"Look and Feel" as A Copyrightable Element: The Legacy of Whelan v. Jaslow? Or, Can Equity in Computer Program Infringement Cases Be Found Instead By the Proper Allocation of Burden of Persuasion?

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I. INTRODUCTION

The growth in the computer software industry continues to be driven by intense competition for product sales. This competition requires that one constantly produce a better product than one’s competitor. But, sometimes, the competitor simply has a better *idea*. There is no doubt that this idea has a unique original expression in the original work of the author. In addition, the author’s original work has a “Look and Feel.”

The wise competitor incorporates the idea in his product and, if at all possible, improves upon the idea. However, during the time the competitor is producing his competing product, the “Look and Feel” of the competitor’s product is quickly becoming second nature to users. Thus, the competitor is faced with a dilemma: should he give his separately created product a new “Look and Feel,” risking loss of sales to those users who do not wish to learn another new program,¹ or should he emulate the original “Look and Feel” in his new, improved program. If he does incorporate the other program’s “Look and Feel” in his independent creation, the good faith competitor has used his competitor’s idea. The non-literal, non-copyrighted “Look and Feel” should not be a bar to the public good that results from the competition.

Copyright law is a protection of two desirable ends that are often competing. The author has the right to the protection and the economic benefit of his work. Copyright protection, however, is not a protection in the abstract of an author’s inherent rights. It has always been a right given to the author by the sovereignty, invariably underlain by the desire of the sovereignty to promote social innovation.² But tension occurs

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¹. Today, many people are switching from their old word processor to WordPerfect. There is no doubt that WordPerfect is a tremendously useful program, but the learning curve and text file translations are a significant problem. (WordPerfect is a registered trademark of WordPerfect, Inc.).

Having used no less than ten editors and word processors in my years, I cast a vote for a doctrine of computer software genericism as a reasonable limitation on the copyright protection of computer programs. See L. Burgunder and C. Heckman, An Emerging Theory of Computer Software Genericism, 2 High Tech. L.J. 229 (1988) [hereinafter Genericism].

². See infra text cited in notes 174-78.
when the protection that the author seeks from copyright law results in a virtual "monopoly" of a useful idea. Copyright law has always extended protection to the author against the infringement of his unique expression. In the area of literary expression, there has been a persistent tolerance for the adaptation of idea from one work to another in recognition that one author's expression has rights of protection only to the extent that it remains his expression of an idea and not the idea itself.

A. What is "Look and Feel"?

The computer user would likely describe a computer program3 by the things that it displays on the screen and by the printed output which

3. A computer program is defined as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101 (1988). A computer program is both similar and dissimilar to other types of literary works, the classification to which computer programs are relegated by copyright law. 17 U.S.C. § 101 (1988) provides in part:

"Literary Works" are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film tapes, disks, or cards, in which they are embodied.

It is the similarities and especially the differences that have made the second generation cases so difficult to resolve by means of conventional copyright analysis. The courts frequently look to audio-visual works without any overt explanation for using these cases instead of the literary works cases. One might surmise that it is logical since, for the most part, humans interact with computer programs through sight, sound, and keyboard or mouse contact.

In many articles on the general topic of computer programs, and in most of the cases cited herein, specialized jargon has been routinely relegated to footnotes for optional perusal by the interested reader. It is ironic that courts and writers routinely give great effort to the precision in terms of legal art and pronouncements of the law, but routinely give an intellectual shrug to the science with which they deal. Computer science, not unlike the law, has its own jargon, often composed of common words that are really terms of art. "As the CONTU Report itself recognized, the distinction between copyrightable computer programs and uncopyrightable process ... do not always seem to 'shimmer with clarity.' ... The witnesses had the not uncommon difficulty of finding the precisely correct words of description in this field." Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 n.8 (3d Cir.), reh'g and reh'g en banc denied, cert. dismissed, 464 U.S. 1033, 104 S. Ct. 690 (1984), quoting the CONTU Report at page 18. See supra note 135 for a discussion of the CONTU Report.

The fact that this is science makes precision in the court's exploration of this science as important as the attention given the precision in applying the law. The failure, in general, of the courts to recognize this truism has resulted in the development and reliance upon precedent that may be of questionable quality for lack of analysis of the underlying object and its unique place in our economy.
it produces. Screen displays and printed output are the program's user (or observer) perceptible manifestations.\(^4\) There is nothing unique in screens or printouts. They may be reproduced with great exactness by an infinite variety of programs.\(^5\) User perceptible manifestations characteristic of a particular computer program are referred to as the program's "Look and Feel."\(^6\)

An example is that of the WYSIWYG,\(^7\) or full screen editor used in all modern word processing programs. The first editors that appeared on personal computers were so called "line-editors" which allowed the viewing and editing of a document on a line-by-line basis, but the viewer had no idea what the final result would look like until a copy was printed. The advent of the full screen editor, where the user could freely move about the screen making changes immediately seeing the results, was a boon to the commercial use of computers. The advent of the full screen editor resulted in the virtual demise of line editors. The issue was never raised that every subsequent program that used full screen editing was infringing on this new "Look and Feel."\(^8\)

"Look and Feel" has come to imply that user (or observer) perceptible manifestations of a computer program may be copyrightable features. Furthermore, substantial similarity of program attributes in a competing product may be strong indicia of copyright infringement. While the latter is not necessarily an incorrect conclusion in certain situations, outside of those situations the concept could potentially allow the judicial expansion of copyright protection beyond the scope of the basic purpose of the statutory scheme, which is to promote the pro-

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4. Sometimes called the "user interface." Johnson Controls, Inc. v. Phoenix Control Systems, Inc., 886 F.2d 1173, 1175 n.3 (9th Cir. 1989).

5. For the computer programming aspects of this paper, the author draws on 19 years of professional computer programming on a variety of computers and in a variety of computer languages, including FORTRAN and BASIC.

It is not necessary for a programmer to see the actual source code, see infra note 23 to recreate user perceptible manifestations. This recreation may be done simply by writing new source code that reproduces what is seen on the screen. The internal operation of the program that yields these "clone" manifestations may be, and usually would be, completely different from the original, but this difference would not likely be noticeable to the observer.

6. While the term "Look and Feel" in computer software related cases sometimes is used to include other elements, such as file structure, subroutine organization, and other factors, the screen displays and printed output are generically recognized as "Look and Feel."

7. WYSIWYG is an acronym for What You See Is What You Get.

8. Whether or not the results would be the same today if the full screen editor were created in 1990 may be in some doubt. In fact, the relative success of "Look and Feel" cases is being touted as a possible reason for Apple's suit against Microsoft and Hewlett-Packard over the use of icon driven screens. Apple Computer v. Microsoft Corp., 717 F. Supp. 1428 (N.D. Cal. 1989).
duction of the public good while protecting the economic value of the author's work.9

Since the early 1970s, the subject of copyright protection for computer programs has been a matter of intense interest in the computer industry, the courts, and academic circles. (This interest has tracked the advances in integrated circuit technology.) It became apparent to persons aware of the amazing progress of the infant integrated circuit industry that the world was about to change dramatically—that the computer would soon be a household item.10

As is true of most infant industries, the computer software industry was led by hundreds of cottage-shop entrepreneurs, in this case—programmers. As the number of personal computers exploded in the early 1980s, due chiefly to the introduction of the IBM PC, the computer program market blossomed into one of enormous economic potential. A computer program potentially could be sold to millions of PC users, which led to an avid interest in any and all methods of ownership protection of the computer programs.

It was generally acknowledged by experts in the field of copyright law that a computer program had some type of intellectual property protection, but no one was certain whether that protection would be patent, trade secret, copyright, or sui generis.11 In 1976 and 1980, Congress changed the copyright laws to include computer programs.12 Although computer programs were then protected by the Copyright Act ("the Act"), the war was yet to be fought over the degree and scope of that protection.

Today, fourteen years later, the "Look and Feel" decisions have raised grave concerns in the industry over the use of any aspect of a competing product in a new program. A large amount of litigation has spawned as program copyright owners seek to assert their right not to have the "Look and Feel" of their product mimicked by others. The concern was brought into focus by the decision in Whelan v. Jaslow,13 and, in particular, by the opinion's language that "structure," "sequence," and "organization" could be copyrightable.

The debate over the nature and scope of "Look and Feel," and the ultimate implications should the doctrine be validated by the U.S.

10. See infra note 33.
12. 17 U.S.C. § 101 (1988) provides in part that "[a] 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."
NOTES

Supreme Court, has continued in legal, computer, and business literature,\textsuperscript{14} as well as in subsequent court decisions. The responses to \textit{Whelan} have ranged from articles expressing regret for the end of the clone era of software to the "business as usual" attitude of software producers who continue to produce new programs oblivious to the uproar resulting from \textit{Whelan}.

This comment begins with a brief look at the elements of a copyright infringement case and then focuses on two early computer copyright cases, \textit{Synercom Technology, Inc. v. University Computing Co.}\textsuperscript{15} and \textit{Whelan v. Jaslow}.\textsuperscript{16} Some subsequent cases are then briefly examined.

This author contends that the underlying equities in almost all computer program copyright infringement cases are a driving factor in the decisions. The court is really protecting good faith in the development of competing products and using copyright law to make bad faith parties "pay their way." This comment suggests that the same result may be accomplished by the proper allocation of burdens of persuasion in "Look and Feel" cases without non-literal elements of a computer program being elevated to something which they are not, i.e., protected works in and of themselves.


\textsuperscript{15} 462 F. Supp 1003 (N.D. Tex. 1978).

\textsuperscript{16} See supra note 13.
This shifting of burdens will remove the incentive for the courts to make decisions at raised levels of abstraction in order to achieve equitable results. It will also put the burden of persuasion on the defendant to demonstrate that he did produce a competing work in good faith by independent efforts. Such an allocation of the burdens of persuasion serves the purpose of copyright law in promoting the public good and still provides protection to the program author for his work.17

B. Copyright Infringement

A case of copyright infringement is based upon an unauthorized reproduction of a protected work.18 The plaintiff demonstrates his prima facie case by proof (1) that he has a valid, registered copyright and (2) that the defendant copied the work protected by the copyright registration.19 A copyright registration certificate is prima facie proof of the validity of a copyright.20 Since proof of copying by direct evidence is not always possible, copying may be proved through inferential evidence by showing that the defendant had access to the protected work and that the alleged infringing work is substantially similar to the copyrighted work.21

17. An underlying premise in this comment is that the proper analysis of the scope of copyright protection for computer programs cannot be performed by the courts without a better understanding of computer programs. Analogies to non-computer literal works, audio-visual works, and other extrinsic sources in an attempt to resolve these difficult cases have led the courts to reach otherwise fair results by strained arguments.

