

NEW LYRICS FOR AN OLD MELODY: THE IDEA/ EXPRESSION DICHOTOMY IN THE COMPUTER AGE*

HONORABLE JON O. NEWMAN**

The computer era has presented new challenges to all segments of society, so it should come as no surprise that these challenges arise in the domain of law in general and copyright in particular. It should also not be surprising that our initial efforts to meet these challenges have not been entirely successful. After all, if the programmers could not anticipate that the year 2000 would not be just one year after 1999 but in another century¹ — one in which computers would be thinking that 2000 is 1900 — the legal community ought to be forgiven for not immediately adapting its doctrines to the demands of cyberspace.

Among the major challenges the computer age poses for copyright law is how to draw the line with respect to digital materials — mostly software² — between what is protectable by copyright and what is available to be copied. The instinct of many judges, lawyers, and commentators has been to start with the idea/expression dichotomy and then struggle to adapt this basic continental divide to digital materials. The effort has thus far led to two deficiencies in our approach — deficiencies that have been recognized insufficiently, if at all. Moreover, unless we begin to notice what has happened and seriously consider whether our approaches are sound, we risk not only a deficient approach to copyright issues concerning digital materials, but also an unwise corruption of previously sound approaches to copyright issues concerning non-digital materials.

These two deficiencies of decision-making in the copyright

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** Circuit Judge, United States Court of Appeals for the Second Circuit.

¹ Purists would no doubt point out that the year 2000 is the last year of the twentieth century, not the first year of the twenty-first century, just as it is the last year of the second millennium, not the first year of the third millennium. But as others have observed, those who wait until midnight on December 31, 2000, to celebrate the start of the new century and the new millennium will have missed a lot of excitement on December 31, 1999.

² I say “mostly software” because the 1s and 0s of object code that make source code readable by a computer can be embodied either in software on floppy disks or CD-ROMS, or in the hardware of a computer itself. See Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2319 (1994).

field pose potential difficulties both for litigants and for the orderly evolution of copyright law. On the one hand, some courts are taking doctrines developed in the traditional context of writings and applying them forceably in non-traditional contexts involving emerging computer technologies.³ On the other hand, and sometimes simultaneously, some courts are taking new doctrines, or at least refinements of old doctrines, developed in non-traditional computer-related contexts and applying them broadly to traditional contexts.⁴ We need to examine how these trends have developed before we can consider what, if anything, to do about them.

From the beginning of copyright law, courts have properly recognized the obvious truth that a line must be drawn between what is protectable and what is not. For those who create, we want to maintain the incentive of receiving a financial reward for the socially useful task they perform in contributing, as our Constitution puts it, to “the Progress of Science and the Useful Arts.”⁵ At the same time, for the public at large, we want to recognize that some results of an intellectual process ought to be available for copying and use because such copying and use also contribute to the progress of science and the useful arts. As the Supreme Court noted in *Sony Corp. of America v. Universal Studios, Inc.*,⁶ copyright law seeks to achieve a balance between “the interests of authors . . . in the control and exploitation of their writings . . . on the one hand, and society’s competing interests in the free flow of ideas . . . on the other hand.”⁷ An important part of this balance is permitting — even encouraging — the public to copy unoriginal material. As the Court made clear in *Feist Publications, Inc. v. Rural Telephone Service Co.*,⁸ “[r]aw facts may be copied at will. This result is neither unfair nor unfortunate. It is the means by which copyright advances the progress of science and art.”⁹

When courts were dealing with writings such as ordinary prose texts, they attempted to strike that balance by distinguishing between ideas and expression. Ideas remained in the public domain, even though it took the working of one person’s mind to articulate the idea and thereby make it available to the world. Courts recog-

³ See, e.g., *Computer Assocs. Int’l v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992); *infra* text accompanying notes 16-28.

⁴ See, e.g., *Country Kids ‘N Slicks, Inc. v. Sheen*, 77 F.2d 1280 (10th Cir. 1996); *infra* text accompanying notes 34-37.

⁵ U.S. CONST. art I, § 8, cl. 8.

