

FAIR USE AND MISUSE: TWO GUARDS AT THE INTERSECTION OF COPYRIGHTS AND TRADE SECRET RIGHTS HELD IN SOFTWARE AND FIRMWARE

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I. INTRODUCTION

Some commentators have recently argued that access to functional interface information¹ contained in software and firmware should be guaranteed by resort to the copyright Misuse Doctrine.² In the Spring 2000 Newsletter of the American Bar Association Section of Intellectual Property Law, Ivan Rothman presented an argument for eliminating the application of the Fair Use Doctrine³ to software reverse engineering cases, and, instead, applying and analyzing such cases in light of the copyright Misuse Doctrine.⁴ Another article in the Winter 2000 issue of the Dickinson Law Review, by

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¹ Functional interface information refers to program elements — ideas, rules, principles or procedures embedded in the code — that are determinative of the program's compatibility and interoperability with other programs, systems or devices.

² See generally Ivan Rothman, *From Sega to Sony and Beyond: An Alternative Legal Basis for Software Reverse Engineering*, 2000 A.B.A. SEC. INTELL. PROP. L. 18, No. 3, at 1; Ralph D. Clifford, *Simultaneous Copyright and Trade Secret Claims: Can the Copyright Misuse Defense Prevent Constitutional Doublethink?*, 104 DICK. L. REV. 247 (2000).

³ See generally 17 U.S.C. § 107 (1994).

⁴ See Rothman, *supra* note 2, at 1, 7, 8; See also *Lasercomb Am., Inc. v. Reynolds*, 911 F.2d 970, 977, 15 U.S.P.Q.2d (BNA) 1846, 1852 (4th Cir. 1990) (extending misuse doctrine to area of copyright).

Ralph D. Clifford, argued that both a trade secret right and a copyright in a work cannot be asserted at the same time, and that the misuse defense must be used to prevent enforcement of the copyright, if such an attempt is made.⁵

This article addresses the arguments made by Rothman and Clifford. While Rothman's article recognized that the Fair Use Doctrine has been applied in cases of reverse engineering to discover functional interface information (and argued that it has outlived its purpose),⁶ Clifford's article completely overlooked the application of the Fair Use Doctrine. However, neither recognized the usefulness of the Fair Use Doctrine in balancing trade secret rights held in functional interface information against copyrights in the expression on the one hand, and against third party interests in the functional interface information on the other hand. Rothman appeared to assume that functional interface information embedded in expression is unprotected subject matter.⁷ While Clifford recognized that legal protection of this information under the trade secret doctrine is common, he believed that such claimed rights should not be enforced, because they can not constitutionally co-exist with the privileges of copyright.⁸ In the end, both authors concluded that the Misuse Doctrine, alone, can ensure the availability of functional interface information to third parties.⁹

This author takes issue with the arguments presented by Rothman and Clifford, and presents, respectfully, why their reasoning is flawed and their conclusions are incorrect. A further purpose of this article is to clarify the scope of fair use of copyrighted computer code, and to argue for the continued viability of the Fair Use Doctrine in resolving copyright and trade secret issues that arise in the context of reverse engineering of software and firmware. This article also argues that trade secret protection for functional interface information in software is available, and that such rights do not run counter to the purposes of the Copyright Act¹⁰ and the Constitution's Copyright Clause.¹¹ Finally, the article concludes that assertion of trade secret rights in functional interface information does not constitute copyright misuse, and does not need to be preempted, *as long as the Fair Use*

⁵ See Clifford, *supra* note 2, at 251–52, 277, 283, 286–87.

⁶ See Rothman, *supra* note 2, at 1, 7.

⁷ See *id.* at 1, 7, 8.

⁸ See Clifford, *supra* note 2, at 283–86.

⁹ See *id.* at 286; Rothman, *supra* note 2, at 8.

¹⁰ See Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (codified at 17 U.S.C. §§ 1-1332 (1994)).