Perhaps the courts are beginning to understand this point. See Johnson Controls, Inc. v. Phoenix Sys., Inc., 886 F.2d 1173 (9th Cir. 1989) (court appointed an expert as a special master under Federal Rules of Civil Procedure 53 to consider the technical issues in the case.); NEC Corp. v. Intel Corp., (N.D. Cal. Feb. 6, 1989) (1989 WL 67434) (While not appointing a special master, Judge Gray had the litigants spend about six weeks educating him on software, firmware, and the topic of the case—microcode.)

19. Whelan II, 797 F.2d at 1231.
21. Whelan II, 797 F.2d at 1232. Literal Copying: One may misappropriate a computer program by literally copying the program. E.g., photocopying its printed form or using the computer itself to place a copy of the source code onto a disk, tape, or in some manner cause the source code to be transmitted by wire to another computer. This gives the copier the author's original work, including his comments, and makes program structure readily apparent. In this literal form, the computer program is at greatest risk of copyright infringement. It might be infringed by translation or imitation of internal operation of the original program into a new program. An example of this would be the translation of a program written in BASIC into DbaseIII. This is only possible when the infringer has a literal copy of the original program.

Copying of the object code, while not impossible, would be most cumbersome. Object code is usually represented by a seemingly random sequence of binary or hexadecimal numbers that are intelligible to humans only with the greatest of efforts. A binary number
C. The First Generation Cases—Literal Copying

First generation cases are those in which the courts dealt with the copyright of computer program source code and object code. The

is an expression of a number in base 2. A hexadecimal number is an expression of a number in base 16. These numeric bases as well as base 8 are used in association with computers because each base is a power of 2. Thus, there is a one-to-one correspondence to the binary nature of the basic electrical building block of the computer, i.e., the transistor which has only two possible operational states, usually denoted as “1” and “0,” which in turn are the only two digits in base 2. (For an example of a court that tired of the extensive testimony in this “technical” point see footnote 9 in Midway Mfg. Co. v. Strohon, 564 F. Supp. 741 (N.D. Ill. 1983)). Under only the rarest of circumstances could the author’s original expression ever be reconstructed from this “copied object code.” And this, most likely, only if the original language which the author used was either machine language or assembly language. If the program were written in assembly, the reverse-engineered product would be the original author’s expression less the structure of his original program, i.e., the order of its components could not be revealed by this process. Nor would it be possible to recreate the original comments, variable names, labels, and other mnemonics that the author placed in the assembly language source code. All of the author’s original expressions would be lost in the process of creating the object code. The structure, original comments, variable names, labels, and other mnemonics of the original program and the comments are ignored by the program assembler and are in no way represented by the resultant object code. Finally, if the programmer is writing a program which requires any sophistication in its operation, the programmer is going to rely on commercially produced library functions included by the creator of the assembler. These library functions become inextricably merged with the author’s work during the assembly process. It is thus entirely possible that one could extract a functional portion of a program from “copied” object code and reverse-engineer that segment with the net result that the “copier” has only recreated a program function that was written by the creator of the assembler and is totally unrelated to the work of the author in question. This would be the functional equivalent of taking a cooked box cake to a chemistry laboratory to discover how it is made instead of simply reading the contents off the box label.

Because of the nearly intractable problems of reverse-engineering, “copied” object code rarely results in anything meaningful or useful. “Copied” object code rarely serves any use except to run the very same program on a similar computer. The classic example of this type of copying is when X copies his employer’s copy of WordPerfect to use on his home computer, i.e., simply ripping off a copy to use on another computer. This would be the form of “copying” with which most people are familiar and the easiest to prove because the “copied” code is 100% identical to the original code.

Except on a commercial basis, this is not the common type of copyright infringement case for computer software. But, regardless of the means of literal copying used, the thing which is copied is the original literal expression of the author. Although it can also result in more than the author’s original work being copied. There can be no doubt that this original, literary expression of the author is protected by copyright law as would be any other printed work. 17 U.S.C. § 101 (1988) in part states: “Copies’ are material objects . . . in which a work is fixed . . . and from which the work can be perceived, reproduced.”

Non-Literal Copying: A computer program may be functionally “copied” by being rewritten in another computer language, or being “cloned.” This is the type of “copying”
cases usually involved literal copying of the source or object code. The first generation cases easily reached the reasonable result that both the source code and the object code were protected under the copyright law.

Under Section 101 of the Act, source and object code are clearly material objects in which the author's original work is fixed from which the work may be perceived or reproduced. Under the Act, based upon the 1976 and 1980 revisions, they are works of original authorship. The results achieved in these cases required little beyond literal interpretation of the statutes and analogies to existing audio-visual and literary works case law. However, the difficulty of applying these same statutes that worked so nicely in the first generation cases became readily apparent in the second generation cases in which there had been no literal copying.

D. The Second Generation Cases—Non-Literal Copying

Second generation cases had to deal with a much more difficult issue: the copyright protection afforded to a computer program that was in some manner "copied," but not literally or directly. The second generation cases proved to be fraught with difficult conceptual problems, not the least of which was the nature of a "computer program."


In 1978, Judge Higginbotham took that first step into the second generation of computer software copyright cases in Synercom.
Synercom developed a computer program, STRAN, which performed structural analysis. STRAN was based on an earlier public domain program FRAN, developed by IBM and improved by the subsequent founders of Synercom while employed at McDonnell Douglas Automation Company ("McAuto"). After leaving McAuto on a friendly basis, the founders of Synercom created STRAN using IBM's public domain information, McAuto improvements in the program user's manual, and their own expertise. Unlike IBM and McAuto, Synercom attempted to retain proprietary rights in STRAN by copyright registration and proper notice on the user's manual.

After a brief attempt to market the program through a Houston firm, Bonner and Moore, Inc. ("Bonner"), Synercom decided to market STRAN through University Computing ("UCC"). Meanwhile, Bonner acquired an engineering consulting firm (EDI) in New Orleans. Bonner proposed to John Fowler and his firm, EDI, that EDI manage the newly acquired engineering consulting firm. They planned to develop a structural analysis computer program to compete with STRAN. The new program, SACS II, was to be completely compatible with STRAN in order to minimize training and data conversion problems for customers who switched to SACS II from STRAN. EDI planned to price SACS II lower than STRAN in order to encourage UCC's customers to switch to SACS II. Thus, EDI and Bonner planned to compete with STRAN in the very market that UCC and Synercom had developed.

31. Acronym for STRuctural ANalysis.
32. Public domain programs are computer programs that are published without a reservation of copyright. They are freely copied and distributed with nominal charges at most for copying expenses, maintenance, or update to future versions.
33. Neither IBM nor McAuto attempted to retain proprietary rights in their programs. At the time FRAN and STRAN were developed by IBM and McAuto, the decade of 1960, the only computers that were available were mainframes. The PC (personal computer) revolution was still ten years away. While the processor speed, memory requirements, and programming language sophistication that such a program would require are available in a desktop computer in 1990, such a system in the 1960's was beyond the means of nearly anyone except for large corporations or the government. Thus, it is quite likely that companies that produced computer programs in this era never even gave thought to proprietary protection for a program that would only execute on one of their computers.

One study showed that by 1970 there would only be an estimated 100,000 computer installations in the entire United States. C. Gottlieb and A. Bordin, Social Issues in Computing 9 (1973). In stark contrast is the data compiled by Computer Reseller News indicating that for the month of November 1989, the unit sales for PC manufacturers was 279,700 units. Sussman, The Numbers Sheet—PC Units Sold By Manufacturers, Computer Reseller News, January 22, 1990 at 14.
34. Upon Boeing New Orleans' closure in 1973, Fowler and another former Boeing engineer formed EDI (the court's opinion does not indicate if EDI is an acronym). Fowler, as an employee of Boeing was familiar with SAMECS, another public domain structural analysis program.
With this design goal in mind, Fowler created SACS II, using, in part, as a source of information about STRAN which had been printed by Bonner while working with Synercom. The brochure was the source of the computer input card images used by UCC that would become the basis of the copyright infringement suit filed by Synercom. Both STRAN and SACS II were designed to accept data in the form of punched data cards.

The requirement that SACS II would accept input data in the same format as the data on the punched computer cards used by STRAN was crucial to this plan. EDI wrote a pre-processor program that translated STRAN formatted data into a SACS II compatible format. Thus, the STRAN data became accessible to SACS II. Finally, in 1976, the business relationship of UCC and Synercom began to deteriorate. By the time Synercom decided not to renew its contract with UCC, UCC had already contracted with EDI to market SACS II.

EDI and UCC then distributed an uncopyrighted user's manual along with SACS II, that contained "mirror images of some of [Synercom's] input cards and instructions [that] effectively enabled a customer to use the STRAN input format." It was this action that prompted Synercom to file suit for copyright infringement of their manual and their input card formats.

a. The Trial Court Decision

Although the trial court resolved four issues, only one is within the scope of this paper: did EDI and UCC infringe Synercom's copyright?

35. The possession of the brochure by Bonner was probably nothing more than a vestige of the Bonner-Synercom business relationship. The significance of Fowler's use of the brochure lies in the inference that the substantial similarity in SACS II was a result of copying of Synercom's copyrighted works.

36. What we recognize today as those cards that one must never fold, spindle, or mutilate, were, some say, invented, while others admit at least brought to the forefront of technology, by Herman Hollerith in the 1880s. These cards, known as Hollerith cards, were used in a crude mechanical computer to tabulate information in the 1890 Census of the United States. The 1880 census took nearly ten years to complete. With the Hollerith cards and tabulating machines, the initial population count in the 1890 census was completed in less than a year. The Hollerith card and machine patents were later sold to a company that would become IBM. G. Austrian, Herman Hollerith—Forgotten Giant of Information Processing (1982).

37. The fact that the preprocessor program was written using only the brochure and Synercom's user manual, without the copying of any portion of Synercom's STRAN program prevented the program from being a directly infringing work or an infringing derivative work.

