

## **QUANTIFYING ORIGINALITY: A LOGICAL ANALYSIS FOR DETERMINING SUBSTANTIAL SIMILARITY IN COMPUTER SOFTWARE COPYRIGHT INFRINGEMENT ACTIONS**

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PLAINTIFF: "They stole my program!"

JUDGE: "But the programs are not identical."

DEFENDANT: "Your honor, we used only the plaintiff's ideas and not their expressions in developing program Y."

PLAINTIFF: "That's not true! Your program and screens are substantially similar to mine and infringe my copyright in program X."

And so another judge finds herself faced with the impossibly vague task of having to decide whether program Y is so similar to program X that a finding of copyright infringement is warranted.

Building on the foundation set in the first article of this series, this article presents a logical analysis for determining substantial similarity in computer software copyright infringement actions. The first article in the series provides a general survey of the concepts of the technologies of computers and software. [n.1] Later articles in the series will concern other legal issues involved in intellectual property protection for computer software.

### \*270 I. INTRODUCTION

Although the area of software copyright law has received a wealth of scholarly attention, [n.2] important principles of copyright law often appear to be overlooked. One such principle is that the more original a copyrighted work is, the broader the scope of protection will be for the work. While courts in resolving questions of copyrightable subject matter have considered all software collectively, [n.3] issues of infringement and scope of protection require that software programs be examined individually and that the

amount of originality in the copyrighted program be quantified. It is not possible to simply state a single scope of copyright protection for all software in one statement. The scope of protection varies with the originality in the copyrighted work. The determination of the proper scope of copyright protection has become increasingly important as software copyright law enters a new era of determining the proper scope of protection for computer/user interfaces.

This article presents an analytical tool which respects the varying degrees of originality in computer software in determining copyright infringement of computer programs. [n.4] This section provides a brief overview of the copyrightability of computer software, registration of computer software copyrights, and the requirements for bringing an infringement action.

### \*271 Copyrightability

Computer software is copyrightable subject matter irrespective of whether it is in the form of source code, [n.5] object code, [n.6] or executable code, [n.7] \*272 and irrespective of whether it is fixed on paper, [n.8] on a disk, [n.9] or in an integrated circuit chip. [n.10] Furthermore the protection extends to all other forms of the program which contain the same expressive elements, e.g., translations into other programming languages [n.11] and versions made to run on different computers. [n.12]

\*273 The audio-visual outputs generated in the execution of computer programs are also copyrightable. [n.13] These include the images and sounds generated in video arcade games [n.14] and computer/user interfaces such as screen displays. [n.15]

### Registration

Computer software program code can be registered in the Copyright Office of the Library of Congress (the Copyright Office) as a literary work. [n.16] Following precedents set by numerous courts concerning the copyrightability of video games, [n.17] the Copyright Office allows registration of screen displays as audiovisual works. [n.18]

On June 3, 1988 the Copyright Office issued a Notice of Registration Decision stating that "all copyrightable expression in a single work owned by the same claimant and embodied in a computer program . . . is considered a single work and should be registered on a single application form." [n.19] This registration decision allows a copyright registration \*274 for a program code also to serve as a registration for screen displays generated in executing the program code. The Notice of Registration Decision states as follows:

The Office has decided generally to require that all copyrightable expression embodied in a computer program, including computer screen displays, and owned by the same claimant, be registered on a single application form . . . The Office finds that in the

interest of a clear, consistent public record, our registration practices should discourage piecemeal registration of parts of works. [n.20] (emphasis added)

In *Manufacturers Technologies, Inc. v. CAMS, Inc.* the United States District Court for the District of Connecticut specifically recognized this procedure:

This Court adopts [the approach] to treat the single registration of the computer program as accomplishing two interrelated yet distinct registrations; one of the program itself and one of the screen displays or user interface of that program, to the extent that each contains copyrightable subject matter. This approach creates a legal fiction of two separate registrations. [n.21]

In *Lotus Development Corp. v. Paperback Software International*, [n.22] the United States District Court for the District of Massachusetts noted that "when Lotus attempted to register separately the screen displays of 1-2-3 as an audiovisual work, the Copyright Office denied the registration." [n.23] The court in *Lotus* accordingly held that "Lotus properly registered 1-2-3 for copyright protection," [n.24] and that "defendants admitted copying elements which the court held to be protected non-literal elements of expression in the user interface and the underlying computer program." [n.25]

The 1988 Notice of Registration Decision has added the need for clarity and predictability in computer screen infringement actions to the urgent need for clarity in software code infringement actions.

## Infringement

For a party to prevail in an action alleging copyright infringement, the party must prove ownership of the copyright and that the infringer violated an exclusive right of the copyright owner. [n.26] The exclusive right most commonly alleged to have been violated is the exclusive right to reproduce the work, i.e., copying. [n.27] Because it is rarely possible to prove copying by direct evidence, [n.28] indirect evidence of copying is usually required. Through either direct or indirect evidence the plaintiff must establish that the defendant had access to the infringed work and that there is a substantial similarity between the plaintiff's work and the infringing work. [n.29]

This article focuses on the determination of substantial similarity. In the words of Judge Learned Hand, "[t]he test for infringement of copyright is of necessity vague." [n.30] And as Melville Nimmer wrote,

the determination of the extent of similarity which will constitute a substantial and hence infringing similarity presents one of the most difficult questions of copyright law, and one which is least susceptible of helpful generalizations . . . . Somewhere between the one extreme of no similarity and the other of complete and literal similarity lies the line marking off the boundaries of "substantial similarity." Judge Learned Hand has said that this line "wherever it is drawn will seem arbitrary" [*Nichols v. Universal Pictures Co.*, 45 F.2d 119, 122 (2d Cir. 1930)] [n.31]

This does not mean that the line drawn will be arbitrary. The fact that the test for substantial similarity is of necessity vague does not mean that courts are free to find for whichever party they happen to like and do so using the "vague tests" for substantial similarity. The danger here is that although our open market system requires the existence of close competitors to keep prices as low as possible, once a leading company brings a following (imitating) company into court, there is a tendency to view the competitor as an ugly copy- cat who has contributed nothing the progress of science and the useful arts. [n.32] The Supreme Court, however, has unanimously stated that "the efficient operation of the federal patent system depends upon substantially free trade in publicly known, unpatented design and utilitarian conceptions." [n.33] It should also be kept in mind that, since ideas, processes and systems are not protectable by copyright, [n.34] the competitor is likely to have contributed to helping keep the leader's prices at a fair level.

The fact that the test of substantial similarity is not very susceptible to helpful generalizations does not mean that there are no helpful generalizations. The most important generalization stressed in this article is "the scope of copyright protection in a given work must be commensurate with the amount of originality in the work."

## II. THE IMPORTANCE OF ORIGINALITY

The judge in the situation presented at the beginning of this article might look at whether there are other computer programs available which perform the same or a similar task that programs X and Y both perform. If there are other such programs and Y's happens to be the one which is closest to the plaintiff's then the judge is likely to conclude that the task is the idea and that the defendant took the plaintiff's expression. However, program Y is likely to be more similar than a third program, say program Z, to program X because the plaintiff chose to sue that defendant and not some other (third) party. Although this approach is often employed, it is very dangerous for it begins with the conclusive determination of the idea/expression dichotomy. Prior to determining the idea/expression dichotomy, originality must be quantified.

This section examines the amount of originality required for registration of copyrights, considers the problems posed by functionality, and concludes with the presentation of an analytical tool for determining substantial similarity for computer software. The analytical tool differs from current tests for determining substantial similarity in that it requires that originality be quantified. The next section discusses current tests and underscores the importance of quantifying originality.

### \*277 Originality Required for Registration

The Copyright Act provides that "[c]opyright protection subsists . . . in original works of authorship." [n.35] The word "original" in reference to a copyrighted work means that the

work "owes its origin" to the author. [n.36] Not only is there no requirement that the work be novel, [n.37] all that is needed is that "the 'author' contributed . . . something recognizably 'his own.'" [n.38] This test of originality has been characterized as "modest," [n.39] "minimal," [n.40] and as establishing a "low threshold." [n.41]

The Supreme Court, however, recently held in *Feist Publications, Inc. v. Rural Telephone Serv. Co., Inc.* [n.42] that the requirement of originality in factual compilations goes beyond mere mechanical or routine selection and arrangement, and requires the existence of intellectual production of thought and conception. [n.43] Although the case specifically addresses telephone directory white pages of a wide geographic distribution, the impact that this decision will have upon copyright protection for databases is not clear.