¹¹ See U.S. CONST. art. I, § 8, cl. 8 (“To 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”).

*Doctrine*¹² continues to be meaningfully available to owners and users of a copy of the software or firmware in question.

This article engages in a rather in-depth analysis of Rothman's arguments and conclusions, because his argument for misuse is based on an analysis of *Sony Computer Entertainment, Inc. v. Connectix Corp.*,¹³ which is the most recent important court opinion regarding the reverse engineering of software and firmware. Clifford's argument for the misuse defense is based on a comprehensive approach that deals more with the policies underlying the Copyright Act and the Copyright Clause and therefore receives a more limited treatment.¹⁴

II. THE SONY OPINION: AN ANALYSIS

In *Sony*, the defendant Connectix Corp. made and sold a software program and video game system that emulated the functioning of the plaintiff's video game system on a computer. In the development of its product, the defendant repeatedly copied the plaintiff's copyrighted BIOS (basic input-output system) during a process of reverse engineering. However, the defendant's final product did not contain any of the plaintiff's copyrighted material. The plaintiff claimed infringement and sought a preliminary injunction. The defendant raised, *inter alia*, the Fair Use and Misuse defenses. Finding that the defendant's intermediate copying was not a protected fair use, the district court granted the injunction. On appeal, the Ninth Circuit reversed and ordered that the injunction be dissolved, finding that the Fair Use Doctrine permitted the defendant's intermediate copying during the course of reverse engineering. Accordingly, the court did not address the Misuse defense.

The crux of Rothman's reasoning with respect to *Sony* is his argument that the Ninth Circuit had made a "significant departure from *Sega*."¹⁵

¹² See 17 U.S.C. § 107 (The factors for determining fair use include: (1) the purpose and character of the use; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the work as a whole; and (4) the effect of the use on the potential market for or value of the copyrighted work).

¹³ See generally *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 53 U.S.P.Q.2d (BNA) 1705 (9th Cir. 2000).

¹⁴ This issue is addressed separately in part VI(A), *infra*.

¹⁵ Rothman, *supra* note 2, at 6. In *Sega*, the defendant wished to produce a video game that would be compatible with Sega's entertainment console. It purchased Sega game cartridges and transformed the object code into source code through a process of reverse engineering. The defendant then used the source code to discover and study the interface information necessary to produce compatible games, and subsequently used that information to create games that could run on Sega's platform. The defendant's final

Rothman believes that the decision in *Sony* stands for the proposition that “intermediate copying¹⁶, if necessary to access and examine unprotected ideas, may be sanctioned only so long as the final product does not infringe the plaintiff’s original product,”¹⁷ and that the “legitimate reason” inquiry along the lines of *Sega* is not required anymore. Rothman argued that this general proposition was “implicit in the court’s ruling that a final product which does not contain any code of the original product is transformative, and that a transformative product does not supplant the original product and thus does not cause a substantially adverse impact on the potential market of the original.”¹⁸ This statement represents what Rothman believes to be the court’s reasoning. The first part of this statement may be rephrased as follows: if a final product contains 100% new code, then that product is transformative. The second part of the statement may be rephrased as follows: if a final product contains 100% new code, then it does not supplant the original product. Both of these conditionals are invalid argument forms, as will be shown in this article by applying the logical principles of *Modus Ponens*, *Modus Tollens*, and their counter-principles to the facts of several different cases.¹⁹

Rothman then concluded that “[t]his line of reasoning leaves little room for any meaningful application of the *Sega* Rule or the fair use

product did not contain any of Sega’s copyrighted code. The court found that the defendant’s intermediate copying of plaintiff’s code during the process of reverse engineering constituted fair use, because it was the only way to gain access to the functional elements and the defendant had a “legitimate reason” for seeking such access. *See Sega Enters., Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 24 U.S.P.Q.2d (BNA) 1561 (9th Cir. 1993)

¹⁶ Intermediate copying refers to the copying of computer code during a process of reverse engineering. “This term was adopted because the copying in question is done only as an intermediate step in producing a final product that is itself different from, and may not constitute an infringing copy of, the works copied at the intermediate stage. In other words, the copy produced at the intermediate copying stage is not the final product . . . the copier seeks to develop and market.” Rothman, *supra* note 2, at 1 n.3.