A derivative work is defined as "a work based on one or more preexisting works, such as translation." 17 U.S.C. § 101 (1988).


39. The other issues concerned (1) whether Synercom had any valid copyrights on
The question that was at the heart of *Whelan*—whether there was substantial similarity between the protected work and the alleged infringing work—was not at issue because UCC had copied the *Synercom* work literally. The court, finding the issue *res novo*, reached into the distant past to find the 1879 copyright case *Baker v. Selden.* *Selden* provided a test which the court could apply by analogy to solve this novel question.

In *Selden*, the plaintiff’s testator had written a book describing an innovative method of bookkeeping. The book included blank forms containing “ruled lines and headings, given to illustrate the system.” Selden’s executor claimed that the forms were secured by the copyright on the book. Baker, in a subsequent book, included forms similar to those in Selden’s.

Speaking for a unanimous court, Justice Bradley found that Selden’s blank forms were not among the items explicitly enumerated in the copyright law of 1859. Then Justice Bradley considered whether or not the blank forms may implicitly fit within the scope of protected works under the Act. He opined that copyright law protected only the original works of an author, that is, his expression of an art, in this case a new method of bookkeeping, but could not invade the “province of letters-patent” by granting an exclusive right to the art itself.

This holding in *Selden* has become known as the idea-expression dichotomy and is generally regarded as being codified in Section 102(b) of the Copyright Act which states:

> In no case does copyright protection for an original work of authorship extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the

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40. In an earlier part of the decision, the court tentatively decided that the input format cards may be copyrightable. This assumption was made to allow the court to discuss the possible infringement by UCC. This proves to be *obiter dictum*, but is the portion of the decision on which the *Whelan II* court would focus.

41. In *Whelan* this was a material issue since the alleged infringing program was written in a different language, i.e., it was not copied literally. *Whelan II*, 797 F.2d at 1225. See text supra note 21 for a discussion of “copying” of computer programs.


43. Id. at 100.

44. Id. at 100.

45. Items then enumerated in the copyright law were books, maps, charts, musical compositions, prints, and engravings. Id. at 101.

46. Id. at 102.
form in which it is described, explained, illustrated, or embodied in such a work.\textsuperscript{47}

The \textit{Synercom} court, after citing Selden for the proposition that “blank forms are not the subject of copyright,”\textsuperscript{48} distinguished later cases. Courts in cases where the forms were held to be properly copyrightable noted that the forms in and of themselves communicated information of a specific nature.\textsuperscript{49} Drawing the common thread between these later cases and Selden, the \textit{Synercom} court expressed a “litmus test”: “whether the material proffered for copyright undertakes to express.”\textsuperscript{50}

Applying this test to the facts before him, Judge Higginbotham noted that UCC did not actually provide the format cards themselves (i.e., the blank forms), but instead supplied a description of the card, in the form of a mirror image printed in their manual. UCC’s purpose was to convey the sequence and order idea contained in the card to the user of SACS II, rather than to provide the format cards themselves or the specific information contained in the card image.\textsuperscript{51}

In the simple language of \textit{Selden}, since the court could find that only the images of the cards were necessary to convey the idea contained in the input format cards, then, the cards did indeed communicate or express. The next question would be whether or not the cards, themselves expressions, were subject to copyright protection. The court found that input card formats may be properly copyrightable, \textit{if the idea expressed is separable from the expression}.\textsuperscript{52} If such a separation cannot be found, then, the expression is not copyrightable under the \textit{Selden} and Section 102(b) idea-expression distinction.\textsuperscript{53}

Assuming \textit{arguendo} that the input format cards were a copyrightable expression, Judge Higginbotham then considered the fundamental question of the separability of the particular expression and the underlying idea. Judge Higginbotham analyzed the question using a hypothetical example of an idea-expression merger involving a figure-H pattern of


\textsuperscript{49} Id. at 1011. The cases to which the court was referring were Harcourt, Brace & World, Inc. \textit{v.} Graphic Controls Corp., 329 F. Supp. 517 (S.D.N.Y. 1971); Reiss \textit{v.} National Quotation Bureau, Inc., 276 F. Supp. 717 (S.D.N.Y. 1921) (Code Books); Hartfield \textit{v.} Peterson, 91 F.2d 998 (2d Cir. 1937) (Forms to record answers to multiple choice tests). See supra text accompanying note 46.

\textsuperscript{50} \textit{Synercom}, 462 F. Supp. at 1011.

\textsuperscript{51} Id. at 1012.

\textsuperscript{52} Id. at 1012 (emphasis added).

\textsuperscript{53} See supra text accompanying note 47.
an automobile gear shift. He noted that although in theory many other
patterns may suffice as a gear shift pattern, once the basic pattern is
chosen, whether purposefully or arbitrarily, "it is the only pattern that
will work in a particular model." He then analogized this chosen
pattern "to the computer 'format.'"

The Synercom court noted that UCC would be liable for infringement
only if UCC copied the expression and not the idea. Thus, the court
was forced to attempt to articulate the underlying idea of the computer
input format cards. The court noted that "[i]f the sequence and ordering
of data" is the idea, then there was no infringement. On the other
hand, the court queried: "If sequencing and ordering is expression, what
separable idea is expressed?" This was the very question that would
later perplex the Whelan court.

For the Synercom court, this question was especially bedeviling
because STRAN and SACS II were written in the computer language
FORTRAN. FORTAN variables and data must be precisely defined
in the program, and input data on the punched cards must match this
definition exactly.

54. Synercom, 462 F. Supp. at 1013. One must infer from this statement that the
court meant that once a particular vehicle had a "H-pattern" shift lever, it could not
be shifted by using any other pattern, e.g., a "N" pattern.
55. Id. It appears that Judge Higginbotham was struggling with the same intellectual
difficulties that many courts and commentators have found at the heart of this thorny
legal problem. A computer program is protected by copyright law by virtue of the adoption
of the 1980 amendments to the copyright laws as recommended by CONTU, supra note
11. Without any debate or congressional hearings on the advisability of the CONTU
recommendations, they were enacted, with the result that a computer program (see def-
inition in text supra note 3) became a protected literary work. Thus, there are no universally
recognized sources of authority to guide the courts in the interpretational problems that
result from the application of a body of law that regulates ownership of tangible expressions
of intellectual works to an expression that is basically utilitarian in purpose, not expressive,
and undergoes substantial alteration of form to achieve its intended purpose, i.e., com-
scription, assembly, linking, or interpretation.
56. Id. at 1013.
57. Id. at 1013.
58. FORMula TRANslation Language. FORTRAN was an early development in com-
puter languages.

It was developed specifically for use in problems encountered in scientific and engineering
fields which required use of multi-dimensional arrays, trigonometric, logarithmic, expo-
nential, hyperbolic, and complex number functions. The only other programming languages
commonly available at that time were COmmon Business Oriented Language (COBOL),
which did not support any of these required functions, and assembly language, which
although, in theory could support all of the FORTRAN type functions, would require
Herculean efforts for each and every simple task that FORTRAN handles routinely.
59. Thus, the input format card, usually 100 characters wide, is strictly defined in
terms of what columns are to be used for what data.
The program accepting the data from these cards would contain these same definitions
The crucial feature of the input card in Synecom was that the card itself literally provided the sequence and order in which the data had to appear in order to function with STRAN or SACS II. To the trained eye of a FORTRAN programmer or perhaps a sophisticated user, the image of the input format card would reveal this critical pattern of sequence and ordering as if one were looking at the program author's original FORTRAN source code program. More importantly, the input format cards in and of themselves provide no other information except this sequence and ordering.

Thus, the input card image really conveys the underlying idea of the necessary sequencing, ordering, and nature of the underlying program variable required by the FORTRAN program, and the particular expression conveys nothing beyond this.

Once the court concluded that the input cards had the idea and expression inseparably encoded, the court simply needed to point out, as did the Selden court, that the purpose of copyright law is to protect the particular expressions of an author from unauthorized copying when the copying has the purpose of misappropriating the particular expression. Had UCC copied a deck of input format cards for the purpose of obtaining specific data on those cards, then the Synecom court would surely have found infringement.

Such was not the case. Here, UCC simply conveyed the underlying idea of the sequence and order, an idea inseparable from the expression of the input format card. Thus the court found the input cards were not infringed even if presumptively copyrightable because UCC conveyed the idea contained and not the particular expression. Alternatively, the court held that if UCC copied the particular expression, the cards were in order that it could properly parse the information provided by the card. This information in its raw state would be nothing more than 100 alphanumeric characters standing side-by-side. The FORTRAN program, via the input card format definitions written into the program, would divide this mass of information into the separate pieces of data and insert the data into the appropriate variables for use in its internal calculations.

In this respect the input format cards sub judice are no different from those used in any other FORTRAN program.

See Appendix A for a description of a FORTRAN input card format.

Judge Higginbotham did not recognize this additional feature of the input cards, but this additional detail simply adds support to the argument that the information that the card really conveys is not that which is printed on it, but the underlying idea.

This conclusion presumes that the copying of the input card format is not for the specific purpose of getting the exact data entered onto this card. Such copying may be a violation of copyright law. This would turn in part on the issue of whether or not this expression was an original work within the meaning of the Copyright Act, or simply a non-copyrightable utilitarian work.

Note also, that the lack of copyright protection does not prevent assertion of common law, state, and other federal causes of action, e.g., common law copyright, trade secrets, unfair trade practices, or anti-trust.
not copyrightable because the idea was inseparable from the expression.64

The analogy, although sufficient for the purpose of guiding the court's decision that input format cards are not copyrightable, reflects a general conceptual problem troubling the courts in computer software related cases.

Like other courts that have grappled with the problem of the idea-expression distinction in computer related cases, the Synercom court used a hypothetical involving a tangible physical concept as an analytical aid. There is a natural inclination to use this type of analysis as one attempts to comprehend an unfamiliar, intangible concept. However, tangible hypotheticals are only a substitute for understanding the nature of the works being claimed as protected by the Act, in this case, a computer input format card. The court could have accomplished the same purpose by noting that the idea of sequence and order found in a computer input card format is highly analogous to the idea of sequence and order found in a sequence of numbers.