The Copyright Office does not make determinations of scope of protection. When the Copyright Office issued the 1988 Notice of Registration Decision, the Office acknowledged that it is sympathetic to users \*278 who may have difficulty in determining the scope of copyright in computer software, but stated that the registration practices of the Copyright Office cannot precisely determine the scope of protection in any work. [n.44] The scope of protection for individual copyrighted works must be determined by courts. [n.45]

## Functionality

The Copyright Act of 1976 defines the term "useful article" as "an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information." [n.46] The only category of copyrightable subject matter that specifically refers to "useful articles" in the Copyright Act is the category of "pictorial, graphic, and sculptural works." [n.47] The Copyright Act provides that:

Such works shall include works of artistic craftsmanship insofar as their form but not their mechanical or utilitarian aspects are concerned; the design of a useful article, as defined in this section, shall be considered a pictorial, graphic, or sculptural work only if, and only to the extent that, such design incorporates pictorial, graphic, or sculptural features that can be identified separately from, and are capable of existing independently of, the utilitarian aspects of the article. [n.48] (emphasis added)

Thus, separability and independent existence is the test of whether a work of "applied art" is copyrightable. This test has been interpreted by the Second Circuit to require that the work be "conceptually" even if not "physically" separable from the utilitarian features. [n.49] However this interpretation has been limited; the same circuit also stated "if design elements reflect a merger of aesthetic and functional considerations, the artistic aspects of a work cannot be said to be conceptually separable from the utilitarian elements." [n.50] The court drew the line at \*279 "where design elements can be identified as reflecting the designer's artistic judgment exercised independently of functional influences, conceptual separability exists." [n.51]

The Third Circuit has held that a sculptural work is not a useful article if its sole utilitarian function is to portray the appearance of the article. [n.52] The court held that in such a situation a court need not analyze whether a work's utilitarian function is separable from the work's sculptural elements.

Although computer screens are the first audiovisual work to grapple with the "intrinsic utilitarian function" problem, computer software is not the first literary work to do so. [n.53] Literary works which merely convey information have long been a problem.

In 1879 The Supreme Court of the United States held in *Baker v. Selden* [n.54] that the exclusive property in a system of book-keeping cannot be claimed, under the law of copyright, by means of a book in which that system is explained. The Court came to the conclusion that "blank account-books are not the subject of copyright." [n.55] Although this ruling has been followed by many courts [n.56] and the Copyright Office has adopted \*280 the rule that blank forms are not copyrightable, [n.57] the holding has been roundly criticized. [n.58]

Most importantly, it must be noted that in *Baker* the plaintiff specifically sought, through copyright law, to preclude use of his bookkeeping system. The Court could have, and it has been argued should have, [n.59] put aside the patent versus copyright issues and held, through copyright infringement analysis, that the works were not substantially similar given that the defendant had not used substantially the same ruled lines and headings as appeared on the plaintiff's forms. [n.60]

Nonetheless, the Code of Federal Regulations now states in 37 C.F.R. 202.1(c) that works "which are designed for recording information and do not in themselves convey information are works not subject to copyright." [n.61] Decisions now turn on the nebulous distinction of whether a work in itself conveys information. [n.62] Much clarity could be gained by rephrasing the above issue as whether a work in itself contains elements (literal or non- literal) which owe their origin to the author and whether the defendant copied such elements.

\*281 Although it is clear that software is proper copyrightable subject matter as both a literary work and an audiovisual work, [n.63] the issue of scope of copyright protection for computer software must take into account the utilitarian function of computer programs and computer/user interfaces. The development of software copyright law will inevitably produce for computer software, a limitation similar to that provided by 17 U.S.C. 101 for pictorial, graphic, and sculptural works.

### An Analytical Tool

The following presents an analytical tool to aid in the determination of substantial similarity as between two computer programs, and to aid in the determination of scope of protection generally for specific computer programs. None of what is presented is new to the field of copyright law. Rather it is the application of long established principles of

copyright law to the technology of computer software in a conceptually orderly fashion that is the novelty of this tool.

The first step in the analysis is to inquire as to the amount of originality in the copyrighted work. It was stated above that for a work to meet the minimal originality requirement for copyright registration all that is needed is that "the author contributed . . . something recognizably his own." [n.64] This first step in the analysis returns to the question of originality but asks not whether there exists any originality (as did the question of copyrightability), but asks how much originality does the work contain? The Supreme Court defined originality in reference to a copyrighted work in 1884 as the extent to which the work "owes its origin to the author." [n.65]

Originality and the protection of originality are, in some respects, counter intuitive concepts in that often the real value (worth suing for) in a copyrighted work is directly related to the utilitarian features of the work, such as an efficient program. Ironically it is the non-utilitarian aspects (the portion of the work which owes its origin to the author and is clearly recognizable as his or her own), such as creative embellishments, which will receive the greatest protection. This is, however, the essence of copyright law. This is somewhat analogous to the situation where a company is considering various brand names for a new product. In trademark law a descriptive name that effectively describes a product is generally a much weaker trademark than a fanciful or arbitrary name \*282 which alone tells the purchaser nothing about the new product; eventually purchasers come to associate the fanciful or arbitrary name with that company's product. [n.66]

Originality must be quantified in some relative fashion. The varying degrees of originality which different computer programs and screens contain must be respected. It is not enough to simply say that a work has some originality (i.e., copyrightability) and then suddenly make a determination of overall substantial similarity of two programs. A relative quantification of originality must be made of the computer program and/or screens in question.

Computer programs and screens vary significantly in their amounts of originality. Computer programs, however, could look very much alike to one unfamiliar with "reading" program code. The danger here is that a court faced with determining substantial similarity of two programs might look only at the two programs in question and ignore the possibility that many other programs might also be strikingly similar to the plaintiff's. [n.67] To one unfamiliar with looking at program code, all program code might look alike. Thus the quantification of originality should be objective in the sense that originality should be judged in light of what is standard and common in a particular industry. If all of the plaintiff's competitors have works strikingly similar to both the plaintiff's and the defendant's then this is evidence which detracts from the originality of plaintiff's work. This objective test of originality is in contrast with the determination of originality for purposes of registration. For purposes of registration, the determination of originality should be subjective, relying predominantly on the word of the registrant.

The quantification of originality must exclude elements, both literal and non-literal, which are technically and practically necessary to achieve the function sought by the programmers. The more a program achieves the desired function in an original way, the more original is the program. For example, a very dry, straightforward and simple approach to a function is not as original as an approach which contributes something recognizably the author's. Expert testimony should be allowed for the quantification of originality.

\*283 New ideas pose a difficult problem with this step and must be addressed. Although a new idea is original in that the idea owes its origin to the author, copyright protection does not extend to the idea. Protection for the idea may or may not be available under the patent laws, but as far as copyright law is concerned the idea is in the public domain. The quantification of originality should not include ideas. The creator of a new idea who then expresses the idea in a very straightforward, dry, and purely functional way, should receive little or no protection under the copyright laws. This situation is, however, very rare and for that reason no attempt should be made to precisely and conclusively determine the line between the idea and the expression before originality is quantified. These rare cases generally arise when the technology is very new. [n.68]

\*284 Drawing on the analogy above to trademark law, this rare situation would be analogous to a trademark for a new kind of product (a product for which there is no generic name). If the producer of the product fails to give the product both a trademark (brand) name and a generic name, then the producing company stands at risk of eventually losing the trademark if the product is successful and there is no easy to use generic name available for competitors to call a similar product. [n.69] The trademark/copyright analogy relates the trademark with original expression, and the generic name with the idea.

Once a relative quantification of originality has been completed, then and only then can an inquiry be made as to the line between the idea and the expression. This determination should be conducted by the trier of fact viewing the similarities as an ordinary observer. The major weakness of initially skipping to the idea/expression question is that there is no referent. There is no reference from which to determine how detailed is the idea, nor is there a reference for determining how broad should be the scope of protection. By taking these questions in the reverse order, first quantifying originality, second determining the idea/expression line, and third determining the overall scope of protection, the following graph illustrates the logical analysis herein discussed.

TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT  
DISPLAYABLE  
TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT  
DISPLAYABLE

The graph emphasizes the fundamental principle that the scope of copyright protection in a given work must be commensurate with the \*285 amount of originality in the work.



Too often courts undertake to examine whether a work has any originality and base a finding of infringement on the issue of copyrightability, [n.70] or begin a substantial similarity analysis with the determination of the idea/expression dichotomy. [n.71] Substantial similarity alone is not the question. The issue must be qualified as substantial similarity of those elements which owe their origin to the author.

The relative quantification of originality directs one to a relative placement along the horizontal axis of the graph. Program C in the graph is an example of a program which is very high in originality; program A is very low in originality; and program B is relatively higher in originality than program A but lower in originality than program C. As can be seen from the graph, program C will be afforded the broadest scope of protection and program A will be afforded the least broad scope of protection. If a program has even less originality than program A, the scope of protection will be very narrow. In fact, for such a program, the defendant's program might need to be identical to the plaintiff's program to warrant a finding of infringement. Direct evidence of copying may even be required for infringement of works extremely low in originality.