¹⁷ *Id.* at 7.

¹⁸ *Id.*; *See also* 17 U.S.C. § 107.

¹⁹ Modus Ponens is a valid argument having the following form: “If P then Q. P. Therefore, Q.” In such an argument, the conditional (“if-then”) rules out the possibility that its antecedent (P) is true when its consequent (Q) is false. (Modus Tollens is also a valid argument having the following form: “If P then Q. Not Q. Therefore, not P.” It confirms the validity of Modus Ponens by simply denying the consequent.) This article argues, based on the facts of several different cases, that in Rothman’s statements the antecedents can indeed be true when the consequents are false. *See also* Addendum 1, *infra*.

defense.”²⁰ However, the proposition Rothman discerned in the court's reasoning was neither expressed by the court in its opinion nor implicit in its ruling.²¹ As will be shown, what Rothman believed to be the court's reasoning (quoted above) is incorrect, thus leading to an inaccurate conclusion.

A. *The First and Fourth Fair Use Factors*

The *Sony* court, in its discussion of the first fair use factor, did not create a *categorical legal rule* that, “a final product which does not contain any code of the original product is transformative.”²² Instead, the court made a *case-specific conclusion of law* that Connectix's Virtual Game Station was transformative, after completing a *totality of the facts* inquiry “into whether Connectix's Virtual Game Station merely *supersedes* the *objects* of the original creation, or instead adds something new, *with a further purpose or different character*, altering the first with *new expression, meaning, or message*.”²³

Similarly, in its discussion of the fourth fair use factor, the *Sony* court *did not categorically find* that, in Rothman's words, “a transformative product does not supplant the original product and thus does not cause a substantially adverse impact on the potential market of the original.”²⁴ Instead, the court merely reiterated that “a transformative work is *less likely* to [cause a substantially adverse impact on the potential market of the original.]”²⁵ Immediately following this *qualified* proposition came the *case-specific conclusion* that Connectix's Virtual Game Station does not have a substantially adverse impact on the potential market of Sony's PlayStation, because of the court's prior conclusions (under the first fair use factor analysis) that the Virtual Game Station does not merely supplant or

²⁰ Rothman, *supra* note 2, at 7.

²¹ See generally *Sony*, 203 F.3d at 596, 53 U.S.P.Q.2d at 1705.

²² Rothman, *supra* note 2, at 7.

²³ *Sony*, 203 F.3d at 606, 53 U.S.P.Q.2d at 1712 (emphasis added) (citing *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579, 29 U.S.P.Q.2d (BNA) 961 (1994). See also *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 560, 225 U.S.P.Q. (BNA) 1073, 1081 (1985) (“Fair use is a mixed question of law and fact.”).

²⁴ Rothman, *supra* note 2, at 7.

²⁵ *Sony*, 203 F.3d at 607, 53 U.S.P.Q.2d at 1713 (emphasis added). In other words, whether a product is transformative as such is not the decisive issue under the fourth fair use factor, but rather what the *level* of transformation of the product is, and whether that level is sufficient to hold that defendant's product will not supplant plaintiff's product.

supersede the PlayStation console and was transformative.²⁶ One needs to ask on what basis the court concluded that the Virtual Game Station was transformative, and did not supplant the original, to realize why the categorical statements quoted above are incorrect.