An example of such an analogy would be the partial sequence of numbers: 0, 2, 4, 6, 8, 10, 12, 14. The sequence, ordering, and the precise formula, or idea, is readily apparent from this literal expression and the idea is inseparable from the expression.65 From any part of this infinite sequence, whether it be the first eight numbers or the ninth through the fifteenth, any other part of the sequence can be derived. Thus, this numeric sequence, as does any non-random numeric sequence, demonstrates how in a "literary" expression the particular expression might well embody the idea in an inseparable manner.

The analogy of a sequence that contains an idea from which any part of the sequence may be derived is conceptually nearer to that of the computer input format card, and functions without the risk of confusion between the idea expressed in a physical object and the object itself. For example, one could easily conceive of an "H-stick" that would operate in an "H" pattern, but the "H" pattern would be subject to an infinite variety of artistic expressions. One need only reflect on the number of fonts or type styles that man has derived for the Roman alphabet in 2000 years. However, the sequence of numbers, like the input format cards, is a pure expression of the idea. There are no further variations allowable without the loss of the idea.

The important idea derived from Synercom is that sequence and ordering are important in deciding whether certain types of literary works may be copyrightable and, as expanded by Whelan, in deciding if a protected work has been infringed. Synercom also reinforces the necessity

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64. Synercom, 462 F. Supp. at 1012-14.
65. This sequence represents the value of the expression \( x = 2n \), where \( n \) is an integer with the values \( n = 0 \) to 7.
of finding an idea-expression dichotomy in the alleged infringed expression as a prerequisite to a recovery for infringement. With these two Synercom elements, the stage was now set for Whelan.

2. Whelan v. Jaslow

In Whelan v. Jaslow, the Third Circuit was squarely presented with the issue of determining an appropriate test for copyright infringement of a non-literally copied computer program. Specifically, the court had to decide whether evidence of substantial similarity of plaintiff's copyrighted computer program and defendant's alleged infringing program would be the appropriate test.

In 1978, Rand Jaslow ("Rand") purchased a small personal computer and attempted to teach himself how to program the computer in BASIC. After a few months of unsuccessful efforts, Rand abandoned his efforts and hired Strohl Systems, Inc. ("Strohl") to develop a custom designed dental lab program. Elaine Whelan, a co-owner and employee of Strohl, was assigned as systems analyst and programmer. As part of her task as systems analyst, she produced extensive design documentation on the contents, structure, and logic of the program from which she eventually created the program "Dentalab." The program that resulted was written in EDL.

67. Whelan II, 797 F.2d at 1225.
68. Defendants in Whelan were Jaslow Dental Laboratories, Inc., Edward Jaslow (Rand's father), Rand Jaslow, and Dentcom, Inc. Edward and Rand were officers and shareholders in Jaslow Dental Laboratories, Inc. and Dentcom, Inc. In addition, Joseph Cerra and Edward Mohr participated in the formation of Dentcom, Inc. Whelan II, 797 F.2d at 1226, 1227 and n.6.
69. Rand "purchased ... a small, relatively expensive computer, a TRS-80, that had no printer and limited capacity." Whelan I, 609 F. Supp. at 1309.
70. BASIC is an acronym for Basic All-Purpose Symbolic Instructional Code, a language created by Professors John Kemeny and Thomas Kurtz of Dartmouth College in the 1960's for the purpose of instructing students in the art of programming computers. Because of its ease of use and simplicity in command structure, BASIC has been a programming mainstay in the small business and personal computer market. It has only been in the last 10 years that languages such as Pascal and C have begun to make significant inroads in the small computer market as programmers and program development tools have become more sophisticated.
71. Both the district court and the appellate court noted the extensiveness of the documentation produced by Whelan and the tremendous time she devoted to the project. Whelan II, 797 F.2d at 1231, 1237, and Whelan I, 609 F. Supp. at 1319. This was apparently in response, in part, to a claim by Rand that he was co-owner of the program due to his close association with Whelan as she developed the program. The appellate court makes a point to state that the "coding process is a comparatively small part of
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Whelan left Strohl in late 1979 to form Whelan Associates, Inc., later negotiating the purchase of all rights and title in the EDL version of Dentalab from Strohl. In early 1980, she contracted with Jaslow Lab and Rand to be her sales representatives for her EDL version of Dentalab. However, in mid-1982, Rand sensed that there might be a lucrative market for a Dentalab-type program written in BASIC to run on small business computers and began writing such a program. It is undisputed that while Rand was working on the his BASIC version of Dentalab, he had access to the source code of the EDL version.

After working on the program for nearly a year, Rand, in May of 1983, notified Whelan that the Lab was terminating the contract. Further, Rand stated that the Lab had exclusive rights to market Den-

programming. Whelan II, 797 F.2d at 1231, 1237. This fixation on a point not especially relevant to a copyright infringement claim seems to be an undercurrent of equity that one finds in nearly all computer program copyright cases in which there appears to be an element of bad faith on the part of the alleged infringer.

For a rare case where there appeared to be no bad faith, see Plains Cotton Co-Op v. Goodpasture Computer Serv., Inc., 807 F.2d 1256 (5th Cir.), reh'g denied, 813 F.2d 407, cert. denied, 484 U.S. 821, 108 S. Ct. 80 (1987) (Although Goodpasture hired some of Plain Cotton’s employees, Goodpasture required signed employment agreements in which these employees agreed not to breach any confidences of their former employer. Former Plains Cotton employee Fisher brought a computer diskette to Goodpasture containing Plains Cotton’s program designs. Upon discovering that Fisher had breached his agreement, Goodpasture fired Fisher, and immediately replaced the one subroutine copied with a separately developed subroutine. Plains Cotton Co-Op, 807 F.2d at 1258-1259. The court found no infringement in spite of substantial similarity between the programs because the market demanded this particular expression. Plains Cotton Co-Op, 807 F.2d at 1262.

72. EDL is an acronym for Event Driven Language, and was an IBM proprietary programming language that was apparently one of the few possible choices for the IBM-Series I computer which Strohl had the Lab acquire. EDL is so fundamentally different from BASIC that there is little or no correspondence between the command sets. Literal copying of the EDL program would have served no other purpose than allowing it to be run on other IBM-Series I or EDL compatible computers. Thus, literal copying would have defeated the avowed purpose of Dentcom to reach the market of dental labs running small computers that could execute programs written in BASIC. See infra text accompanying note 76.

73. Whelan II, 797 F.2d at 1226.
74. Whelan I, 609 F. Supp. at 1310.
75. Id.
76. Id.
77. Whelan Associates had apparently produced two versions of Dentalab in BASIC, but one was commercially unsuccessful and the other was not at issue in the case. Whelan II, 797 F.2d at 1226 n.4.
78. Whelan II, 797 F.2d 1232.
79. Rand's latest programming effort was completed by a professional programmer, Jonathan Novak, hired by Dentcom in 1983, and the resultant program was named Dentcom. Whelan II, 797 F.2d at 1227.
talab which "contain[ed] valuable trade secrets of Jaslow Dental Laboratory."\textsuperscript{80}

After completing the Dentcom program, a company formed by Rand and others began selling Dentcom as a "new version of Dentalab."\textsuperscript{81} Whelan also continued to sell Dentalab. Jaslow Dental Laboratory, Inc. filed suit in state court alleging misappropriation of the Lab's trade secrets.\textsuperscript{82} Whelan responded with a suit in federal court\textsuperscript{83} alleging violation of Whelan's federal copyright,\textsuperscript{84} Pennsylvania's common law on trademark, federal trademark law,\textsuperscript{85} unfair competition, and tortious interference with contractual relations. The state court action was suspended during the pendency of the federal court claims.

\textit{a. The Trial Court Decision}

The trial court noted that Strohl had four copyright registration certificates\textsuperscript{86} which Whelan purchased. The certificates purported to register (1) "Author of entire computer text," (2) "Computer program text," (3) "Manual for implementation and installation of computerized system," and (4) "Manual for use of computer program."\textsuperscript{87}

In terms of copyright infringement analysis,\textsuperscript{88} a copyright infringement claim can only be for the infringement of a \textit{protected work}. The only protected works involved were the parts of the program that were registered. The trial court, however, focused on the user perceptible manifestation of the program, something not the subject of any of the copyright registration certificates. In effect, the court merged the un-

\begin{footnotesize}
\begin{enumerate}
\item[80.] \textit{Whelan II}, 797 F.2d at 1222. Two months later, in August of 1983, Edward and Rand Jaslow, Joseph Cerra, and Paul Mohr formed Dentcom to sell Rand's completed BASIC program, Dentcom. At this point in the decision, the court dropped a hint of an implied concern for the equities involved. The court noted that Cerra had been an employee of Whelan Associates, Inc. until June of 1983. As head of marketing Cerra had extended contacts with Rand. Then, Cerra resigned from Whelan. Cerra made a verbal promise to Elaine Whelan that he would not become associated with Rand in any business ventures. \textit{Whelan II}, 797 F.2d at 1227 n.6.
\item[81.] Id. at 1227.
\item[82.] Id. at 1227.
\item[83.] 28 U.S.C. § 1338 (1988) provides in part that: "(a) The district courts shall have original jurisdiction of any civil action arising under any Act of Congress relating to ... copyrights . . . . Such jurisdiction shall be exclusive of the courts of the states in ... copyright cases."
\item[86.] A copyright registration certificate is \textit{prima facie} evidence of a valid copyright. Introduction of such certificate into evidence is the first prerequisite in an infringement suit in making the plaintiff's \textit{prima facie} case. See supra text accompanying notes 18-21.
\item[87.] \textit{Whelan I}, 609 F. Supp. at 1312.
\item[88.] See supra discussion in text accompanying notes 18-21.
\end{enumerate}
\end{footnotesize}
copyrighted, and perhaps uncopyrightable, physical manifestation with the protected work. 89

The trial court found that Whelan was the owner of valid copyrights on Dentalab. 90 The court then stated the idea-expression dichotomy test 91 and found that the idea underlying Dentalab was a program to manage a dental laboratory. 92 The court then found that the expression was the "manner in which the program operates, controls and regulates the computer." 93 The only question left for the lower court was whether Rand's program was a copy of Whelan's. 94

The trial court noted that "Rand Jaslow . . . [had] surreptitiously and without consent of either Strohl or Whelan Associates obtained a copy of the source code which he utilized in trying to develop a program." 95