The relative degree of scope of protection governs the placement of the idea/expression line. This is illustrated as the perimeters of the "protectable expression" circles. The more original a work, the broader is the protectable expression, and the more broadly should the idea be phrased. As Judge Learned Hand stated:

Upon any work . . . a great number of patterns of increasing generality will fit equally well, as more and more of the (elements of the work) [are] left out. The last may be no more than the most general statement of what the [work] is about . . . but there is a point in this series of abstractions where [the elements] are no longer protected since otherwise the [author] could prevent the use of his ideas. [n.72]

\*286 This "abstractions test" as it has come to be known, [n.73] recognizes that the idea/expression line can be drawn narrowly or broadly. There is, in fact, a series of idea/expression lines which can be applied to any work. In the graph these idea/expression lines are illustrated as circles. The difficulty lies in determining where the line is to be drawn for a given work, as this will determine whether the defendant is within or outside the line. The graph illustrates that once a relative quantification of originality has been made, it is much easier to make a relative determination of how broadly should the idea/expression line (or circle) be drawn.

At the origin of the graph, the scope of protection drops to zero when the originality in a work becomes very, very low. This is illustrative of the merger doctrine. [n.74] This allows the Copyright Office to permit registrations for works of questionable originality. The policy behind this is that it is better to have courts determine originality than to have copyright examiners rigorously examine all applications. Generally the Copyright Office should review applications for categorization purposes and should only reject works which unquestionably contain no originality.

Computer software includes program code and (if applicable) [n.75] a computer/user interface made up screens (sights) and sounds. The program code contains the literal

elements of the source code, object code, and executable code; and the non-literal elements of the structure, sequence, and organization [n.76] of the program code. The user interface contains literal elements (such as expressive icons on a screen) and possibly even protectable non-literal elements [n.77] (such as "comprehensive non-literal similarity" [n.78] in program screens). All of these elements \*287 are protectable, but only to the extent that they qualify as original expressions of an idea. [n.79] The analytical tool disclosed in this section can be used for determining the scope of copyright protection for computer program code and computer user/interfaces for both their literal and non-literal elements.

### III. THE NEED FOR THE TOOL

There is no need to determine whether two works are substantially similar when there is direct evidence of copying. This direct evidence can be a witness [n.80] or an admission. [n.81]

When copying must be proven by indirect evidence it must be proven that there is a substantial similarity between the two works. The first step in the analysis discussed in the previous section is to quantify the amount of originality in the copyrighted work. It is reasonable to allow expert testimony on this matter. Permitting experts to have their say on the issue of quantifying originality allows the reasonable person standard to apply in the second step of the analysis of using the quantification of originality to determine where the idea/expression line should be drawn. This provides an opportunity for the experts to argue about how original a copyrighted work is, and enables a reasonable person standard to apply in comparing original aspects of the copyrighted work to a defendant's work. The courts, however, have generally addressed the issue of originality and the idea/expression dichotomy in determining copyrightability, but not in determining copying. In determining substantial similarity, courts have made little or no attempt to distill out of a copyrighted work those elements to which protection should not extend.

Turning now to the cases, this section examines the tests used by courts for determining substantial similarity of computer software programs and screens, and compares these tests to the analysis detailed above.

Initially it is necessary to discuss two copyright cases which do not involve computer software, but are important because of their discussion of the scope of copyright protection of non-literal elements of a copyrighted work. These cases have had a profound impact on the development of computer software copyright law.

\*288 In *Roth Greeting Cards v. United Card. Co.*, [n.82] the United States Court of Appeals for the Ninth Circuit was asked to decide whether defendant's greeting cards were substantially similar to the plaintiff's greeting cards. Before concluding that the cards were substantially similar, the court noted that "it was the defendant's practice to

look at the cards produced by other companies and make similar cards for sale under the defendant's label." [n.83] The court also stated "it appears to us that in total concept and feel the cards of the defendant are the same as the copyrighted cards of the plaintiff." [n.84] This language ("total concept and feel") has been interpreted to be a test for substantial similarity, and has received attention across the country as such a test.

The "total concept and feel" test, however, was not the test relied upon by the court in Roth. The court concluded that the circumstances of the defendant's keeping of a close eye on competition, and intentionally trying to make similar cards, together with the "marked similarity" between the cards, convinced the court that the cards had in fact been copied. [n.85] Although the majority used the words "marked similarity" in its conclusion, the case has come to stand for the proposition that a defendant will be found to have infringed a plaintiff's copyright if he or she copied the "total concept and feel" of the plaintiff's copyrighted work. The dissent in Roth disagreed on the issue of copying and contended that the plaintiff's works had been lawfully imitated but not copied. [n.86]

In *Sid & Marty Krofft Television, Inc., v. McDonalds Corp.*, [n.87] the same court had to decide whether a plaintiff's copyright in a children's television show was infringed by defendant's television commercials directed to an audience of children. The court allowed expert testimony on the issue of similarity (possibly because the works were each directed towards an audience of children). The court, however, wanted to keep the question of substantial similarity of expression one to be decided by a lay person standard.

\*289 The court in Krofft germinated the notion that the test for substantial similarity consisted of two parts: a test of substantial similarity of ideas (the extrinsic test) and a test of the substantial similarity of expression (the intrinsic test). Although the court stated that "[t]he determination of whether there is substantial similarity in ideas may often be a simple one" the court said that expert testimony was relevant for determining only similarity of ideas and not expressions. Thus was created a test for substantial similarity consisting of an extrinsic test (substantial similarity of ideas) and an intrinsic test (substantial similarity of expressions).

There are a number of problems with this test. First of all, it is not at all clear how one could have substantial similarity of expressions without having substantial similarity of ideas. The role of the extrinsic test for substantial similarity of ideas has been criticized [n.88] and is of very little or no help in determining substantial similarity.

Furthermore, and most importantly, the test implicitly assumes that one has already determined the idea/expression line. How is one to conduct an extrinsic and intrinsic test without first determining what is the idea and what is the expression? Not only does this test skip the first step in the analysis disclosed in this article, it also skips the second step in that it presumes that the line between the idea and the expression already exists. The extrinsic-intrinsic test is merely a restatement of the conclusion.

Two cases which have been interpreted to have applied the Roth and Krofft tests to computer software are (also from the Ninth Circuit) Frybarger v. IBM Corp. [n.89] and Data East, Inc. v. Epyx, Inc. [n.90]

In Frybarger, however, the court cited Krofft for the substantial similarity propositions that "[i]t is an axiom of copyright law that the protection granted to a copyrighted work extends only to the particular \*290 expression of the idea and never to the idea itself" [n.91] and " i ndispensable expression is accorded only . . . slight protection because it is so close to the nonprotectable idea itself that the expression provides nothing new or additional over the idea." [n.92] The most that Krofft was cited for, regarding the extrinsic and intrinsic tests, was with reference to when summary judgement is proper in copyright infringement cases. The court, in affirming a grant of summary judgement in favor of the defendant, cited Krofft in stating "summary judgement for defendant is appropriate when plaintiff fails to make a sufficient showing that the ideas and expressive elements of the works are substantially similar after defendant has properly identified in a motion for summary judgement that plaintiff has failed to do so." [n.93] The court in Frybarger did not explicitly uphold a finding of substantial similarity on the extrinsic and intrinsic tests.

In Data East, the court, in reversing the district court's finding of infringement, cited Frybarger as stating "[t]o show that two works are substantially similar, plaintiff must demonstrate that the works are substantially similar in both ideas and expression." [n.94] The court explicitly stated:

The Ninth Circuit has developed a two-step test for the purpose of determining substantial similarity . . . . First, an "extrinsic" test is used to determine whether two ideas are substantially similar. This is an objective test which rests upon specific criteria that can be listed and analyzed . . . . Second, an "intrinsic" test is used to compare forms of expression. This is a subjective test which depends on the response of the ordinary reasonable person. [n.95]

This test has been cited by district courts in the Eleventh Circuit in deciding substantial similarity of computer software, [n.96] and the Tenth Circuit in discussing comprehensive nonliteral similarity of audiovisual \*291 works. [n.97] The Ninth [n.98] Circuit has since followed both Frybarger and Data East. None of the courts of appeals in the Eighth, [n.99] Seventh, [n.100] \*292 Sixth, [n.101] Fifth, [n.102] Fourth, [n.103] or Third [n.104] Circuits (nor district courts within any of the Eighth, Seventh, Sixth, Fifth, Fourth, or Third Circuits) have decided the issue of substantial similarity of computer software since Frybarger (1987). District courts in the Second [n.105] and First [n.106] \*293 Circuits have avoided discussing either Frybarger or Data East in deciding the issue of substantial similarity of computer software.

Computer software is unique (and troublesome) enough a subject matter that it is not clear whether a court in a circuit which has not handled many software cases would follow its own circuit's statement of the test for substantial similarity, or whether a court would look to circuits which have had more experience in handling copyright infringement cases involving computer software and use their test for substantial

similarity. Although copyright law is federal and is intended to be the same in all the circuits, there is enough room within the vague tests of substantial similarity that circuits can vary somewhat in outcomes without being in direct conflict with one another.