⁶ 464 U.S. 417 (1984).

⁷ *Id.* at 429.

⁸ 499 U.S. 340 (1991).

⁹ *Id.* at 350.

nized that if an idea could be protected, intellectual progress would be slowed. However, courts also recognized that there was usually a sufficient number of alternative ways of expressing an idea such that requiring payment for copying one person's expression of the idea left ample opportunity for others to use and to apply the idea itself with their own creative expressions of it.¹⁰

Recognizing the two broad categories, however, was only the first insight. What remained was to provide some guidance as to how the categories would be distinguished in close cases. As in most areas of law, the easy cases presented no problem. It would not be difficult, on the one hand, to tell Einstein that when he had the idea that $E=MC^2$, others could copy and use that idea without payment of license fees or infringement damages, and, on the other hand, to tell Shakespeare that when he wrote *Romeo and Juliet*, others could not sell copies of his play without his permission (and a royalty payment to him). But the close cases proved more difficult, and where courts draw the line between idea and expression, or at least where courts place the somewhat narrow range of seriously disputed cases, ultimately determines whether we have protected too much or too little and thereby risked serving either of the broad purposes we set out to serve to such a great extent that the other is insufficiently served.

I suppose we might have approached the line-drawing task simply by asking in each case where protection was claimed for a particular writing whether there was available a sufficient number of alternative ways of saying what the claimant had said. If so, we would grant protection. That approach would enable us to determine what is copyrightable, but would not be of assistance in determining whether a somewhat similar work infringed, because in order to determine infringement, we have to isolate the "what" in our inquiry — what is it that the claimant has said? *Romeo and Juliet* is undoubtedly a work entitled to copyright protection, but does another playwright infringe with a play about a boy who loves a girl, about a boy from one ethnic background who loves a girl from another ethnic background, about a boy from one ethnic background who mistakenly believes that the girl of another ethnic background whom he loves is dead and therefore commits suicide?

¹⁰ In rare instances where the number of ways of expressing an idea was so limited that protecting expression of the idea equaled, or at least substantially approached, protection of the idea itself, we said that the idea had "merged" with its expression, and in that limited circumstance denied protection to the idea-encapsulating expression. See, e.g., *CCC Info. Servs. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 70-73 (2d Cir. 1994); *Kregos v. Associated Press*, 937 F.2d 700 (2d Cir. 1991).

In *Nichols v. Universal Pictures Corp.*,¹¹ Judge Learned Hand famously noticed the difficulty when he observed, in a passage more often cited than read:

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 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 never extended. Nobody has ever been able to fix that boundary, and nobody can. . . . In such cases we are . . . concerned with the line between expression and what is expressed. As respects plays, the controversy centers upon the characters and sequence of incident, these being the substance.¹²

There are several points to note about this well known passage. In the first place, Judge Hand manifestly did not think of his observations as the enunciation of anything that might be called a "test." His disclaimer (for himself and everyone else) of the ability to "fix the boundary" should have been sufficient caution that no "test" capable of yielding a result was intended. Second, he observed that the line between "expression" and "what is expressed" might well be drawn differently depending on the subject matter. In *Nichols*, Judge Hand was concerned with a play and a film (Hand called it a "motion picture play") — *Abie's Irish Rose* and the *Cohens and the Kellys* (the copyright on *Romeo and Juliet* had long since expired). The context of plays was worth identifying as such, he usefully pointed out. Third, he thought it useful to identify those elements that would normally be significant in determining, within the context of plays, whether one play so closely resembled another as to copy protectable elements. With plays, he observed, "the controversy centers upon the characters and sequence of incidents."¹³

Regrettably, Judge Hand's careful expression has not been sufficiently read, and his idea has been often misunderstood. Starting in 1971, courts began referring to an "abstractions test,"¹⁴ thus per-

¹¹ 45 F.2d 119 (2d Cir. 1930).

¹² *Id.* at 121.