The conclusion that Rand's program was in fact a copy was primarily based upon the court's assessment of the testimony of competing expert witnesses. Whelan's expert, Dr. Moore, testified that because of the many similarities between Dentcom and Dentalab, "the person who wrote the Dentcom PC program 'had a thorough knowledge of [Dentalab], and he used that knowledge to design [] Dentcom [], whether it was a case of reading [Dentalab] and copy [sic] it over, of course, I don't know.'" 96 In noting that the alleged infringing work was written in BASIC and not EDL, the source language of Dentalab, the court pointed out that "knowledge and use of the source code in order to make the conversion from EDL to BASIC is very helpful." 97

Furthermore, the Jaslow expert, Mr. Hess, simply testified to the many differences and similarities between Dentcom and a BASIC program written, but unmarketed, by Whelan and Associates. His study and research was limited to an examination of the source code 98 and

89. See infra Appendix D for excerpts from the "Single Registration Rule" promulgation and some brief comments thereon.
90. Whelan I, 609 F. Supp. at 1320.
91. See supra text accompanying note 47.
92. Whelan I, 609 F. Supp. at 1320.
93. Id.
94. Id.
95. Id. at 1315, finding of fact no. 27 (emphasis added).
96. Id. at 1316 (emphasis added).
97. Id.
98. Id. at 1315-16.
further, Mr. Hess "did not examine the actual operation of any of the systems in dispute." 99

One might consider whether the court erred in accepting Dr. Moore's testimony over that of Mr. Hess. If Mr. Moore made an error in his comparison, it was in comparing the Whelan BASIC program to the Jaslow BASIC program. The infringement claim was between the Whelan EDL program and the Jaslow BASIC program.

As to his examination being limited to the source code, and presumably the object code, Mr. Hess was in fact examining the protected work. Whether Mr. Hess observed the program in operation should be irrelevant, as that might relate to the substantial similarity between the protected work and the alleged infringing work unless the user perceptible manifestations of the program were impliedly held to be objects of a valid copyright.

The Court of Appeals later confessed the difficulty caused by "having practically no knowledge of the operation of computers" to judge which of two experts in a field is more credible.100 Notwithstanding this difficulty, even the Court of Appeals rejected the testimony of Hess because "[He] never observed the computer in operation nor viewed the various screens." 101

b. The Appellate Court Decision

The Court of Appeals began its analysis with a description of the elements of a copyright infringement suit102 and then noted that since no question was raised on appeal as to the ownership of a valid copyright by Whelan, the only question remaining was whether there had been any copying of a protected work. Since there was no direct evidence of copying, Rand's program having been written in a different language from Whelan's, the task became to determine what evidence is to be taken as inferential evidence of copying.103 The court agreed with the

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99. Id. at 1316.
100. Id. at 1321.
101. Id. Thus, the court is saying that although it is willing to concede that the screens are not per se proof of copyright violation, that the one expert who looked only at the author's original works, the thing protected by copyright law, is less believable because that was all he examined. This seems to elevate the screens to the level of proof which the court denied they hold. It is also a reflection of the persuasive strength that the visual evidence can have even with a jurist who is supposed to be able to blind himself to irrelevant and prejudicial evidence. See infra text accompanying notes 157-64.
102. See supra text accompanying notes 18-21.
103. This court, as did the lower court, failed to refer to the copyright registration certificates to determine what objects sub judice were susceptible to proof of a prima facie case. See supra text accompanying notes 18-21 & 87.

Non-literal copying of computer programs is of necessity proved by inferential evidence.
NOTES

trial court that once a valid copyrightable object is found, proof of copying requires proof of two elements: (1) access to the protected work and (2) substantial similarity of the infringing work with the protected work.104

To determine if there was access to a protected work, the court had to determine first if there was a copyrightable object, a protected work, to be infringed. Since the thing allegedly "copied" was not the source or object code of Whelan's program, but rather its logical structure, the court asked "whether the structure (or sequence and organization) of a computer program is protected by copyright law, or whether the protection of copyright law extends only as far as the literal computer code."105

Noting that the district court had found the non-literal elements of the program covered by copyright law,106 the Court of Appeals affirmed but with a different rationale.107 The trial court found that copyright

Whelan II, 797 F.2d at 1231. For the very things which are protected according to Synercom and Whelan's interpretation of the Act applied to computer programs are the source code, the object code, and implicitly, the separable expression contained therein to the degree that it is separable from its underlying idea. On the surface this would not seem to extend the protection to structure, sequence, and organization unless these elements could be shown to be implicitly within the literary works protected by copyright law and they are separable expressions from the underlying idea.

104. Whelan I, 609 F. Supp. at 1321, Whelan II, 797 F.2d at 1231. The emphasis here should be on the term protected work, and not its non-copyrighted aspects.

105. Whelan II, 797 F.2d at 1224. In a curious footnote, the court said "[w]e use the terms 'structure,' 'sequence,' and 'organization' interchangeably when referring to computer programs, and we intend them to be synonymous in this opinion." (emphasis added). Id. at 1224 n.1.

This footnote exemplifies the author's complaint, see infra Appendix A about the lack of precision in the usage of terms of art. Even in the vernacular, I opine that very few people would use "structure," "sequence," and "organization" as synonyms.

106. Whelan I, 609 F. Supp. at 1320. The trial court reasoned that copyright protects the expression of an idea. The expression of the idea contained in a computer program is "the manner in which the program operates, controls and regulates the computer in receiving, assembling, calculating, retaining, correlating, and producing useful information either on the screen, print-out or by audio communication." Id. But cf. 17 U.S.C. § 102(b) (1988), the idea-expression dichotomy, supra text accompanying note 47.

107. Whelan II, 797 F.2d at 1233. It appears rather that the Court of Appeals was anxious to get to what it perceived as the real issue in the case, that of the relevance of substantial similarity in non-literal aspects of a computer program in a case lacking direct copying.

However, by not rejecting the trial court's conclusion, but rather finding another basis for the conclusion, the court left a expansive interpretation of copyright law as a precedent to be used in a case that might not have the equities present in this case. Cf. Digital Communications Assoc., Inc. v. Softklone Distrib. Corp., 659 F. Supp. 449 (N.D. Ga. 1987). See supra text accompanying note 106. Accord Johnson Controls, Inc. v. Phoenix Control Sys., Inc., 886 F.2d 1173 (9th Cir. 1989) (granting a preliminary injunction based on a finding of substantial similarity of two computer programs without any citation of Whelan or Synercom).
protection for computer programs exceeded simply the source code and the object code. It said "the expression of an idea . . . in a computer program is protected . . . even though it must be altered . . . to be made adaptable to different types of computers."\textsuperscript{108} With this simple analysis the trial court immediately began a substantial similarity analysis.\textsuperscript{109}

The Court of Appeals found this first step of the analysis, that of finding a valid object of copyright protection, more troubling and spent a considerable portion of the opinion on this topic. It had to determine the copyrightability of the "expression" that the trial court had found.\textsuperscript{110}

It began with the idea-expression distinction\textsuperscript{111} incorporated into section 102(b) of the Act. It then posed the critical question as whether the structure (read "structure, sequence, and organization") of a program is an idea, which cannot be protected by copyright law, or an expression, which can be.\textsuperscript{112} Acknowledging Judge Learned Hand's comments on the idea-expression dichotomy, that "the distinction will inevitably be \textit{ad hoc},"\textsuperscript{113} the court attempted to extract from the case law a rule for this case.\textsuperscript{114}

In \textit{Baker v. Selden},\textsuperscript{115} the Court of Appeals found a test to distinguish between idea and expression by looking to the \textit{end sought} "to be achieved by the work."\textsuperscript{116} The court then states the "rule" derived from the "end sought" test:

\begin{quote}
In other words, \textit{the purpose or function of a utilitarian work would be the work's idea, and everything that is not necessary to that purpose or function would be a part of the expression of the idea}.\textsuperscript{117}
\end{quote}

Applying this test, the court stated that "[w]here there are various means of achieving the desired purpose, then the particular means chosen

\textsuperscript{108.} \textit{Whelan I}, 609 F. Supp. at 1320.
\textsuperscript{109.} Id.
\textsuperscript{110.} See supra text accompanying note 108.
\textsuperscript{111.} See supra text accompanying note 47.
\textsuperscript{112.} \textit{Whelan II}, 797 F.2d at 1235. In fact, "[d]efendants argue that the structure of a computer program is, by definition, the idea, and not the expression of the idea." Id. at 1235.
\textsuperscript{113.} Id. at 1234, quoting from Peter Pan Fabrics, Inc. v. Martin Weiner Corp., 274 F.2d 487 (2d Cir. 1960).
\textsuperscript{114.} \textit{Whelan II}, 797 F.2d at 1234.
\textsuperscript{115.} 101 U.S. (11 Otto) 99 (1879).
\textsuperscript{116.} \textit{Whelan II}, 797 F.2d at 1236. One cannot help but note this is a standard that is incredibly flexible. In fact, it is really a fiction. Any court could easily mold the "end sought" test to fit its concept of the equities of any case.
\textsuperscript{117.} Id. at 1236. See supra text accompanying note 47.
is not necessary to the purpose, hence, there is expression, and not idea." The court supported this concept by citing the greatly limited copyright coverage given to fact intensive works and *scenes a faire*.119

The court then looked to what it perceived to be the underlying purpose of the idea-expression distinction, "the preservation of the balance between competition and protection reflected in copyright and patent law."120 Citing the "fact" that "the more significant costs in developing a computer program are those attributable to developing the structure and logic of the program," the court decided that its newly derived rule for the case would best accomplish the end of promoting *this* underlying purpose.121

The Court of Appeals applied its rule by looking at whether there is more than one means of achieving the desired purpose, in the context of its economic justifications and sense of copyright law purpose. In applying this immensely flexible rule, the court decided that the idea of Dentalab was "the efficient organization of a dental laboratory."122 Hence, the structure is not a necessary incident to that idea."123 But this bootstrapping observation ignores the question: "structure" of what? To be copyrightable, the answer must be the structure of the protected work.124

It seems clear in retrospect that the court was concerned with one person appropriating the economic value of the intellectual effort of another by copying the "Look and Feel" where there was no literal copying. In support of this concern the court said that "the fact that it will take a great deal of effort to copy a copyrighted work does not mean that the copier is not a copyright infringer."125 In short, as the court pointed out, "[the] issue ... is simply whether the copyright

118. Id.
119. "[I]ncidents, characters, or settings which are as a practical matter indispensable ... in the treatment of a given topic." Id. The reason that these two forms of expression are not accorded copyright protection is that to do so "would give the first author a monopoly on the commonplace ideas behind [them]." Id. at 1236 (emphasis added).
120. Id. In fact, the primary purpose of copyright and patent law is to promote the public good by affording reasonable protection to the works of authors who in turn are secondarily favored as individuals. U.S. Const. Art. I, § 8, cl. 8; M. Nimmer and D. Nimmer, 1 Nimmer on Copyright §§ 1.02-1.03 (1989).
121. *Whelan II*, 797 F.2d at 1237.
122. Id. at 1240. One commentator has analyzed the application of "Look and Feel," on a scale of abstraction of analysis. Genericism, supra note 1, at 237. As the commentator points out, the more abstract then idea the court can find, the more likely it will be that any particular expression will be copyrightable under the *Whelan* test. Id. at 236.
123. *Whelan II*, 797 F.2d at 1240.
124. See supra text accompanying notes 18-21.
125. *Whelan II*, 797 F.2d at 1240.
holder's expression has been copied.\textsuperscript{126} However, this summation of the "issue" by the court seems to have overlooked the very real possibility that \textit{Synercom} addressed, that the expression may not be copyrightable because the idea is inseparable.