The Second Circuit has declined an opportunity to adopt either the "total concept and feel" test or the extrinsic-intrinsic test for computer software. In *Manufacturers Technologies v. CAMS, Inc.*, the Second Circuit first stated that the test for substantial similarity was "whether [the works] appear [substantially similar] from the spontaneous response of the ordinary lay observer." [n.107] The court, however, then proceeded to state that

in a complex case such as this the Court may first consider expert testimony relevant to the question of whether there is sufficient similarity between nonprotected aspects of the two works at issue to establish copying. Then, if and only if copying is established, the fact finder must determine without the assistance of expert testimony whether there are substantial similarities between the protected aspects of plaintiff's work and the allegedly infringing work indicating "illicit copying" or infringement. [n.108] (emphasis added)

The determination of "whether there is sufficient similarity between nonprotected aspects of the two works at issue to establish copying" makes very little sense. What is the meaning of the interim finding of "copying" when substantial similarity is yet to be determined? Why address similarities of nonprotected aspects? The "ordinary observer"/"reasonable lay person" tests merely shift the difficult finding of infringement onto a fictitious "reasonable person." What does the reasonable person know about "unlawful appropriation" [n.109] and what is "illicit copying"? [n.110]

The First Circuit has also not adopted either the "total concept and feel" test or the extrinsic-intrinsic test for computer software. In *Lotus \*294 v. Paperback* the defendants contended that "extending copyright protection to nonliteral elements of computer programs is contrary to the objects and policies of copyright law." [n.111] The defendants argued that the user interface of Lotus 1-2-3 is useful (functional) object which is not properly copyrightable. In a very thorough opinion Judge Keeton discussed the "total concept and feel" test created in *Roth* in the determination of copyrightability of nonliteral elements of computer software. Although this test is intended to be used for determinations of substantial similarity, the court considered its applicability for determinations of copyrightability. Not surprisingly, the court did not find the concept to be "significantly helpful in distinguishing between nonliteral elements of a computer program that are copyrightable and those that are not." [n.112] Apparently the court took up discussing the "look and feel" concept (as the test has come to be known) solely for the purposes of dismissing its usefulness. The court further stated:

Moreover, "look and feel" is a conclusion, and the usefulness and applicability of a precedent depends on the reasons the conclusion was reached in a particular context, not on the conclusion itself. Thus, in trying to understand the relevance of "concept and feel" precedents, we need to look to details of those cases that appear to have been relied upon in reaching the conclusion, rather than merely embracing the conclusion without regard for underlying reasons. [n.113] (emphasis in original)

The defendants in Lotus admitted copying the nonliteral elements (the user interface) of Lotus 1-2-3. The court did not need to determine whether substantial similarity existed. It seems the court seized upon the opportunity to criticize the "total concept and feel" test in general.

Although the court did not need to determine substantial similarity, since copying was admitted, the court in Lotus cited *Bandia* for its finding of copying as a matter of law, and *Peter Pan Fabrics* for application of the ordinary observer test. The court cited *Bandia* in finding that where the copying is so "overwhelming and pervasive," that an assertion of independent creation is precluded as a matter of law. [n.114] The court then quoted Judge Learned Hand in *Peter Pan Fabrics* as stating

the ordinary observer, unless he set out to detect the disparities, would be disposed to overlook them, and regard their aesthetic appeal as the same. That is enough; and indeed, it is all that can be said, unless protection against infringement is to be denied because of variants irrelevant to the purpose for which the design is intended. [n.115]

\*295 This test was used in *Peter Pan Fabrics* to determine substantial similarity of patterns on bolts of cloth which were used to make dresses. [n.116] There is no chance that these patterns were in any way functional. [n.117] Conversely, that which appears in a user interface may be, at least in part, functional. Direct application of the ordinary observer test would erroneously include comparison of functions which may not be expressed in an original or creative fashion. This is precisely the reason why originality must be quantified before a comparison is made of works involving computer software.

The analysis disclosed in the previous section first quantifies the amount of originality in a copyrighted work (with the use of experts if appropriate), and then uses that quantification to aid in the determination of the idea/expression line (without the use of experts). This approach yields a reliable determination of the scope of copyright protection that a computer program and/or computer/user interface will enjoy.

#### IV. CONCLUSION

While it is true that the test for substantial similarity of copyrighted works cannot be specifically stated in one litmus test, it is not true that functional aspects of a copyrighted work should be thrown into the vague determination of substantial similarity without any effort to identify and remove protection of functional aspects from the copyrighted work.

Although computer program code is copyrightable as a literary work it is not poetry. The virtue of elegant program code is that it takes up as little computer memory as possible and it achieves the desired result in a very short period of computation time. These are very functional considerations. This is not to say that the program code should be given no protection at all, but it is difficult to imagine why protection for program code should ever be extremely broad when other similarly functional works are not protected at all. [n.118] For example, the artwork for printed circuit boards, if even

copyrightable, should be given a very narrow scope of protection because the artwork is almost completely (if not completely) functional. Also, the patterns on different layers within a semiconductor integrated circuit chip, if even copyrightable, should be given a similarly narrow scope of protection. These mask works, as they \*296 are called, are the subject of The Semiconductor Chip Protection Act. [n.119] The activities of designing printed circuit boards, fabricating integrated circuit chips, and programming computers are all highly governed by the functions sought.

Copyright protection for computer/user interfaces, on the other hand, promises to be a helpful way of protecting some computer programs. Computer/user interfaces, by virtue of the fact that they interface with humans and not simply machines, do allow room for creativity and originality in their design. As computer memory capabilities and computer screen resolutions increase, the capacity for programmers to further express themselves will also increase. Nonetheless, even the design of computer/user interfaces will be dictated, in part, by functional considerations. For example, in 1989 a Ninth Circuit district court held that the use of "pull-down menus" was an idea and the plaintiff's and defendant's expressions of the idea were different. [n.120]

The analytical tool presented in this article respects the functional constraints in writing program code and in designing computer/user interfaces. These functional constraints are respected by requiring that the issue of quantifying originality be addressed before an attempt is made at drawing the all important line between an author's protectable expression and the unprotectable idea. Now that it has been unequivocally established that computer software (both the program code and the computer/user interfaces) contain sufficient originality to justify copyrightability, attention must be focused on quantifying that originality.

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[n.1]. Survey of Computers, Software, and Information Processing, 31 IDEA 67 (1990)(the article provides a conceptual overview of how computers, through processing very small amounts of energy, manipulate symbols which represent information).

[n.2]. Beginning in the 1970's with the controversy over the copyrightability of computer software, the application of copyright law to computer software has remained one of the most prolific fields of intellectual property protection for the technologies of the high technology era of the 1980's and 90's. The Sept. 1989 to Aug. 1990 volume of the Index To Legal Periodicals alone lists over thirty published articles concerning copyright law and computer software.

[n.3]. In *Whelan v. Jaslow*, 797 F.2d 1222, 230 U.S.P.Q. 481 (3d Cir. 1986), cert. denied, 479 U.S. 1031, 107 S.Ct. 877, 93 L.Ed.2d 831 (U.S. 1986), the Court of Appeals for the Third Circuit set out in section V of the opinion to determine "whether a program's copyright protection covers the structure of the program or only the program's literal elements," at 797 F.2d 1234. In section V titled "THE SCOPE OF COPYRIGHT PROTECTION OF COMPUTER PROGRAMS," the court attempted to address the question for all software. To read this opinion to hold that copyright protection can extend to non-literal elements of the program is justified, but to read this opinion to hold that all computer programs (irrespective of their amount of originality) should be given a similar scope of protection is not justified. It is precisely the point of this article to stress that scope of protection for a given program must be commensurate with the amount of originality in that program. For example, the scope of protection for non-literal elements in the code (i.e., the structure, sequence and organization) must be commensurate with the amount of originality in the code's structure, sequence and organization.

[n.4]. Application of the analytical tool is not, however, limited to works involving computer software.

[n.5]. In 1980 President Carter signed the Computer Software Copyright Act of 1980 (Pub. L. No. 96-517) which incorporated most of the recommendations of the Final Report of the National Commission on New Technological Uses of Copyrighted Works (the CONTU Final Report is reprinted 3 Comp. L. J. 53). The Computer Software Copyright Act of 1980 specifically applies the Copyright Act of 1976 to Computer Programs.

For judicial interpretations see *Apple Computer, Inc. v. Formula International, Inc.*, 562 F.Supp. 775, 218 U.S.P.Q. 47 (C.D. Cal. 1983), aff'd, 725 F.2d 521, 221 U.S.P.Q. 762 (9th Cir. 1984) ("[i]t is crystal-clear that CONTU recommended that all computer programs, fixed in any method and performing any function, be included within copyright protection") at 562 F.Supp. 781; and *Whelan*, supra note 3, at 797 F.2d 1234 ("Title 17 U.S.C. § 102(a)(1) extends copyright protection to 'literary works,' and computer programs are classified as literary works for the purposes of copyright.").