¹³ *Id.*

¹⁴ See *Bevan v. CBS, Inc.*, 329 F. Supp. 601, 605 (S.D.N.Y. 1971). A Westlaw search reveals that the phrase "abstraction test" was used in the copyright context in 5 opinions during 1970-80, in 15 opinions during 1980-1990, and in 30 opinions since 1990. Candor

verting Judge Hand's sensible thought that the boundary between idea and expression cannot be fixed — not by judges and surely not by anything to be called a "test."¹⁵ Next, courts applied *Nichols* and what they unfortunately called an "abstractions test" to areas of intellectual achievement wholly different from plays, indeed, wholly different from writings. Thus, courts have tried to apply an "abstractions test" to copyright issues beyond the context of written texts and are now trying to apply it to computer programs.¹⁶ In doing so, they have very likely been influenced by this sweeping assertion in *Nimmer on Copyright*.¹⁷ "Although the abstractions test was created for use with literary works, it is readily adaptable to analyzing computer software."¹⁸ In *Computer Associates International v. Altai, Inc.*,¹⁹ our Court joined the chorus: "While the abstractions test was originally applied in relation to literary works such as novels and plays, it is adaptable to computer programs."²⁰

Proceeding from this observation, *Altai* then advised courts to "dissect the allegedly copied program's structure and isolate each level of abstraction contained within it."²¹ This is to be done, we are told, by charting the program into a hierarchy of modules, each identified, apparently, by the function it performs.²² Having stratified the program into these levels of abstraction or modules, we are then to move on to what *Nimmer* calls, and *Altai* embraces, a "'successive filtering method' for separating protectable expression from non-protectable material."²³ We are to make the separation by determining whether what the opinion calls "the structural components at each level of abstraction"²⁴ is an idea, which would be unprotectable, or is covered by any of three other inquiries, which if satisfied, would also render the component unprotectable. The first is whether the component was "dictated by considerations of efficiency, so as to be necessarily incidental to that idea."²⁵ The

obliges me to admit my own contribution to this unfortunate series of usages. See *Warner Bros. v. American Broad. Cos.*, 720 F.2d 231, 240 (2d Cir. 1983).

¹⁵ As Judge Easterbrook has observed, "Hand's insight is not a 'test' at all. It is a clever way to pose the difficulties that require courts to avoid either extreme of a continuum of generality." *Nash v. CBS, Inc.*, 899 F.2d 1537, 1540 (7th Cir. 1990).

¹⁶ See *Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d 693, 706-07 (2d Cir. 1992).

¹⁷ 4 MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* §13.03 [F][1] at 13-121 (1998).

¹⁸ *Id.* (footnote omitted).

¹⁹ 982 F.2d 693.

²⁰ *Id.* at 706-07.

²¹ *Id.* at 707.

²² See *id.*

²³ *Id.* (quoting 3 MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 13.03[F] (1991)).

²⁴ *Id.*

²⁵ *Id.*

second is whether the component was “required by factors external to the program itself.”²⁶ The third is whether the component was “taken from the public domain.”²⁷ Once this “filtration” has occurred, the allegedly infringing program is compared to the protectable elements that have survived filtration to determine whether protectable elements have been copied and to assess the relative importance of the copied elements to the plaintiff’s overall program.²⁸

The seductive three-step progression of *Altai*’s structured approach has not escaped criticism, notably by Professor Patry. He believes that the Court misapplied an infringement test designed for plays as a copyrightability test for computer programs.²⁹ He described *Altai*’s approach as sounding and acting “more like a water purification process than a copyright infringement analysis.”³⁰ The result, he concluded, is that the “whole” of a computer program is viewed as “considerably less than the sum of its parts.”³¹ In fairness, however, I should note that although *Altai* is open to criticism for promulgating an overly structured approach, it represents an important and useful advance over the Third Circuit’s approach in *Whelan Associates v. Jaslow Dental Laboratory, Inc.*,³² which proceeded on the unwarranted assumption that a computer program could have only one idea and that everything else must be expression.³³

While our Court was endeavoring to apply an “abstractions test” to computer programs, and in the process formulating an “abstraction-filtration-comparison” mode of analysis, other courts were taking the newly refined approach to computer programs and invoking it to decide cases far removed from computer programs.³⁴ In this effort, they were again doubtless influenced by the Nimmer treatise, which introduced its discussion of the filtration component of what was now labeled the “abstraction-filtration-comparison test” by stating: “Although the discussion in this subsection illustrates the application of the filtration test [sic] solely in the context of computer software, there is no reason to limit it to that

²⁶ *Id.*

²⁷ *Id.*

²⁸ *See id.* at 710.