The court's constant references to the operation of the computer program is a reflection of the difficulty of separating the idea from the expression.\textsuperscript{127} The court never notes that the copyright registration certificates cover only certain aspects of the program and specifically do not cover the screen displays or any other "Look and Feel" element.\textsuperscript{128} Instead, the court uses its newly derived "end sought" test in order to bootstrap sequence, order, and structure\textsuperscript{129} into the realm of copyrightable non-literal elements of the work. Inherent in this result is the ultimate conclusion that the idea-expression test must have been met by this copyrightable object.\textsuperscript{130} The \textit{Whelan} court thus reached a position in seeming conflict with the results in \textit{Synercom}.

Recognizing this discrepancy, the \textit{Whelan} court discussed \textit{Synercom} and its results.\textsuperscript{132} Starting with \textit{Synercom}'s "powerful rhetorical question: If sequencing and ordering is expression, what separable idea is expressed?",\textsuperscript{133} the \textit{Whelan} court first examined what it perceived to be an underlying premise of \textit{Synercom}. "[T]he premise that there was a difference between the copyrightability of sequence and form in the computer context and in any other context, we think . . . is incorrect."\textsuperscript{134} The court then pointed out that Congress, despite its awareness of the "novel set of issues and problems for copyright law" posed by computer programs,\textsuperscript{135} did not make any special provisions for "ordering and

\begin{itemize}
\item \textsuperscript{126} Id. In fact, the court's concern for protecting this economic value of the programmer's efforts drove the decision on the path of requiring that "Look and Feel" be a protected element of the work.
\item \textsuperscript{127} 17 U.S.C. § 101 (1988). Copyright law protects only certain works which are the expression of an author.
\item \textsuperscript{128} See supra text accompanying notes 18-21 and 86-87.
\item \textsuperscript{129} See supra note 105 concerning the court's interchangeable usage of sequence, order and structure.
\item \textsuperscript{130} See supra text accompanying notes 60-64.
\item \textsuperscript{131} See supra text accompanying notes 60-64.
\item \textsuperscript{132} \textit{Whelan II}, 797 F.2d at 1239-1239.
\item \textsuperscript{133} \textit{Whelan II}, 797 F.2d at 1239.
\item \textsuperscript{134} Id. at 1240.
\item \textsuperscript{135} The 1976 and 1980 changes to the Copyright Act were in large part a result of the Report of the National Commission on New Technological Uses of Copyrighted Works (CONTU). The commission's recommendations were accepted almost verbatim into the Copyright Act without Congressional debate. The \textit{Whelan} court rejected the CONTU report as a surrogate legislative history because "the CONTU Report is not binding on us in this case." This conclusion was based on the courts determination that the only section of the Copyright Act applicable to this case was Section 102(b), to which the CONTU Report recommended and Congress made no changes. The court also rejected
\end{itemize}
sequencing” in the computer context. Thus, the court held that it had just answered Synercom’s question. The idea was “the efficient organization of a dental laboratory.” Then, because there are many different programs which may be expressions of this idea, “the structure [of any particular program] is not a necessary incident to that idea.”

Having “dispatched” the difficult theoretical question, the court now addressed the second part of the test for proof of copying by use of circumstantial evidence, inquiring “whether there was a sufficient evidence of substantial similarity between the structures of the two programs.”

In addressing this question, the court questioned whether the substantial similarity test would even be the appropriate test for copyright infringement of a computer program that was not literally copied. The Court of Appeals affirmed the trial court’s affirmative answer.

Again, reaching into copyright case archives, the Whelan court looked to a series of audio-visual copyright infringement cases. Based on these cases, the court decided that in a non-fiction literary work, substantial similarity of an infringing work with the original work, combined with access to the original work, was sufficient to prove copying.
erring these cases as providing a sufficient basis for the use of the substantial similarity test in this *res novo* situation, the court adopted the comprehensive non-literal similarity test from audio-visual works cases.\footnote{145}

In this test, the "comprehensive non-literal similarity ['means] a similarity not just as to a particular line or paragraph or other minor segment, but [that] fundamental essence or structure of one work is duplicated in another."\footnote{146} This test, drawn from *Roth Greeting Cards v. United Cards Co.*,\footnote{147} was referred to in *Sid & Marty Krofft Television Productions, Inc. v. McDonald's Corp.*\footnote{148} as "total look and feel" when describing the similarity between the H.R. Pufnstuff characters and the McDonaldLand characters, especially Mayor McCheese and H. R. Pufnstuff.\footnote{149}

Under the facts of *Whelan*, the Court of Appeals focused nominally upon three aspects of the program in order to assess the degree of comprehensive non-literal similarity: the file structures, the screen outputs, and five subroutines.\footnote{150} An examination of the significance of these three entities helps to shed some light on the court’s efforts to compare the degree of comprehensive non-literal similarity.

A file structure is the definition of the organization of the stored data selected by the programmer. Examples in a dental laboratory program might be patient files, diagnosis code files, service code files, and activity files. Each file structure is designed by the programmer in consultation with the client and generally is a unique expression of the programmer’s decisions on data organization.

That two programs would have the same file structure by accident is improbable. That a programmer could create an identical file structure to that of an existing program, without having access to the original source code, is very likely. In most cases, the file structure is easily made apparent by keying in some known data and then observing the

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One might note with some interest that the court would reach to *audio-visual* cases to resolve a question ostensibly relating to a *literary work*, when there was a large case law extant on the subject of literary work copyright infringement cases. This may be an indication, as some critics of computer copyright cases have contended, that copyright is simply not the proper means of protection for computer programs, without doing a serious injustice to the law and the notion of protected works.

145. Twentieth Century-Fox Film Corp. v. MCA, Inc., 715 F.2d 1327 (9th Cir. 1983) (13 alleged distinctive plot similarities between *Battle Star Galactica* and *Star Wars* may be a basis for finding a copyright violation); Sid & Marty Krofft Prods., Inc. v. McDonald's Corp., 562 F.2d 1157 (9th Cir. 1977). *Whelan II*, 797 F.2d at 1234.


147. 429 F.2d 1106 (9th Cir. 1970).

148. 562 F.2d 1157 (9th Cir. 1977).

149. Id. at 1166.

150. *Whelan II*, 797 F.2d at 1228.
resultant data file. From this observation the same data file structure can be created without any knowledge of the original program that produced the data file. In fact, this same technique is commonly used by programmers wishing to make their own program compatible with some other program or, as was the case in Synercom, wishing to create a conversion program that takes as its input data the data from an existing data file.

Thus, the similarity of the file structures between the Dentalab and Dentcom programs is only of legal significance because Rand had access to the source code.\(^{151}\) Access to the source code inferentially raised the presumption that Rand "copied" the file structures. The expert evidence offered by the defendants did not in any way refute this presumption. Instead, the defendants made their stand on the issue that the file structures, analogous to blank forms, were not copyrightable expressions under Baker or Section 102(b) of the Act. The court rejected this argument based upon the cases that held that "blank forms may be copyrighted if they are sufficiently innovative that their arrangement of information is itself informative."\(^{152}\)

However, in an interesting aside, the Court of Appeals noted that the testimony of Mr. Hess bore the seeds of an argument that "there were in fact few possible, efficient, file structures, and that the similarity in the programs' file structures was therefore neither surprising nor probative."\(^{153}\) The court then opined that "[h]ad defendants offered more evidence to support their position, our answer might have been different."\(^{154}\)

The court then turned its attention to the similarity in the screen outputs. The court conceded immediately that screen outputs are audiovisual works, that they are covered by different provisions of copyright law from literary works, and that Whelan was not alleging any infringement with respect to the screen outputs. Without making any reference to the fact that the four copyright certificates covered things other than the screen outputs, and notwithstanding the lack of any copyright claim on the screens, the court notes that the screen outputs would be relevant as circumstantial evidence of copying.

Recognizing the Federal Rules of Evidence 401/403\(^{155}\) relevancy probative value question involved in admitting evidence of the screen out-

\(^{151}\) See supra note 95 and accompanying text.
\(^{152}\) Whelan II, 797 F.2d at 1243.
\(^{153}\) Id. at 1243 n.43 (emphasis added).
\(^{154}\) Id. (emphasis added).
\(^{155}\) Fed. R. of Evid. 401 provides:

"Relevant Evidence" means evidence having any tendency to make the existence of any fact that is of consequence to the determination of the
puts, the court stated that "[t]he screen outputs must bear some relation to the underlying program . . . . [and] therefore [pass] the low admissibility threshold."156

The court recognized that the real danger of allowing this form of evidence to be admitted was the possibility of unfair prejudice.