[n.6]. See *Williams Electronics, Inc. v. Artic International, Inc.*, 685 F.2d 870, 877, 215 U.S.P.Q. 405 (3d Cir. 1982) ("We reject [defendant's argument that copyright protection should be limited to the source code and not extend to the object code, and that the broad language of 17 U.S.C. 101] should nonetheless be interpreted in a manner which would severely limit the copyrightability of computer programs which Congress clearly intended to protect."); *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1249, 219 U.S.P.Q. 113 (3d Cir. 1983), cert. dismissed 464 U.S. 1033, 104 S.Ct. 690, 79 L.Ed.2d 158 (U.S. 1984) ("a computer program, whether in object code or source code, is a 'literary work' and is protected from unauthorized copying, whether from its object or source code version"); and *Whelan*, supra note 3, at 797 F.2d 1233 ("It is well, though



recently, established that copyright protection extends to a program's source code and object code.").

[n.7]. Although the words "object code" and "executable code" have been subject to some confusion in judicial opinions, both have been held to be copyrightable. See *Digital Communications Associates, Inc. v. Softklone Distributing Corp.*, 659 F.Supp. 499, 454, 2 U.S.P.Q.2d 1385 (N.D. Ga. 1987) ("Case law under the [Copyright Act of 1976] also clearly establishes that copyright protection extends to both a program's source code, written in conventional human language and symbols, and object code, written in machine readable binary language."); and *NEC Corp. v. Intel Corp.*, 10 U.S.P.Q.2d 1177, 1178 (N.D. Cal. 1989) ("[Microcode] comes squarely within the definition of a 'computer program,' which Congress added to the Copyright Act of 1980.").

Machine readable language is not technically object code, but executable code. Object code is part of an intermediate step in producing the executable code from source code. In the process of compiling, source code is given to a code generator and the code generator produces object code which is then given to a compiler (or an interpreter). The compiler then generates executable code which in machine readable binary language. The term "microcode" as used in NEC refers to the machine readable binary code (executable code) stored within certain microprocessor integrated circuit chips. For a general discussion of the technology see Survey, *supra* note 1.

[n.8]. The medium of paper is very likely the tangible medium of expression which the drafters of the Constitution had in mind in providing for explicit protection of "writings" in Article I, Section 8, clause 8 of the United States Constitution.

[n.9]. A computer disk is a tangible medium of expression which is sufficiently permanent or stable to permit a work fixed on a disc to be perceived, reproduced or otherwise communicated for a period of more than transitory duration. Thus a computer disk meets the statutory requirements of 17 U.S.C. § § 101 and 102. See also, L.J.KUTTEN, *COMPUTER SOFTWARE* 2- 20.1 (1990).

[n.10]. See *Tandy Corp. v. Personal Micro Computers, Inc.*, 524 F.Supp. 171, 173, 214 U.S.P.Q. 178 (N.D. Cal. 1981) ("The imprinting of a computer program on a chip, which then allows the computer to read the program and act upon its instructions, falls easily within [the statutory definition of 'fixed'.]"); and *Williams* *supra* note 6, at 685 F.2d 874-876 (holding that the statutory requirement of "fixation" is satisfied through the embodiment of the expression in ROM (Read Only Memory) devices), followed in *Apple v. Franklin*, *supra* note 6, at 714 F.2d 1249.

[n.11]. See *Synercom Technology, Inc. v. University Computing Co.*, 462 F.Supp. 1003, 1013, 199 U.S.P.Q. 537 (N.D. Tex. 1978) ("It is as clear an infringement to translate a

computer program from, for example, FORTRAN to ALGOL, as it is to translate a novel or play from English to French.") at fn. 5.

[n.12]. The high water mark of an example where a defendant went too far in copying a plaintiff's program was *Broderbund Software, Inc. v. Unison World, Inc.*, 648 F.Supp. 1127, 231 U.S.P.Q. 700 (N.D.Cal. 1986). Even though there was direct evidence of copying in *Broderbund*, the court noted at 648 F.Supp. 1135 that

in the "Custom Layout" screen of [the plaintiff's program], the user is instructed to press the "Return" key on the Apple keyboard. Similarly, in the "Custom Layout" screen of [the defendant's program], the user is instructed to press the "Return" key on the IBM keyboard. Actually, the IBM keyboard contains no "Return" key, only an "Enter" key.

Although the Court of Appeals for the Ninth Circuit held in *Frybarger v. IBM Corp.*, 812 F.2d 525, 2 U.S.P.Q.2d 1135 (9th Cir. 1987), that a program written for the Apple II computer was not infringed by a program written for an IBM PC Jr., this result may change course as attention shifts from infringement of program code to infringement of computer screens. It is not clear what the court would have held if Anthony Frybarger had brought this case after the Copyright Office's Notice of Registration Decision in 1988 (see *infra* note 19), and if Mr. Frybarger had alleged infringement of the expressive elements of his computer screens. See also *SAS Institute, Inc. v. S&H Computer Systems, Inc.*, 606 F.Supp. 816, 225 U.S.P.Q. 916 (M.D. Tenn. 1985) (defendant's converting of plaintiff's program for IBM computers into a text file within VAX computers constituted infringement even though the converted version eventually contained significant original portions contributed by the defendant).

[n.13]. Title 17, U.S.C. § 102(a)(6) provides that works of authorship include "motion pictures and other audiovisual works."

[n.14]. See *Midway Mfg. Co. v. Artic International, Inc.*, 547 F.Supp. 999, 216 U.S.P.Q. 413 (N.D. Ill. 1982), *aff'd* 704 F.2d 1009, 218 U.S.P.Q. 791 (7th Cir. 1983), cert. denied 464 U.S. 823, 104 S. Ct. 90, 78 L.Ed.2d 98 (U.S. 1983), where the court found that the audiovisual displays of plaintiff's video games met the requirements for copyrightable subject matter and that there was no requirement that the work be written down or recorded somewhere exactly as it is perceived by the human eye.

See also *Atari, Inc. v. North America Phillips Consumer Elec. Corp.*, 672 F.2d 607, 214 U.S.P.Q. 33 (7th Cir. 1982), cert. denied 459 U.S. 880, 103 S. Ct. 176, 74 L.Ed.2d 145 (U.S. 1982); *Stern Electronics, Inc. v. Kaufman*, 669 F.2d 852 (2d Cir. 1982); *Midway Manufacturing Co. v. Drikschneider*, 543 F.Supp. 466, 214 U.S.P.Q. 417 (D. Neb. 1981); and *Williams*, *supra* note 6.

[n.15]. See *Broderbund*, *supra* note 12, interpreting *Whelan*, *supra* note 3 ("Whelan thus stands for the proposition that copyright protection is not limited to the literal aspects of a computer program, but rather that it extends to the overall structure of a program,

including its audiovisual displays.") at 684 F.Supp. 1133; and *Manufacturers Technologies, Inc. v. CAMS, Inc.*, 706 F. Supp. 984, 993 U.S.P.Q.2d 1321 (D. Conn. 1989) ("screen displays or user interfaces" are copyrightable).

Copyrightability and infringement issues for video games have, in many respects, paved the way for such issues for screen displays since they are technically and functionally similar.

[n.16]. U.S.C. 102(a)(1).

[n.17]. See *M. Kramer Manufacturing Co., Inc. v. Andrews*, 783 F.2d 421, 228 U.S.P.Q. 705 (4th Cir. 1986); *Williams*, supra note 6; and *Stern Electronics*, supra note 14.

[n.18]. U.S.C. § 102(a)(6).

[n.19]. See *Bureau of National Affairs, Inc. Patent, Trademark & Copyright Journal* (BNA's PT&C J.), vol. 36, pp. 152-155 (6-9-88).

[n.20]. *Id.* 36 BNA's PT&C J. 153.

[n.21]. See *Manufacturers*, supra note 15, at 706 F.Supp. 993.

[n.22]. 740 F.Supp. 37, 15 U.S.P.Q.2d 1577 (D. Mass. 1990).

[n.23]. *Id.* at 740 F.Supp 81.

[n.24]. See *Lotus*, supra note 22, at 740 F.Supp. 82.

[n.25]. See *Lotus*, supra note 22, at 740 F.Supp. 80.

[n.26]. 17 U.S.C. § 501(a) ("Anyone who violates any of the exclusive rights of the copyright owners as provided by section 106 through 118 . . . is an infringer of the copyright.").

[n.27]. See 17 U.S.C. § 106(1).

[n.28]. This would essentially require having a witness available who could testify as to witnessing the act of copying.

[n.29]. Even if access and substantial similarity are proven, a defendant can escape liability if he or she can prove that the allegedly infringing work had been independently developed.

[n.30]. *Peter Pan Fabrics, Inc. v. Martin Weiner Corp.*, 274 F.2d 487 (2d Cir. 1960).