1. The First Fair Use Factor -- Purpose and Character of the Use

Under the first fair use factor, the court's primary inquiry was: 1) into the *objects* of plaintiff's original creation (Sony's PlayStation), as well as how these were manifested in, amongst others, the "expressive element[s]" of the underlying software; and 2) into the level of transformation of defendant's final product (the Virtual Game Station), as determined by the *further purpose or different character* of that product, as well as the extent of, amongst others, "new expression" in the underlying software.²⁷ The ultimate *conclusion of law* that a court needs to make under the first fair use factor is whether the defendant's final product merely supplants the plaintiff's product, or, "in other words, whether and to what extent the new work is transformative."²⁸ In contemplating the level of transformation of Connectix's Virtual Game Station, the court, citing *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994), used a totality of the facts approach, with no one fact being dispositive, in which the role of the "new expression, meaning, or message" term is that of a necessary, but not sufficient condition to achieve product transformation.²⁹

The facts which the court considered in its evaluation of the Virtual Game Station were: 1) the product created "a new platform, the personal computer, on which consumers can play games," 2) it "affords opportunities for game play in new environments," 3) it enables game play "anywhere . . . a computer with a CD-ROM drive is [available]" but not "a Sony PlayStation console and television," 4) the Virtual Game Station "itself is a wholly new product," 5) "Connectix's commercial use of the copyrighted material was an intermediate one" and indirect, and 6) the reverse engineering was done "to produce a product . . . compatible with games designed for the Sony PlayStation."³⁰

²⁶ *See id.*, 53 U.S.P.Q.2d at 1713-14.

²⁷ *See id.* at 606, 53 U.S.P.Q.2d at 1712-13.

²⁸ *Id.*, 53 U.S.P.Q.2d at 1712.

²⁹ *See id.*, at 606-08, 53 U.S.P.Q. at 1712-13. This is true regardless of the percentage amount of code that is new in defendant's final product, as will be seen in the subsequent discussion.

³⁰ *Id.* at 606-07, 53 U.S.P.Q.2d at 1713.

Of these facts, the “[m]ore important” fact was number four: the Virtual Game Station itself was “a wholly new product.”³¹ It was while elaborating on this fact that the court stressed that “[t]he expressive element of software lies as much in the organization and structure of the object code that runs the computer as it does in the visual expression of that code that appears on a computer screen Sony does not claim that the Virtual Game Station itself contains object code that infringes Sony's copyright. We are therefore at a loss to see how Connectix's drafting of entirely new object code for its VGS program could not be transformative”³² The interpretation Rothman gave this language was not quite accurate. The court did not say, “we are therefore at a loss to see how Connectix's *final product* could not be transformative.” Instead, the court was merely speaking about the *act* of drafting entirely new object code *for* its final product as being a transformative act. This was only one of the several transformative factors of the final product, which *in combination* supported the conclusion that the *final product* was of such a transformative extent that it did not merely supplant Sony's product (the ultimate conclusion of law that a court needs to make under the first fair use factor).³³ Accordingly, the court concluded that “[f]or the *reasons* stated above, the Virtual Game Station [i.e. the final product] is transformative, and does not merely supplant the PlayStation console.”³⁴

Thus, the court's conclusion that the final product was innovative and transformative was based on a combination of both entirely new object code and several other contributing factors. In addition to the court's consideration that Connectix's *object* was to enable game play in an entirely different platform/environment (i.e. the *different character* of the product), the entirely different object code was additional, *corroborative* evidence of the transformative character of a computer platform as opposed to a television platform.³⁵ It was certainly not the singularly decisive factor Rothman believed it to be,³⁶ but it was an important one that could not be ignored. Indeed, the court even stated that “[i]n reaching its decision, the district court apparently failed to consider *the expressive nature* of the Virtual Game Station software itself.”³⁷

³¹ *Id.* at 606, 53 U.S.P.Q.2d at 1712-13.

³² *Id.* at 606-07, 53 U.S.P.Q.2d at 1713.

³³ *See id.*, 53 U.S.P.Q.2d at 1712-13.