"[T]he portions of the program that relate to the screen outputs are often so small a part of the full program, that they might say very little about the underlying program. . . . [B]ecause the screen outputs are vivid and easily understood (at least as compared with the obscure details of computer programs), they might have a disproportionate influence on the trier of fact."157

After acknowledging the "force" of this observation, the court points out that the defendants did not object, nor could the court find any objections in the record, to admission of testimony about screen similarities.158 Applying the plain error rule, the court determined the objection to have been waived.159 Then, giving substantial deference in the review of the trial court's admission of evidence relating to the similarities in the screen outputs, the appellate court found that the probative value of this evidence outweighed its prejudicial effect, especially since the defendants could "easily explain their (the screens') limited probative value."160

In retrospect, one must question whether or not the Court of Appeals could be convinced by its own argument as to whether or not the screens were unduly prejudicial. There was no jury in the trial. The trial court

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action more probable or less probable than it would be without the evidence.

Fed. R. of Evid. 403 provides in relevant part:

Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, . . .

156. Whelan II, 797 F.2d at 1244.
157. Id. at 1245.
158. Id.
159. Id. In dicta after this conclusion, the court decides that the "[s]creen outputs are not so enticing that a trier of fact could not evaluate them rationally and with a cool head." Id.

Yet, one cannot help but note the emphasis that pervades both the trial court and the appellate court decisions on the lack of defendant's expert ever observing the program's operation (i.e., looking at the screen outputs). This observation coupled with statements by the court of the difficulty of understanding "details" of computer program and the difficulty in weighing the expert testimony on this subject might lead one to consider how well the court was able to avoid succumbing to the very prejudice that it denied.160 Id.
expressed the difficulty of assessing the credibility of the experts provided by both sides. The trial court placed heavy emphasis on the screens’ similarity as circumstantial proof of “copying” and totally discounted defendant’s testimony as to similarities of the two source code programs, the place where actual copying would be most aptly shown, because “[h]e never observed the computer in operation nor viewed the various screens.”

The court next considered the similarity in five program “subroutines” contained in the programs. The trial court noted that “five particularly important ‘subroutines’ within both programs—order entry, accounts receivable, end of day procedure, and end of month procedure—performed almost identically in both programs.” The appellate court, on the other hand, simply responded to the defendant’s complaint that to decide the issue of substantial similarity by looking at only a small portion of the complete work was erroneous and that the substantial similarity inquiry is a qualitative rather than quantitative inquiry. The evidence in the trial court presented no material issue as to the nature or substance of the screens, except Dr. Moore’s observations as to the similarity in the flow of the information.

162. Whelan II, 797 F.2d at 1245. In Whelan II, id. at 1230 n.5, the court states that “[t]echnically speaking, modules and subroutines are slightly different. . . . For present purposes, however, they may be used synonymously.” This comment by the court viewed in light of the footnote 1 comment equating the terms structure, sequence, and organization (see supra note 105) evinces an attempt by this court to simplify the issues at hand to a lowest possible denominator. As the discussion in Appendix A, infra, suggests, there is a price to be paid when the law is applied with precision to terms of art absent precision in their use.

A program module is a functional division of a program made by the program designer for reasons of memory allocation, performance considerations, and logical division of the functions which the program performs on a macro level. A subroutine, on the other hand, is a small portion of program code, usually less than 50 lines of commands, that performs a very specific function of the program, and is called from a large number of locations within all the modules. Its purpose, aside from aiding the programmer to create a logical, concise, and reliable program, is to avoid the repetition of an algorithm in possibly hundreds of places in the code. An example of a module is Accounts Receivable. An example of a subroutine is the computation of sales tax.

The granularity of the court’s observations regarding similarity by measure of the presence of these five “subroutines” is another reflection of the court’s inability to grasp the nature of the thing that was “copied.” The court’s factual finding of similarity based on these five “subroutines” is comparable to a finding that the design of a Ford Pinto infringes upon that of a Jaguar XJ-6 because each vehicle has four wheels, a steering wheel, and an engine in the front compartment. Doubtless, there are hundreds if not thousands of business type computer programs which by and large have these very few “subroutines,” or more properly called program modules. One cannot obtain any reasonable inference of copying by comparison at such gross levels.

163. Whelan II, 797 F.2d at 1228.
164. Id. at 1246.
The court noted in passing that it was "not convinced that progress in computer technology or technique" would be inhibited by the imposition of liability based upon similarity of "Look and Feel" because "the progress in computer technology . . . is [not] quantitatively different from progress in other science and arts." 165

One might ponder if this negative policy statement by which the court justified the use of "Look and Feel" as a means of finding copyright infringement was in fact correct. There are few arts or sciences that have grown at the rate that computer technology has in the last 30 years. It is not unreasonable, in this author's opinion, to state that the rapid progress that has occurred in the last thirty years in the computer industry is probably indirectly, if not directly, responsible for the progress made in the few other fields that have kept pace with the progress with computer technology. If true, even in part, then the policy basis upon which the Whelan court justified its expansive reading of the Act risks creating a "chilling" effect on the industry that is driving the pace of technology and science today. Chilling the industry surely would be a complete contradiction to the express Article I, Section 8, Clause 8 mandate "[t]o promote the progress of science."

To declare sequence and order a copyrightable element of a computer program seems to deny the purpose of the promotion of public good via copyright. It would instantly result in a virtual monopoly to the first person who creates a new but more efficient program. It would force other program authors to use a less efficient method in their future programs and would subject the users of such programs to the unending nightmare of guaranteed program and data incompatibility at a loss of untold man-hours and dollars. It is inconceivable that the framers of the Constitution, having spent the twenty years before the writing of the Constitution creating state copyright and patent laws, would have intended such an absurd result from a clause inserted for the purpose of promoting the advancement of science and the arts.

So where is the law after Whelan? We have Whelan that tells us structure, sequence, and organization are copyrightable expressions of an idea, or at the very least, useful as strong circumstantial evidence of copyright infringement. On the other hand, the decision in Synercom still maintains the idea/expression distinction as codified in Section 102(b) of the Act. The United States Supreme Court has yet to take up a case with a related issue. Thus, the question of whether either the Whelan or Synercom rationale would prevail or if there may be another rationale that can promote the proper balance of the conflicting interests still awaits a definitive answer.

165. Id. at 1238. See infra text accompanying note 179.
D. Some Other Cases

A brief look at some of the other cases involving computer program copyright questions is in order at this point.

In *Apple Computer, Inc. v. Franklin Computer Corp.*, Franklin was enjoined from selling computers which contained Read Only Memories (ROMs) that were held to be copies of Apple's copyrighted programs based upon virtual identity of the object code in the ROMs. *Franklin did not dispute that it had literally copied the programs.*

In *Broderbund Software, Inc. v. Unison World*, infringement of an audio-visual copyright was found. Unison had negotiated with Broderbund to develop a PC version of a Broderbund program. *Unison had access to the source code* and worked on the program until negotiations terminated. The Unison programmer was instructed to continue the project but to add enhancements. Although ordered to stop copying the original program, he was not ordered to delete the portion already produced as a result of copying the Broderbund program.

In *Data East USA, Inc. v. EPYX, Inc.*, a finding of copyright infringement was reversed by the Court of Appeals in a case involving competing video karate games. The court reversed because the plaintiff failed to prove access to the copyrighted work by the defendant. In addition, the court found that *if there was substantial similarity, this similarity resulted from the idea of karate which was inseparable from the expression.*

In *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, the court found the defendant had infringed on the copyright of Digital's program status screen. Softklone's version of this communication program was purposefully designed based upon Digital's program after the purchase of a commercially available version of the original program and consultations with their attorney to determine the portions of the original work that were copyrightable and thus, protected.


168. 862 F.2d 205 (9th Cir. 1988).


171. This case, among those where the defendant exhibited good faith, comes the closest to being an example of a court misapplying the "substantial similarity" test to achieve a "desired economic" result by using copyright law to achieve the exclusive protection of the plaintiff's economic interests. See infra text accompanying notes 173-74.
In *Plains Cotton Co-Op v. Goodpasture Computer Services, Inc.*, the court found no infringement because the "market" factor played a significant role in determining the sequence and organization of the program. It did not go unnoticed by the court that Goodpasture made former Plains Cotton employees sign employment contracts promising not to breach the confidences of their prior employer. In addition, Goodpasture fired one employee who breached this promise and then voluntarily and promptly expunged a portion of Goodpasture's competing program derived from this employee's breach. *Plains Cotton Co-op* and *Data-East*, as well as the dicta in *Whelan* relating to the arguments the court felt could have been raised as to the necessity for similarity in the file structures, suggest that the courts are indeed using the textual ambiguities and the lack of express Congressional intent in its adoption of the CONTU recommendations to protect the valid economic interests of authors of commercial computer programs from bad faith use of protected works. The courts in *Plains Cotton Co-op* and *Data East* could easily have used a *Whelan* type analysis and found the defendants liable for infringement. In all of the other cases cited, which cover a large portion of the computer cases decided to date, the defendants were or appeared to be in bad faith.

The exception to this observation is *Digital Communications Associates*, in which the court found infringement despite the defendant's good faith efforts to avoid this problem by seeking legal advice in advance. It is notable that Softklone's computer program, a modem communications program, is alive and well in the 1990s, after creating a status screen display that did not infringe on Digital's. The fact that Softklone could rebound from this legal setback and continue with a commercially viable product suggests that the status screen idea Softklone imitated was not one of those fundamental ideas that occur from time-to-time and that simply cannot be competed with in any other way than by adoption. Were this not the case, then Digital's monopoly on this type of screen would have precluded Softklone's success in this market.

II. Conclusion

The Copyright Act creates a statutory intellectual property misappropriation "tort." Not unlike the common law of torts, the Act serves two basic purposes in its protective aspects. First, the Act's

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172. 807 F.2d 1256 (5th Cir. 1987). See, also, supra note 71 for some other thoughts on *Plains Cotton Co-op*.

173. See supra text accompanying notes 152-54.


175. The Act also serves the purpose of protecting the author's economic interest in his protected work by granting to him a limited-time monopoly on the reproduction of the work. 17 U.S.C. § 301 (1988).
penalties for infringement serve the function of deterrence from participation in conduct that is deemed harmful to the interests of society as a whole and against public policy. By protecting the author's limited monopoly to reproduce the work, the Act effectuates the promotion of the public good that results from the advancement of the arts and sciences.\textsuperscript{176} The second purpose of the Act is to make reparations for the harm suffered by the author as a result of the actions of the infringer.\textsuperscript{177}

Congress' express concern in the Act is the protection of the author's rights. However, Congress implemented the Act as its expression of the mandate of Article I, Section 8, Clause 8 of the United States Constitution, which gives Congress the power "[t]o promote the Progress of Science and Useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

The focus of the granted power is "[t]o promote the Progress of Science and the Useful Arts." This is an expression of the desire of the Framers, based in large part in the state copyright struggles that preceded the Constitution, to insure that the art and science necessary for the growth of a new nation would be properly stimulated by economic protection.\textsuperscript{178} By framing the underlying purpose in the guise of protection for of the author's rights, Congress must have intended to incorporate the concept that a violation that harms the public good is the harm which triggers legal liability under the Act.