[n.31]. M. NIMMER & D. NIMMER, *NIMMER ON COPYRIGHT* § 1303[A] (1990).

[n.32]. The Constitutional authority for the Copyright Act comes from Article I, Section VII, clause eight of the United States Constitution; "Congress shall have the power . . . [to] promote the Progress of Science and the useful arts Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

[n.33]. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 156, 109 S.Ct. 971, 103 L.Ed.2d 118, 9 U.S.P.Q.2d 1847 (U.S. 1989). See also *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 84 S.Ct. 784, 11 L.Ed.2d 661, 140 U.S.P.Q. 524 (U.S. 1964); and *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234, 84 S.Ct. 779, 11 L.Ed.2d 669, 140 U.S.P.Q. 528 (U.S. 1964).

[n.34]. 17 U.S.C. § 102(b) ("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 form on which it is described, explained, illustrated, or embodied in such work.").

[n.35]. 17 U.S.C. § 102(a).

[n.36]. *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 57-58, 4 S.Ct. 279, 281, 28 L.Ed. 349 (U.S. 1884).

[n.37]. See *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102 (2d Cir. 1951) ("nothing in the Constitution commands that copyrighted matter be strikingly unique or novel").

[n.38]. *Id.* at 191 F.2d 103.

[n.39]. See *Puddu v. Buonamici Statuary, Inc.*, 450 F.2d 401, 171 U.S.P.Q. 709, 167 U.S.P.Q. 417 (2d Cir. 1971); and *Millworth Converting Corp. v. Slifka*, 276 F.2d 443 (2d Cir. 1960).

[n.40]. See *Thomas Wilson & Co. v. Irving J. Dorfman Co.*, 433 F.2d 409 (2d Cir. 1970), cert. denied 40U U.S. 977, 91 S.Ct. 1200, 28 L.Ed.2d 326, 169 U.S.P.Q. 65 (U.S. 1971); and *Dan Kasoff, Inc. v. Novelty Jewelry Co.*, 309 F.2d 745 (2d Cir. 1962).

[n.41]. See *Herbert Rosenthal Jewelry Corp. v. Grossbardt*, 436 F.2d 315, 168 U.S.P.Q. 193 (2d Cir. 1970).

[n.42]. 499 U.S. 340, 111 S.Ct. 1282, 113 L.Ed.2d 358 (1991).

[n.43]. Rather than simply find that the defendant had copied nonprotectable factual entries from the plaintiff's telephone directory white pages, the Court held that the plaintiff's white pages listings did not contain sufficient originality to warrant copyrightability. One wonders whether the case would have been different if the defendant, instead of copying specific entries from the plaintiff's listing, had photocopied all of the pages of the plaintiff's white pages and simply published the photocopied pages.

[n.44]. See BNA, *supra* note 19, at 36 BNA's PT&C J. 154.

[n.45]. See Field, *Brief Survey of Intellectual Property*, 31 IDEA 85, 107 (1990) ("Copyrights do not have claims as patents do . . . [t]hus the scope of protection is . . . up to the courts to decide.").

[n.46]. 17 U.S.C. § 101.

[n.47]. 17 U.S.C. §§ 101, 102(a)(5).

[n.48]. 17 U.S.C. § 101. See also 17 U.S.C. § 113 (Scope of exclusive rights in pictorial, graphic, and sculptural works); and 37 C.F.R. § 202.10(a) ("In order to be acceptable as a pictorial, graphic, or sculptural work, the work must embody some creative authorship in its delineation or form.).

[n.49]. *Kieselstein-Cord v. Accessories by Pearl, Inc.*, 632 F.2d 989, 208 U.S.P.Q. 1 (2d Cir. 1980) (finding conceptual separability of the artistic features of a belt buckle).

[n.50]. *Brandir International, Inc. v. Cascade Pacific Lumbar Co.*, 834 F.2d 1142 at 1145 (2d Cir. 1987) (holding that a bicycle rack made out of bent tubing, which originated from a wire sculpture of almost the same design, was not copyrightable).

[n.51]. *Id.* at 834 F.2d 1145.

[n.52]. *Masquerade Novelty, Inc. v. Unique Industries, Inc.*, 912 F.2d 663, 15 U.S.P.Q.2d 1881 (3d Cir. 1990) (novelty nose masks were held to be copyrightable subject matter because they "have no utility that does not derive from their appearance"). The court held at 912 F.2d 670 that:

Congress has made clear its view that a product is only a "useful article" if it has "an intrinsic utilitarian function that is not merely to portray the appearance of the article." . . . If a sculptural work is not a "useful article" because its sole "utilitarian function . . . is . . . to portray the appearance of the article," then it remains copyrightable . . . and a court need not analyze whether its utilitarian function is separable from the work's sculptural elements.

[n.53]. Software code is "useful" to the extent the code is form dictated solely by function; and the computer/user interface is "useful" to the extent the elements within the screens, and the placement of the elements within the screens, are dictated by their function (i.e., the command "save" is completely form dictated by function as there exist very few alternative names for the command "save").

[n.54]. 101 U.S. 99, 25 L.Ed. 841 (U.S. 1879).

[n.55]. *Id.* at 101 U.S. 107.

[n.56]. See *Brown Instrument Co. v. Warner*, 161 F.2d 910 (D.C. Cir. 1947), cert. denied 332 U.S. 801, 68 S.Ct. 101, 92 L.Ed. 380 (U.S. 1947); *Taylor Instrument Co. v. Fawley*

Brost, 139 F.2d 98 (7th Cir. 1943); *Aldrich v. Remington Rand, Inc.*, 52 F.Supp. 732 (N.D. Tex. 1942); and *Time-Saver Check, Inc. v. Delux Check printers, Inc.*, 178 U.S.P.Q. 510 (N.D. Tex. 1973).

[n.57]. 37 C.F.R. § 202.1(c) ("Blank forms, such as time cards, graph paper, account books, diaries, bank checks, scorecards, address books, report forms, order forms, and the like, which are designed for recording information, and do not in themselves convey information" are not subject to copyright.").

[n.58]. See NIMMER, *supra* note 31 at § 2.18[A] through § 2.18[C]; and Reichman, *Computer Programs as Applied Scientific Know-How: Implications for Copyright Protection for Commercialized University Research*, 42 *Vanderbilt L. Rev.* 639, 693 n.288 (1989).

[n.59]. See NIMMER, *supra* note 31 at § 2.18[C] ("Criticism of *Baker v. Selden*").

[n.60]. The Supreme Court has more recently interpreted *Baker* as merely holding that the copying of an idea (since the defendant had made a different arrangement of columns and used different headings) does not constitute an infringement, see *Mazer v. Stein*, 347 U.S. 201, 74 S.Ct. 460, 98 L.Ed. 630 (U.S. 1954).

[n.61]. See 37 C.F.R. § 202.1(c), *supra* note 57 for the full text of 37 C.F.R. § 202.1(c).

[n.62]. See *Frederick Chusid & Co. v. Marshall Leeman & Co.*, 279 F.Supp. 913, 158 U.S.P.Q. 188 (S.D.N.Y. 1968) (copyright upheld in "personal data forms"); *Harcourt, Brace & World, Inc. v. Graphic Controls Corp.*, 329 F.Supp. 517, 171 U.S.P.Q. 219 (S.D.N.Y. 1971) (copyright upheld in answer sheet forms which provided spaces for indicating correct answers, but which also conveyed certain minimal information); *Edwin K. Williams & Co. v. Edwin K. Williams & Co. East*, 377 F.Supp. 418, 182 U.S.P.Q. 241 (C.D.Cal. 1974), *aff'd*, 542 F.2d 1053, 191 U.S.P.Q. 563 (9th Cir. 1976), *cert. denied* 433 U.S. 908, 97 S.Ct. 2973, 53 L.Ed.2d 1092, 195 U.S.P.Q. 93 (U.S. 1977) (copyright upheld in record keeping forms accompanied by instructions for proper use); and *Bibero Systems, Inc. v. Colwell Systems, Inc.* 893 F.2d 1104, 13 U.S.P.Q.2d 1634 (9th Cir. 1990) (billing forms known as "superbills" which doctors use to obtain reimbursement from patient's insurers were held to be uncopyrightable blank forms).

[n.63]. See registration generally, *supra* text accompanying notes 16-25.

[n.64]. See originality generally, *supra* text accompanying notes 36-43.

[n.65]. See *Burrow-Giles*, *supra* note 36.

[n.66]. See The Lanham Act, 15 U.S.C. § 1051(e) (no trademark shall be refused registration unless it "consists of a mark which . . . is merely descriptive or deceptively misdescriptive"). Nonetheless, descriptive names are frequently chosen as trademarks.

[n.67]. See *Ideal Toy Corp. v. Sayco Doll Corp.*, 302 F.2d 623 (2d Cir. 1962) (Judge Clark dissented in a finding of infringement of copyright in plaintiff's doll head.). The dissent noted that a third manufacturer who was also sued and had since settled, made a doll which bore a much closer resemblance to the plaintiff's doll.