³⁴ *Id.* at 607, 53 U.S.P.Q.2d at 1713. (emphasis added).

³⁵ *See id.* at 606-07, 53 U.S.P.Q.2d at 1713.

³⁶ *See id.*; Rothman, *supra* note 2, at 7.

³⁷ *Sony*, 203 F.3d at 607, 53 U.S.P.Q.2d at 1713 (emphasis added). Essentially, the district court was guilty of being “categorical” on the issue of “objects, purposes, or character” of defendant's final product. It considered only that aspect of the analysis as being

It is important to realize that under the first fair use factor, the *Sony* court was sensitive to the interaction between the *object, purpose, or character* of a product, and the *expressive elements* of the software underlying that product.³⁸ The court concluded *on the facts of that particular case* that a new platform (computer), together with entirely new object code, was “modestly transformative.”³⁹ It was, in that sense, a relatively easy case. However, the opinion did not rule out the possibility that an entirely new platform (for example, computer), together with *only some* new object code, could nevertheless be transformative (because it would still not supersede the objects of the original product). Neither did the court rule out the possibility that an entirely new platform, together with *no new* expression, would not be transformative.⁴⁰ Nor did it rule out the possibility that exactly the same platform (a television, in the *Sony* case), together with *entirely new* code, would nevertheless *not* be transformative if it results in exactly the same final product (because it might merely supersede the objects of the original

dispositive of the level of transformation. Rothman’s argument made a 180° turn and became categorical on the extent of the differences between plaintiff and defendant’s code, considering only that aspect as being dispositive of the level of transformation. *See* Rothman, *supra* note 2, at 7.

³⁸ *See* Addendum 1, *infra*.

³⁹ *See Sony*, 203 F.3d at 606, 53 U.S.P.Q.2d at 1713. The mere fact that the court used the words “modestly transformative,” despite the presence of entirely new code, should alert one to the fact that the court was not speaking in terms of categorical truths. The reason why the court found the new platform only “modestly” transformative would seem to be “the similarity of uses and functions . . . and screen output,” which even a new game platform has with the old, television based, game platform. Those facts go to the extent of the differences in objects, purposes, or character between Sony’s and Connectix’s final products. Thus, in the *Sony* case, the fact that the code was entirely new became a more important factor *relative* to the other factors in concluding that the final product was transformative. But this is not categorically the case under all circumstances of fact. *See id.* at 606-07, 53 U.S.P.Q.2d at 1712-13.

⁴⁰ Such were the facts in *Infinity Broadcast Corp. v. Kirkwood*, 150 F.3d 104, 47 U.S.P.Q.2d (BNA) 1295 (2d Cir. 1998), a case which the *Sony* court cited, illustrating the differences between its facts and the *Sony* facts. *See Sony*, 203 F.3d at 607, 53 U.S.P.Q.2d at 1713. In *Infinity*, the court, citing *American Geophysical Union v. Texaco, Inc.*, 60 F.3d 913, 35 U.S.P.Q.2d (BNA) 1513 (2d Cir. 1994), held that “a change of format, though useful, is not technically a transformation.” *Infinity Broadcast*, 150 F.3d at 108 n.2, 47 U.S.P.Q.2d at 1297 n.2. All the *Infinity* defendant did was to sell telephone access to unaltered radio broadcasts, so that copyrighted radio transmissions could be retransmitted over telephone lines. *See id.* at 106, 47 U.S.P.Q.2d at 1296. While the format was entirely different, there was no new expression. *Id.* Thus, one may conclude that transformation requires at least some new and original expression, and a finding of transformation is precluded without it.

product).⁴¹ Hence, Rothman's categorical statement that, “a final product which does not contain any code of the original product is transformative,” is inaccurate.⁴² The degree of transformation does not singularly, or even mainly, depend on the presence of new code, but on the *interaction* between