The tension between these two purposes, especially since the former is effectuated by enforcing the latter, becomes most acute in the "Look and Feel" cases where the alleged infringer may incur liability because he misjudged the "penumbra" of the copyright of the original work.\textsuperscript{179} If there is a place for "Look and Feel" in such cases, the question arises as to exactly what role it should play in the determination of whether there has been an infringement.

\textit{Whelan} and its progeny strongly suggest that the "Look and Feel" aspect of a computer program is a copyrightable element of the program. \textit{Synercom, Plains-Cotton}, and \textit{Data-East} take a narrower view, suggesting that this aspect of a computer program may be copyrightable, but only if the idea and expression are not merged. In fact, each of these cases has really dealt with the issues of the value to be given to evidence of

\begin{itemize}
\item \textsuperscript{176} U.S. Const. Art. I § 8 cl. 8.
\item \textsuperscript{177} 17 U.S.C. § 501 (1988).
\item \textsuperscript{178} G. Curtis, Treatise on the Law of Copyright 27-82 (1847); B. Bugbee, Genesis of American Patent and Copyright Law 12 (1967).
\end{itemize}
a substantial similarity of the "Look and Feel" of the two programs in question and the proper allocation of the burden of persuasion. A careful consideration of these two issues suggests an alternative use for "Look and Feel."

Since the *prima facie* case\(^{180}\) for copyright infringement and the tests for the different stages in the litigation are jurisprudentially derived, the courts should not follow the *Whelan* rationale of the *end sought* test. Instead, upon findings that the alleged infringer had access to the protected work and that there are substantial similarities in the two works, the burden of persuasion as to the issue of infringement should shift to the defendant. He should be allowed to carry his burden by introducing credible evidence that the similarity was not the result of any proscribed activity. Among the possible defenses that might be raised as proof of this assertion are the *Plains Cotton Co-op* "market demanded" similar factors defense or the *Synercom/Section 102(b)/Data East* inseparability of idea and expression defense. Or, the defendant might simply provide proof that the program in question was developed in a "clean room" environment in which access to the original protected work was simply not possible.\(^ {181}\) Such a shifting of the burden of persuasion avoids the strained abstractions which *Whelan* and *Synercom* exemplify, and fairly burdens the producer of a "similar work" to prove the independent derivation of his product.

This proposed shifting of the burden of persuasion comports with the realities of requiring the plaintiff to make a *prima facie* case against the defendant and then to place the burden upon the party who has exclusive control of any exculpatory evidence. Additionally, this process avoids placing upon the plaintiff the double burden of making his *prima facie* case against the defendant and then having to disprove all possible "good defenses" that the defendant might simply plead if the burden remains on the plaintiff. This shifting accommodates the underlying purposes of the Act in that it protects the author's rights while avoiding a copyright "monopoly" by elevating the "Look and Feel" to the status of copyright material.

The result is a fair balance of the rights of an author of a computer program to the economic benefits of his work, while allowing the industry to continue to push forward the frontiers of science by building on the ideas of yesterday. Restoration of this balance should, over a period of

\(^{180}\) See supra text accompanying notes 18-21.

\(^{181}\) The "clean room" defense is only likely to be successful in those rare cases where the program is performing functions that are so fundamental or so restricted by the computer programming language that there are very few ways to accomplish the task efficiently. Such a defense has been suggested in a case involving an alleged infringement of the internal program of a computer chip itself. NEC Corp. v. Intel Corp., (N.D. Cal. Feb. 6, 1988) (1989 WL 67634).
time, result in a reduction in litigation in this area of the law as the
cases define the allowable uses by programmers of portions of another's
program. This same development of a series of bright line 'rules' as to
the allowable degree of use will remove the current uncertainty in com-
puter program development, again resulting in the maximum contribution
of the industry in the promotion of science and the arts.

Would the decisions in Whelan or Synercom be any different under
this analysis? In all probability, no. However, the difficult question of
deciding whether or not some user perceptible manifestation of the
program is a copyrightable element is avoided by using the showing of
a substantial similarity in the "Look and Feel" to simply shift the
burden of persuasion as described. The clear delineation of the criteria
that triggers the defendant's obligation to prove his exculpation will
result in fewer suits and in simpler litigation that does not need to resort
to arcane abstractions to answer the question of whether one has mis-
appropriated the expression of another.
POSTSCRIPT

On June 28, 1990, Judge Robert E. Keeton rendered his decision in Lotus Development Corp. v. Paperback Software International.182 This postscript addresses only some brief comments on the opinion and a more complete analysis will await another day. The crucial aspect of the opinion is its thoroughness of analysis, its adoption of the Whelan rationale with some modifications and its express rejection of the Synercom rationale.

In a lengthy and scholarly opinion, Judge Keeton considers the statutory language of the 1976 and 1980 amendments to the Copyright Act, the CONTU Report, legislative intent, and policy derived from consideration of the grant of power to Congress in Article I, section 8, clause 8.183 He reiterated the conclusion that Congress intended to incorporate the idea-expression distinction in the Act,' as amended.184 He also concluded that the intention of Congress was to protect more than the literal expression of a computer program, i.e. the source and object code.185

Judge Keeton derives a test that is a variation of the Whelan unique expression test.186 However, Judge Keeton adds a gloss to the test in an attempt to distinguish an idea that is inseparable from the expression of the idea. "When a particular expression goes no farther than the obvious, it is inseparable from the idea itself. Protecting an expression of this limited kind would effectively amount to protection of the idea . . . ."187 With no allusions to patent law, in which non-obviousness is a statutory requirement, Judge Keeton has conflated obviousness with inseparability of idea and expression, thereby adding a jurisprudential requirement for copyrightability of a computer program. Judge Keeton acknowledges the potential harm of software monopolies,188 but under the analysis he provides, it will be the rare program that cannot meet his test of copyrightability.

In addition, Judge Keeton faced the same problem in Lotus that the court faced in Whelan, in that the disputed element, here the user interface, was not the subject of a copyright registration certificate.189 Recognizing this problem, Judge Keeton, after finding that the user-interface in this case was copyrightable, then found, of necessity, that the copyright certificates covered this element.

183. Id. at 45-53.
184. Id. at 53-54.
185. Id. at 46.
186. Id. at 59-61.
187. Id. at 58-59.
188. Id. at 52-53.
189. Id. at 79-80.
However, in doing so, he rejected the notion the copyright protection of a computer program extended to the screen displays, per se. "[C]opying of a program's screen displays, without evidence of copying of the program's source code, object code, sequence, organization, or structure, does not state a claim of infringement."190

The decision is troubling in that it continues, in this author's opinion, imprudently to pave the road to a jurisprudential rule that grants effective software monopolies. The decision is encouraging in that the insightful analysis may give the next court a clue as to the proper method to balance the competing interest of "public good" and protection of authors' rights.

Richard D. Moreno

190. Id. at 80.
EXAMPLE OF FORTRAN INPUT CARD FORMAT

The first sixteen characters of a card image might appear as follows:

100ABCDEFG123.12X34xyz1e-10

It is unlikely that the lay observer would derive any useful information from this seemingly random combination of letters and numbers.

However, to the trained observer, especially one who had access to the user manuals for the program as did EDI, the input format card is clearly a series of definitions as follows:

3I - a three character length Integer numeric field.
7H - a seven character length Alphanumeric (Hollerith) field.
5F2 - a 7 character Floating-point numeric field with two digits to the right of the decimal point.
1I—a one character length Integer numeric field.
3H—a three character length Alphanumeric (Hollerith) field.
4E2—a 6 character base-10 Exponentiated numeric field with a two digit exponent.

These specifications define that portion of the sample input card format for each of these variable fields regardless of the value the user wishes to enter. The defining information is derived independently of the actual numbers or letters used on the card.
"SINGLE REGISTRATION RULE"

This is not to say that the user perceptible manifestations of a computer program may not be copyrighted. In fact, since Whelan, the Copyright Office has issued regulations for the so-called "single-registration" rule that allows a single registration to cover all copyrightable aspects of a computer program. 32 C.F.R. Sec. 202, effective June 10, 1988; 53 F.R. 21817-01 (June 10, 1988) (emphasis added).

This interesting language, "all copyrightable aspects," could open much room for litigation over what aspects of a program may be copyrightable, an inquiry that leads one immediately into the idea-expression dichotomy. This new rule, however, is a factor only if the courts give the Copyright Office regulation deference in the copyright infringement cases.

EXCERPTS FROM THE PROMULGATION OF THE "SINGLE REGISTRATION RULE"

In the promulgation of the final rule by the Office of Copyright in 53 F.R. 21817-01, the following comments were made as to the relationship of the single registration rule and current jurisprudence:

Most claimants, consistent with Copyright Office regulations, have made only one registration for the computer program and have assumed that the registration covers any copyrightable authorship in the screen displays, without any need for a separate registration. The Copyright Office agrees with this interpretation of the regulations and registration practices.

Judicial decisions do not yet lend clear guidance on the copyrightability of screen displays (other than videogame displays), apart from the computer program. . . . The Softiklone decision, if followed would seem to require a separate claim to copyright in screen displays in order to enjoy copyright protection. This decision seemed to cast doubt on the scope of copyright in computer programs where no separate registration was made for the screen displays.

The Office finds that in the interest of a clear, consistent public record, our regulation practices should discourage piece-meal registration of parts of a work . . . .

It is clear from the Copyright Office's explanation of the purpose of the single-registration rule that the Office is making a regulatory ruling that is not intended to preclude the decision by a court as to
what aspects of the work submitted under the single registration rule will ultimately be found to be copyrightable aspects of the work. The rule is clearly stated for purposes of administrative ease and is not related to the ongoing debate over the nature of order and sequence as copyrightable elements.