made, the *Apple* and *Gates Rubber* decisions conform to traditional copyright principles and precedents.[77]

If Judge Hand did not see fit to mention the exclusion of systems, processes, and the like from the scope of copyright protection in his famous statement of the abstractions approach in *Nichols*, it was likely because the kind of work with which Judge Hand was dealing—a dramatic play—was of an artistic and fanciful character. Because such works are predominantly expressive in content, they generally enjoy a broad scope of copyright protection and only their more abstract elements must generally be filtered out before an infringement analysis is done. Since functional writings, by definition, contain not only abstract ideas, but also functional elements, such as processes, procedures, systems, or methods of operation, the scope of copyright protection available to such works tends to be narrower than for artistic and fanciful works.[78] The functional processes or systems these writings describe must be filtered out before substantial similarity for

75. Id. at 714-15.

76. The Tenth Circuit's *Gates Rubber* decision correctly observes that the presence of unprotectable elements may be probative on the issue of whether the defendant "copied" something from the protected work, but must be excluded when the trier of fact gets to the ultimate infringement determination as to whether there is substantial similarity to expressive aspects of the plaintiff's work. See Alan Latman, Probative Similarity as Proof of Copying: Toward Dispelling Some Myths of Copyright Infringement, 90 Colum. L. Rev. 1187 (1990).

77. See supra Section II.

78. See, e.g., *Sega*, 977 F.2d at 1524 (contrasting the scope of copyright for artistic and fanciful works with the scope of protection for works with strong functional content). See also LasT Frontier Report, supra note 55, at 18-19.

infringement purposes can be assessed, just as the second step of the *Altai/Gates Rubber* test directs.

The third step of the *Altai* test is also different in character from the third step of the *Paperback/Borland* test. In this step too, the *Altai* test is more consistent with traditional tests and principles of copyright law than is the *Paperback/Borland* test. After unprotectable matter has been filtered out, *Altai* test directs, as the third and final stage of analysis, a comparison between the protectable expression in the plaintiff's work and the aspects of the defendant's work claimed to be infringing to determine if there is substantial similarity as to protectable expression which the defendant improperly appropriated from the plaintiff's work.[79] This accords with the infringement determination made under the standard copyright infringement tests used in the United States.[80]

The third step of the *Paperback/Borland* test, as it was initially formulated in *Borland I*, focused only on whether that which had been copied from the plaintiff's work (and which in the second step has been determined not to be solely dictated by function) was a substantial component of the plaintiff's work. *Borland I*, 788 F. Supp. at 90. In *Borland II*, however, the District Court seemed to restate the third step so that all that must be shown is that the *creativity* required to develop the appropriated thing was more than trivial. *Borland II*, 799 F. Supp. at 219.

While the triviality or nontriviality of the appropriated element, or of the creativity required to develop it, is, of course, a factor considered in all infringement actions, the *Paperback/Borland* third step unduly narrows the ultimate issue in a copyright infringement case. It makes no room for the kind of inquiry that is traditional in copyright infringement cases which concerns the nature and degree of similarity between two works: that is, whether there is substantial similarity in expressive elements which the defendant improperly appropriated from the plaintiff's work. By addressing the ultimate issue of infringement based on the existence or absence of substantial similarity as to expressive elements of the plaintiff's work, *Altai*'s third step comports with traditional copyright infringement analysis whereas the third step of the *Paperback/Borland* test does not.

Thus, at every step, the successive filtering methodology adopted by the Second, Ninth, Tenth and Federal Circuit Courts of Appeals is

79. *Altai*, 982 F.2d at 710-11.

80. See, e.g., Arnstein v. Porter, 154 F.2d 464 (2d Cir. 1946) and 2 Goldstein, supra note 15 §§7.1, 7.3 and 3 Nimmer on Copyright, supra note 14, §§13.01, 13.03.

more in accord with copyright law and principles than is the *Paperback/Borland* test.

IV
Conclusion

Computer programs have posed many vexing questions in the copyright caselaw, among them, the difficult issues presented by the present litigation. As the Second Circuit Court of Appeals said in *Altai*: "Thus far, many of the decisions [applying copyright law to nonliteral elements of computer programs] reflect the courts' attempt to fit the proverbial square peg in a round hole." *Altai*, 982 F.2d at 712. The District Court has expended prodigious effort to explore the uncharted territory presented by the facts of this and the *Paperback* case, but has unfortunately faltered in its interpretation of traditional principles of copyright law deriving from Baker v. Selden which Congress intended to be embodied in 17 U.S.C. §102(b) and in deciding what test to apply in this case. We urge the Court of Appeals to correct the errors in the District Court's copyright analysis.