²⁹ *See* I WILLIAM F. PATRY, COPYRIGHT LAW & PRACTICE 224 (1994).

³⁰ *Id.* at 221.

³¹ *Id.* at 224.

³² 797 F.2d 1222 (3d Cir. 1986).

³³ *See id.* at 1236-37.

³⁴ *See, e.g.,* Country Kids ‘N City Slicks, Inc. v. Sheen, 77 F.2d 1280 (10th Cir. 1996).

realm.”³⁵ Thus, the Tenth Circuit used the “filtration test” to determine what features of wooden dolls were protectable,³⁶ and whether the advertisements in a telephone directory were protectable.³⁷

I do not deny that all of these subject matters required courts to determine whether the first work was copyrightable and whether the second infringed protectable elements. What I question is whether courts should be making those determinations with the same modes of analysis and even the same vocabulary that was appropriate for writings. As I shall try to indicate, it is not just a matter of vocabulary. Words convey concepts, and if we use identical phrases from one context to resolve issues in another, we risk failing to notice that the relevant concepts are and ought to be somewhat different.

I tried to point this out many years ago in an opinion that considered the issue of whether the character of Ralph Hinckley, protagonist of the television series *The Greatest American Hero* infringed the copyright in the well-known Superman character.³⁸ I first noted that copyright law has enunciated two somewhat opposing propositions — that differences between an allegedly infringing work and a copyrighted work will not preclude infringement,³⁹ and that, as Nimmer puts it, “a defendant may legitimately avoid infringement by intentionally making sufficient changes in a work which would otherwise be regarded as substantially similar to that of the plaintiff’s.”⁴⁰

Then, in an effort not to apply uncritically our prior approaches in text cases to the different context of graphic images, I wrote the following:

The tension between these two propositions perhaps results from their formulation in the context of literary works and their

³⁵ 4 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT §13.03 [F][1] at 13-119 (1998).

³⁶ See *Country Kids*, 77 F.2d 1280. *Country Kids* quoted from an earlier version of the Nimmer treatise, which had advised, even more expansively than the current version, that the successive filtration test “should be considered not only for factual compilations and computer programs but across the gamut of copyright law.” *Id.* at 1284 n.5 (citing 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.03[E] at 13-96-97 (1991)).

³⁷ See *Transwestern Publ’g Co. v. Multimedia Mktg. Assocs.*, 133 F.3d 773 (10th Cir. 1998).

³⁸ See *Warner Bros. v. American Broad. Cos.*, 720 F.2d 231, 241 (2d Cir. 1983).

³⁹ See *id.* (“It is entirely immaterial that in many respects plaintiff’s and defendant’s works are dissimilar if in other respects similarity as to a substantial element of plaintiff’s work can be shown.”) (quoting 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.03[B] at 13-38 (1991)).

⁴⁰ *Id.* (quoting 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.03[E] at 13-38.1-38.2 (1991)) (internal quotations omitted).

subsequent application to graphic and three-dimensional works. A story has a linear dimension: it begins, continues, and ends. If a defendant copies substantial portions of a plaintiff's sequence of events, he does not escape infringement by adding original episodes somewhere along the line. A graphic or three-dimensional work is created to be perceived as an entirety. Significant dissimilarities between two works of this sort inevitably lessen the similarity that would otherwise exist between the total perception of the two works. The graphic rendering of a character has aspects of both the linear, literary mode and the multi-dimensional total perception. What the character thinks, feels, says, and does and the descriptions conveyed by the author through comments of other characters in the work episodically fill out the viewer's understanding of the character. At the same time, the visual perception of the character tends to create a dominant impression against which the similarity of a defendant's character may be readily compared and significant differences readily noted.⁴¹

Thus, I was saying, to borrow what later would be *Altai's* formulation, one cannot divide a visual work into neat layers of abstraction in precisely the same manner one could with a text.