[n.68]. See *Rival PC Operating Systems Fight to Set the Standard*, *Wall St. J.*, Mar. 8, 1991, at B1. The two disputes which have arisen over Apple's Macintosh user interface are illustrative. Neither of the two cases have yet directly addressed the issue of substantial similarity. See *Apple Computer, Inc. v. Microsoft Corp.*, 717 F.Supp. 1428, 11 U.S.P.Q.2d 1618, (N.D. Cal. 1989). Apple brought a copyright infringement action against Microsoft and Hewlett-Packard alleging that the visual displays in Microsoft's software product Windows 2.03 and HP's product NewWave infringe Apple's copyrighted graphic user interface. The district court granted partial summary adjudication of noninfringement for visual displays which were identical to those provided for in an earlier license agreement. The court held at 717 F.Supp. 1435 as follows:

Accordingly, this ruling constitutes a summary adjudication that defendant's use of Windows 2.03 and in NewWave of the visual displays in Windows 1.0 and the named applications programs is protected against Apple's infringement claim by the license provision in the 1985 Agreement. In the case of Windows 2.03, this applies to all visual displays except the use of overlapping main application windows and the specified changes in the appearance and manipulation of icons.

The court will therefore now proceed to determine whether the use of those unlicensed visual displays in combination with licensed visual displays infringes Apple's audiovisual copyrights.

Recently, two of Microsoft's and HP's defenses were "struck down," see *Apple Gets Boost in Copyright Suit*, *Wall St. J.*, Mar. 7, 1991, at B1. Having removed the defense that Apple's copyrights were invalid because Apple's work was based on work done at Xerox, and the defense that Apple had committed fraud on the Copyright Office by failing to disclose certain preexisting programs that influenced its programs, the case is now ready to go to trial on the issue of substantial similarity.

See also *Xerox Corp. v. Apple Computer, Inc.*, 734 F.Supp. 1542, 14 U.S.P.Q.2d 1512 (N.D. Cal. 1990). Xerox sought declaratory and other relief against Apple regarding ownership of the copyrights in Apple's Lisa and Macintosh Finder copyright registrations



in light of allegations that the Lisa and Macintosh Finder works were derived from Xerox's Star copyrighted material. Declaratory judgement that Xerox was the sole owner of the copyright in the overlapping features of Lisa and Finder was denied. Motions to strike Apple's copyright registrations in Lisa and Macintosh Finder were denied, and Apple's motion for judgement on the pleadings was granted as to Xerox's unfair business practices and false designation of origin claims.

[n.69]. Some trademarks which have become generic names because of the need for a generic name are "escalator," "trampoline," and "Yo-Yo."

[n.70]. In many cases originality is discussed only to the extent that it supports a finding of copyrightability and then a finding of infringement is based on overall substantial similarity without any attempt to determine the extent to which a work owes its origin to the author. See Whelan, *supra* note 3, and Franklin, *supra* note 6.

[n.71]. See the Ninth Circuit test (*infra* text accompanying notes 82-87) requiring substantial similarity of both ideas and expression, each to be determined separately, inherently requiring that the idea/expression line first be drawn.

[n.72]. *Nichols v. Universal Pictures Co.*, 45 F.2d 119, 121 (2d Cir. 1930), cert. denied 282 U.S. 902, 51 S.Ct. 216, 75 L.Ed. 795 (U.S. 1931).

[n.74]. See *Brandir*, *supra* note 49, at 834 F.2d 1145, and accompanying text, ("if design elements reflect a merger of aesthetic and functional considerations, the artistic aspects of a work cannot be said to be conceptually separable from the utilitarian elements").

[n.75]. Not all programs, of course, have associated user interfaces.

[n.76]. See Whelan, *supra* note 3 and *Johnson Controls, Inc. v. Phoenix Control Systems, Inc.*, 886 F.2d 1173, 12 U.S.P.Q.2d 1566 (9th Cir. 1989).

[n.77]. Although screens have generally been referred to as non-literal elements of the program code, there is authority for discriminating between literal and non-literal elements of screens themselves since screens are explicitly registerable as "audiovisual works" in their own right. See *Midway Manufacturing Co. v. Stroh*, 564 F.Supp. 741, 746, 219 U.S.P.Q. 42 (N.D. Ill. 1983) (audiovisual image elements of game PACMAN are referred to as "audiovisuals"). There is no discussion in *Stroh* of literal versus nonliteral elements of an audiovisual work.

[n.78]. See NIMMER, *supra* note 31, § 1303[A][1].

[n.79]. See Johnson, *supra* note 76, at 886 F.2d 1175 (affirming a finding of substantial similarity of nonliteral components of computer software which constitute expression).

[n.80]. See Broderbund, *supra* note 12, at 648 F.Supp. 1135 ("Plaintiffs produced sufficient direct evidence [through uncontradicted testimony] to establish infringement.").

[n.81]. See Lotus, *supra* note 22, at 740 F.Supp. 68 ("Not only is the copying in this case so 'overwhelming and pervasive' . . . but the defendants in this case had admitted that they copied [the elements of protected expression.]").

[n.82]. 429 F.2d 1106, 166 U.S.P.Q. 291 (9th Cir. 1970).

[n.83]. *Id.* at 429 F.2d 1110, 1111.

[n.84]. See Roth, *supra* note 82, at 429 F.2d 1110. ("the characters depicted in the art work, the mood they portrayed, the combination of art work conveying a particular mood with a particular message, and the arrangement of the words on the greeting cards [of the defendant] are substantially the same as [the plaintiff's]").

[n.85]. See Roth, *supra* note 82, at 429 F.2d 1111.

[n.86]. See Roth, *supra* note 82, at 429 F.2d 1111, ("I cannot, however, follow the logic of the majority in holding that the uncopyrightable words and the imitated, but not copied art work, constitutes such total composition as to be subject to protection under the copyright law.").

[n.87]. See Krofft, *supra* note 73.

[n.88]. See C. JOYCE, COPYRIGHT LAW 622 (1986) ("How often will two works' expression be substantially similar when they do not have substantially similar ideas in common? What then is the purpose of the extrinsic test?").

[n.89]. 812 F.2d 525, 2 U.S.P.Q.2d 1135 (9th Cir. 1987) (concurring district court's conclusion that the only similar features in Frybarger's and [defendant's] works are non-protectable ideas (and hence "indispensable expression"), and affirming district court's granting of summary judgement for defendant).

[n.90]. 862 F.2d 204, 209, 9 U.S.P.Q.2d 1322 (9th Cir. 1988)(reversing lower court's finding of substantial similarity which was based on "analytic dissection of similarities" and holding that "the [lower] court did not give appropriate weight and import to its findings which support [defendant's] argument that similarities result from unprotectable expression").

[n.91]. Frybarger, supra note 89, at 812 F.2d 529.

[n.92]. Frybarger, supra note 89, at 812 F.2d 530. Both of these propositions came from other cases; see Mazer, supra note 60, and Jewelry, supra note 40.

[n.93]. Frybarger, supra note 89, at 812 F.2d 528.

[n.94]. Data East, supra note 90, at 862 F.2d 207.

[n.95]. Data East, supra note 90, at 862 F.2d 208.

[n.96]. See Pearl Systems, Inc. v. Competition Electronics, Inc., 8 U.S.P.Q.2d 1520, 1524, 1525 (S.D. Fla. 1988) (Roth and Frybarger tests cited, "the subroutines in both the Competition Electronics device and the Pearl Systems device were nearly identical"); and Digital, supra note 7 (Roth and Krofft tests cited (predated Frybarger), "While there is some difference between the two screens in their arrangement of their "window" list of commands, the upper portion of the two screens are virtually identical, the single exception being the insertion of the name "Mirror" in the place of the name "Crosstalk" on the top line of the screen.").

[n.97]. See Harlan Feder v. The Videotrip Corporation., 697 F.Supp. 1165, 1170 (D. Colo. 1988) (Krofft was cited but the test of substantial similarity was stated as "whether the resemblance would be recognized by ordinary observation, not fine analysis or argument" quoting Perm Greetings, Inc. v. Russ Berrie & Co., 598 F.Supp. 445, 447 (E.D.Mo. 1984)).

[n.98]. See *Johnson Controls*, supra note 79, at 886 F.2d 1176 (9th Cir. 1989) ("To show that [defendant's] program is substantially similar to [plaintiff's, plaintiff] must demonstrate substantial similarity of both ideas and expression."); *Telemarketing Resources v. Symantec Corp.*, 12 U.S.P.Q.2d 1991 (N.D. Cal. 1989) (citing Frybarger for the proposition that "if the underlying idea is subject to a limited range of expression, copyright protection would apply only against virtual identical copying," *Data East* for the proposition that "[i]f the ideas are similar, the expression of the idea is compared under the intrinsic subjective test which depends on the response of the ordinary reasonable person," and Krofft for the extrinsic and intrinsic prongs of the test for substantial similarity); and *NEC*, supra note 7, at 10 U.S.P.Q.2d 1188 citing Frybarger for the proposition that "if the . . . underlying ideas [of the shorter, simpler microroutines] are capable of only a limited range of expression, they may be protected only against virtually identical copying," and *Data East* for "In determining an idea's range of expression, constraints are relevant factors to consider.").