In another context, that of compilation of facts, I have also suggested that simply calling something an "idea" will not necessarily help locate the dividing line between an unprotectable idea and a protectable expression of it. In *Kregos v. Associated Press*,⁴² our Court considered whether copyright protection was available for a selection of nine statistical categories for use on a baseball pitching form.⁴³ In ruling that such protection was available, or at least could be found to be available by the trier of fact, I pointed out that for copyright purposes, simply labeling an aggregation of facts as an idea does not help decide whether a particular aggregation is protectable.⁴⁴ All ideas are not created equal. The unprotectable category includes those that undertake to advance the understanding of phenomena or the solution of problems, while the protectable category includes those that reflect the author's taste and opinion. We placed the pitching form in the latter category.⁴⁵ Our Court later followed this approach in *CCC Information Services v. Maclean Hunter Market Reports, Inc.*,⁴⁶ to accord protection to a

⁴¹ *Id.* at 241-42.

⁴² 937 F.2d 700 (2d Cir. 1991).

⁴³ *See id.* at 701-02.

⁴⁴ *See id.* at 706.

⁴⁵ *See id.* at 706-07.

⁴⁶ 44 F.3d 61 (2d Cir. 1994).

compilation of used car valuations.⁴⁷ Ultimately, what we ruled in both *Kregos* and *CCC Information Services* was that the particular compilations in those cases were not instances appropriate for application of the merger doctrine.

Indeed, the Nimmer treatise, despite its fondness for an “abstractions test” and an “abstraction-filtration-comparison test,” has usefully recognized that in the area of computer programs the line for distinguishing an unprotectable idea from a protectable expression “is a pragmatic one, drawn not on the basis of some metaphysical property of ‘ideas,’ but by balancing the need to protect the labors of authors with the desire to assure free access to ideas.”⁴⁸ That sensible thought has been embraced by our Court in *CCC Information Services*.⁴⁹

Unfortunately, however, even some of the knowledgeable commentators who are offering useful insights as to how courts should analyze the scope of copyright protection for computer software,⁵⁰ fall victim to the old terminology. For example, Professor Samuelson, though sensibly urging that “[c]opyright law should describe computer programs and user interfaces in a technically appropriate manner,”⁵¹ wants us, when considering a claim of infringement of a program or a user interface, “to determine whether what has been copied is ‘expressive’ in a copyright sense.”⁵² As a result, we find courts solemnly considering whether the use of the key on a computer keyboard that produces a virgule — a forward-leaning slash mark — to invoke a series of menu commands is protectable “expression.”⁵³ Now, I have nothing against a virgule, but is it really the sort of “expression” that Judge Hand wanted us to consider when Shakespeare had Romeo say, “It is the east, and Juliet is the sun”?⁵⁴ Now, that’s “expression”! Fortunately, Judge Keeton declined to protect the virgule,⁵⁵ but his inquiry and his ultimate decision invoked all the vocabulary from the cases considering written texts.

In the area of computer programs, I think we might be better

⁴⁷ See *id.* at 63.

⁴⁸ 4 MELVILLE B. NIMMER & DAVID NIMMER, *NIMMER ON COPYRIGHT* § 13.03[F][1], at 13-125 (1998).

⁴⁹ 44 F.3d at 72 n.24.

⁵⁰ See, e.g., Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308 (1994).

⁵¹ Pamela Samuelson, *Computer Programs, User Interfaces, and Section 102(b) of the Copyright Act of 1976: A Critique of Lotus v. Paperback*, 6 HIGH TECH. L.J. 209, 268 (1992).

⁵² *Id.*

⁵³ See *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 67 (D. Mass. 1990).

⁵⁴ WILLIAM SHAKESPEARE, *ROMEO AND JULIET*, act 2, sc. 2.

⁵⁵ See *Lotus Dev.*, 740 F. Supp. at 37.

off to recognize that, although we need to separate protectable “expression” from unprotectable “ideas,” a somewhat different vocabulary might assist us in properly balancing the ultimate values we seek to advance. Thus, I do not consider it helpful, in considering the protection accorded source code, to ask whether it is the written expression of an idea embodied at some higher level of abstraction within the computer program. I would rather begin the process of labeling the protectable and unprotectable elements of computer programs with terms peculiar to the realm of software. For example, I might move away from referring to source code as the “expression” of an “idea,” a phrasing that all too readily enlists the doctrines and case law developed in cases involving written texts, and instead call these arcane writings what they are called in cyberspace — namely, source code. Then, I could consider which source codes or which portions of source codes were protectable. Also, I might not call the unprotectable aspects of a computer program “ideas,” which again evokes the written text cases, but instead call them something like “program purposes” or “program objectives.” After all, you don’t see many cases involving copyrights in musical works talking about the “expression” of some musical “idea.” Why should we force upon copyright cases involving computer programs the same vocabulary we use for cases involving written texts?

Then, I might begin to recognize that a computer program, unlike a play, is not easily reduced to a hierarchy of abstractions, ranging vertically from the most to the least abstract. A computer program can and should be analyzed in several ways, along dimensions that do not constitute a neat downward vertical progression. One example of the different ways of analyzing a computer program, for purposes of copyright protection, was recently suggested to our Court in an amicus brief filed by an able group of computer scientists.⁵⁶ Since the case in which they filed their brief has now been settled, I feel free to comment on their suggested analysis which, in any event, is set forth in their publicly available brief. They point out, using as an example a program for check-book management, that there are several different ways in which even a simple program can be analyzed for purposes of separating the protectable from the unprotectable.⁵⁷ Starting with the vocabulary

⁵⁶ See Amicus Brief in support of Computer Scientists, Harbor Software, Inc. v. Applied Sys., Inc., (2d Cir. 1998) (No. 97-7197) [hereinafter Amicus Brief]. The professors are Hal Abelson, Roy Campbell, Randall Davis, Lee Hollaar, and Gerald J. Sussman. Their brief was filed by Marc M. Arkin, Esq.

⁵⁷ See *id.* at 8-9.

we have forced upon them, they call these various dissections “abstractions,”⁵⁸ but they might better be called something like “program elements.” For the check-book program, they point out that “abstractions” (or, as I prefer, “program elements”) might include “control structure” — “the sequence of operations that [the program] carries out;”⁵⁹ “data structures” — indications of “the way in which individual items of information are stored in the program;”⁶⁰ “data flow” — “a description of how information flows through the program;”⁶¹ and “information architecture” — an indication of “the overall organization of the data used by the program, often in the form of the organization of databases.”⁶² They also point out that a complete set of “control structures” might have many levels of detail.⁶³ These terms might not be appropriate for all programs, but such terms, or similar ones, will be far more helpful to a court than just “expression” and “ideas.”

By using terms appropriate to the subject matter, I might begin to realize that what is relevant in applying the idea-expression dichotomy to computer programs is not necessarily the same as what is relevant in other areas. Judge Hand observed that with plays, characters and the sequence of incidents were especially important. Well, there are no characters in software, at least not literary characters. There are, I suppose, what might be called “incidents,” but we ought not blithely equate the sequence of incidents that combine to form the plot of a play with the sequence of steps that the computer program instructs the computer to perform on data.

So one day when I consider a play, I will be considering the characters and sequence of incidents of the plays, and the next day, when I consider a computer program, I will be looking at entirely different elements. With plays, I have a fairly clear idea, gained from reading and watching many of them, how to strike the balance so that today’s playwrights have adequate incentive to write new plays and tomorrow’s playwrights have adequate freedom to build upon what has preceded them. With computer programs, I lack the familiarity to strike the balance of competing purposes from my own experience, so I will have to be educated to the task.

⁵⁸ *See id.*

⁵⁹ *Id.* at A-10.