[n.99]. See *E.F. Johnson Co. v. Uniden Corp.*, 623 F.Supp. 1485, 228 U.S.P.Q. 891 (D. Minn. 1985). The court first defines the terms "algorithm," "assembly language," "binary," "bit," "byte," "eprom," "hexadecimal," "microprocessor," "program," "prom," "object code," and "source code." The court then noted the following test for substantial similarity: "whether an average lay observer would recognize the alleged copy as having been appropriated from the copyrighted work," but the court, after citing the complexity of computer programs, abandoned the lay observer test and relied on an "iterative" approach of analyzing the similarities and differences of the works in question. The court found that substantial similarity existed as between two software programs for radio systems.

[n.100]. See *Evans Newton Inc. v. Chicago Systems Software*, 793 F.2d 889, 230 U.S.P.Q. 166 (7th Cir. 1986) ("The test for substantial similarity is whether the accused work is so similar to the plaintiff's work that an ordinary reasonable person would conclude that the defendant unlawfully appropriated the plaintiff's protectable expression by taking material of substance and value."); *Strohom*, supra note 77, (a modification kit for a video game was held to constitute infringement); *Atari*, supra note 14, at 672 F.2d 614 (The district court's denial of a preliminary injunction was reversed. The court noted the extrinsic-intrinsic test and relied on the test of "whether an ordinary reasonable person would conclude that the defendant unlawfully appropriated the plaintiff's protectable expression by taking material of substance and value"); and *Williams Electronics, Inc. v. Bally Manufacturing Corp.*, 568 F.Supp. 1274, 1281, 220 U.S.P.Q. 1091 (N.D. Ill. 1983) ("Once the noncopyrightable elements of [plaintiff's video arcade game] *Hyperball* are put to one side, relatively little remains. The color and shape of the playing field is primarily all that is left. Thus, we must apply [the] substantial similarity test by comparing only the protected elements of *Hyperball* to the analogous elements in [defendant's game] *Rapid Fire*." Noinfringement was found.).

[n.101]. See *Nintendo of America, Inc. v. Elcon Industries*, 564 F.Supp. 937, 944 (E.D. Mich. 1982) ("The court finds that the plaintiff has shown a substantial likelihood of success on its claim that defendants have infringed its copyright in the Donkey Kong game . . . [b]y showing that defendants distributed, offered for sale, and sold for profit audio-video games which embody audio-visual material that is virtually identical to the audio-visual material embodied in plaintiff's copyrighted Donkey Kong game."); and *SAS Institute*, supra note 11 (defendants work which began as copy of plaintiff's work and later developed into a program with significant original portions was held to be an infringement of the plaintiff's work).

[n.102]. See *Plains Cotton Cooperative v. Goodpasture Computer Service, Inc.*, 807 F.2d 1256, 1260, 1 U.S.P.Q.2d 1635 (5th Cir. 1987), cert. denied 484 U.S. 821, 108 S.Ct. 80, 98 L.Ed.2d 42 (U.S. 1987) ("the similarity between the two programs exists on a level not protected by appellant's copyright"); *Synercom*, supra note 10 (the idea was found to be the sequencing and ordering of data and hence no infringement was found); and *Vault Corp. v. Quaid Software Limited*, 655 F.Supp. 750, 2 U.S.P.Q.2d 1407 (E.D. La. 1987) (motion for preliminary injunction against software designed to "unlock" copy protected software was denied).

[n.103]. See *M. Kramer Manufacturing Co, Inc. v. Andrews*, 783 F.2d 421, 228 U.S.P.Q. 705 (4th Cir. 1986) (Substantial similarity of video-game programs was found. The similarity of the screens was used as evidence of the similarity of the code); and *Atari, Inc. v. Amusement World, Inc.*, 547 F.Supp. 222, 215 U.S.P.Q. 929, (D. Md. 1981) (The video game "Metroids" was found to be not substantially similar to the game "Asteroids." A "general comparison" of the two works was conducted.).

[n.104]. See *Whelan*, supra note 3, (the computer screens were analyzed for their probative value in determining substantial similarity of the program code); and generally *Midway Manufacturing Co. v. Bandai-America, Inc.*, 546 F.Supp. 125, 216 U.S.P.Q. 812 (D.N.J. 1982) (evidence of copying which is overwhelming and pervasive will preclude, as a matter of law, any assertion of independent development).

[n.105]. See *Kregos v. The Associated Press and Sports Features Syndicate, Inc.*, 731 F.Supp. 113, 14 U.S.P.Q.2d 1143 (S.D.N.Y. 1990)(baseball "pitching forms" found not substantially similar); and *Manufacturers*, supra note 15, at 706 F.Supp. 1000 ("In the Second Circuit the standard for determining whether works are substantially similar is whether they appear so from the spontaneous response of the ordinary lay observer."). See also *Dynamic Solutions, Inc. v. Planning & Control, Inc.*, 646 F.Supp. 1329 (S.D.N.Y. 1986); *Universal City Studios, Inc. v. Nintendo Co. Ltd.*, 615 F.Supp. 838, 227 U.S.P.Q. 96 (S.D.N.Y. 1985); *United States v. Gallo*, 599 F.Supp. 241, 226 U.S.P.Q. 148 (W.D.N.Y. 1984); *United States v. Steerwell Leisure Corp., Inc.*, 598 F.Supp. 171, 224

U.S.P.Q. 1059 (W.D.N.Y. 1984); and *Stern Electronics, Inc. v. Kaufman*, 523 F.Supp. 635, 213 U.S.P.Q. 75 (E.D.N.Y. 1981).

[n.106]. See *Lotus*, supra note 22 (although copying was admitted by the defendant, the court entered into a discussion of the similarity of the works); and *Williams v. Arndt*, 626 F.Supp. 571, 227 U.S.P.Q. 615 (1st Cir. 1985) (copyright infringement of investment services materials found).

[n.107]. See *Manufacturers*, supra note 15, at 706 F.Supp. 1000.

[n.108]. See *Manufacturers*, supra note 15, at 706 F.Supp. 1000.

[n.109]. See *Atari*, supra note 14.

[n.110]. Furthermore, does "illicit copying" differ from "infringement" in the *Manufacturers* test?

[n.111]. *Lotus*, supra note 22, at 740 F.Supp. 52.

[n.112]. *Lotus*, supra note 22, at 740 F.Supp. 62.

[n.113]. *Lotus*, supra note 22, at 740 F.Supp. 63.

[n.114]. *Lotus*, supra note 22, at 740 F.Supp. 70. See also *Bandia*, supra note 102.

[n.115]. *Lotus*, supra note 22, at 740 F.Supp. 70, quoting *Peter Pan Fabrics*, supra note 30, at 274 F.2d 489.

[n.116]. The court further cited *Atari*, supra note 14, at 740 F.Supp. 70 for the cautionary note that "a laundry list of specific differences . . . will not preclude a finding of infringement where the works are substantially similar in other respects . . . . [C]ourts should be careful not to lose sight of the forest for the trees."

[n.117]. Although in other societies, specific patterns and icons on articles of clothing may have been "useful" for their importance in communicating with spiritual worlds, this "use" is not included in the Copyright Act's definition of "useful article."

[n.118]. It is interesting to note that in Japan, the Tokyo High Court held in *Systems Science Corp. v. Toyo Sokki K.K.*, 1322 HANJI 138 (Tokyo High Ct., June 20, 1989) that the processing flow of a program is an algorithm. Since the Japanese Copyright Laws explicitly exclude algorithms from copyright protection, this case has been interpreted to be in direct contrast to *Whelan*, supra note 3 which allowed protection for a program's structure, sequence and organization. For a translation and analysis of the case see D. Karjala, *Japanese Courts Interpret The "Algorithm" Limitation On The Copyright Protection Of Computer Programs*, 31 *JURIMETRICS J.* 233, 245 (1991) ("United States courts would do well to consider the analytical approaches taken by their Japanese Colleagues").

[n.119]. 17 U.S.C. § 901 et. seq., provides in § 905(2) that the "owner [of a mask work] has exclusive rights to . . . distribute a semiconductor chip product in which the mask work is embodied." If this is interpreted to preclude reverse engineering of the product without aid of the original mask works, then this protection leans much more towards being like design patent protection than copyright protection.

[n.120]. See *Telemarketing*, supra note 98. This is the same court which has yet to determine substantial similarity in *Apple v. Microsoft*, see supra note 68.