⁶⁰ *Id.* at A-11.

⁶¹ *Id.* at A-10.

⁶² *Id.* at 23-24.

⁶³ *See id.* at 23-24.

I will need expert witnesses if I am the trier of fact, and skillful briefs if I am considering an appeal.

These professionals would be well advised not to tell me simply that the source code is or is not protectable expression. Their opinions are relevant, but, as with all opinions, what renders them persuasive is not the vehemence of their assertion and not even the credentials of those asserting them; it is the cogency and persuasive force of the reasons they give for their respective positions. These reasons had better relate to the specifics of the computer software field. For example, as *Altai* indicates, even with its overly structured mode of analysis, it will be very important for me to know whether the essential function being performed by the copyrighted program is a function that can be accomplished with a wide variety of source codes, which will strengthen the case for protection, or, on the other hand, is a function capable of execution with very few variations in source code, or variations of such triviality as to be disregarded, in which event protection will be unlikely. For me, this mode of analysis is essentially what in other contexts we call the merger doctrine — the expression is said to have merged with the idea because the idea can be expressed in such limited ways that protection of the plaintiff's expression unduly risks protecting the idea itself.

Beyond this inquiry as to merger, I will want to think about what aspects of a computer program need protection in order to keep a proper balance between the incentive of programmers to create new programs, and the useful contribution that subsequent programmers can make if they are free to copy existing programs, or at least aspects of them. Clearly, I will need the help of knowledgeable experts in making this sort of determination.

Some have suggested that what is needed in this area is a either a new form of copyright of limited term or some sort of sub-copyright protection, while others have suggested a new form of right, limited in duration and subject to compulsory licensing, that would be available for technological innovations including computer software.⁶⁴ Others have suggested that Congress can authorize a new form of protection for digital materials, such as the pending bill to protect electronic databases.⁶⁵ Whether Congress

⁶⁴ See J.H. Reichman, *Legal Hybrids Between the Patent and Copyright Paradigm*, 94 COLUM. L. REV. 2432, 2504-57 (1994).

⁶⁵ See Collections of Information Antipiracy Act, H.R. 2652, 105th Cong. (1998), which was passed by the House on May 19, 1998, see 144 Cong. Rec. H2298-H3404 (daily ed. May 19, 1998); Collections of Information Antipiracy Act, S. 2291, 105th Cong. (1998). A version of the Collections of Information Antipiracy Act was included as Title V in the Digital Millennium Copyright Act, H.R. 2281, 105th Cong (1998), as it passed the House in Au-

has power to protect under the Commerce Clause what might not be protectable under the Copyright Clause, thereby arguably impairing the latter clause's implied grant to the public to copy what is not copyrightable, is a fair issue for future debate. Possibly, a requirement of compulsory licensing of whatever new right is created under the Commerce Clause might meet the objection based on the Copyright Clause. That, too, remains for future debate.

However we come out on these broader public policy and even constitutional issues, I hope that as lawyers, commentators, and courts analyzing copyright issues in the computer field under existing statutes, we will recognize that the analysis appropriate to written text is not transferable wholesale to the realm of computer software and hardware, and that seductively phrased "tests" are, at most, only an aid to understanding and not a mechanical process that can readily yield answers. There is no "abstractions test," and I am not sure we ought to have something called an "abstraction-filtration-comparison test." Moreover, I am quite sure that whatever approaches we develop to help us decide copyright cases in the computer field should not be uncritically imported back into traditional areas of written text, music, or audio-visual works.

At a most abstract level, we can continue to recognize that ideas are not copyrightable and that the expression of ideas is copyrightable. At a less abstract level of thought, however, what we must strive for is a recognition that the differences among modes of expression oblige us to eschew anything like "tests" that can yield answers across all fields. It is at this less abstract level that copyright cases will be decided. We will need the help of all knowledgeable students of copyright so that we can proceed as well as possible to balance the need for creation with the need to copy — all toward the ultimate Progress of Science and the Useful Arts.

gust 1998, but it was excised from the Digital Millennium Copyright Act that became law in October 1998. See Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