⁴¹ This is, arguably, the result that would have been obtained had the plaintiff been in legal possession of a copy of defendant's code in *Atari Games Corp. v. Nintendo of America Inc.*, 975 F.2d 832, 24 U.S.P.Q.2d (BNA) 1015 (Fed. Cir. 1992). In that case, the plaintiff, in emulating the functionality of defendant's software, had used an entirely different programming language to create its own software with entirely different code. *See id.* at 836, 24 U.S.P.Q.2d. at 1025. However, its code was *substantially similar* to defendant's original code, and therefore lacked the requisite level of originality. *See id.* at 845, 24 U.S.P.Q.2d at 1025. Not surprisingly, the plaintiff's final product performed exactly the same function, and had the same purpose, as defendant's original product. *See id.* at 836–37, 844–45, 24 U.S.P.Q.2d at 1018, 1025. Thus, the first and fourth fair use factors would likely have been violated. The *Atari* court also noted that the substantial similarity test “prevent[s] a plagiarist from escaping infringement by making immaterial changes in the protected work.” *Id.* at 844, 24 U.S.P.Q.2d at 1024. Thus, merely using a different programming language (which is, technically, entirely new code) without adding *a requisite level of original code* is an immaterial change. The analysis used to evaluate computer programs for substantial similarity “in ideas and the expression of those ideas,” could be telescoped into the objects, purposes, and character inquiry of the first fair use factor. *See id.* at 838, 24 U.S.P.Q.2d at 1019. *See also* *Whelan Assoc. Inc. v. Jaslow Dental Lab., Inc.*, 797 F.2d 1222, 23 U.S.P.Q. (BNA) 481 (3d Cir. 1986), *cert denied*, 479 U.S. 1031 (1987).

⁴² For an even clearer understanding of this point, consider that “[i]t is the work that cannot be copied or incorporated and not the specific tangible expression on file in the Copyright Office.” *Midway Mfg. Co. v. Artic Int'l, Inc.*, 211 U.S.P.Q. (BNA) 1152, 1158 (N.D. Ill. 1981). Thus, a copyright owner holds copyrights on the various versions of the computer program, be they source code version, object code version, or any other version. “The Copyright Office considers source code and object code as two representations of the same computer program. For registration purposes, the claim is in the *computer program* rather than in any particular representation of the program.” COPYRIGHT OFFICE, COMPENDIUM II OF COPYRIGHT OFFICE PRACTICES §321.03 (1984). Thus, “a final product which does not contain any code of the original product” could just as well be an entirely different representation (copy) of the very same computer program, and one would be hard pressed in arguing that such a work would be “transformative” and not “superseding.” Furthermore, in *Whelan*, the court has stated that “[b]y analogy to other literary works, it would thus appear that the copyrights of computer programs can be infringed even absent copying of the literal elements of the program.” *Whelan*, 797 F.2d at 1234, 230 U.S.P.Q. at 489. The *Whelan* court, quoting with approval cases that have applied the “total concept and feel” test, concluded that, by analogy, copyrights in a program do not merely protect object and source code but “extend beyond the programs' literal code to their structure, sequence, and organization.” *Id.* at 1248, 230 U.S.P.Q. at 500; *see also* *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 23 U.S.P.Q.2d (BNA) 1241 (2d Cir. 1992).

the different objects, purposes, or character of the new product and the level of originality of its code, as determined by a totality of the facts.⁴³

Despite the court's finding under the second Fair Use factor that Sony's BIOS operating system lies at a distance from the core of intended copyright protection, software and firmware nevertheless have a very important expressive element that can be "perceived, reproduced, or otherwise communicated either directly or with the aid of a machine or device."⁴⁴ As such, it is subject matter that falls squarely under the Copyright Act, and hence requires an analysis of the fair use factors, as the *Sony* court did. Any piece of software or firmware contains both significant original expression and functional elements dictated by technical considerations. A court cannot simply presume that when plaintiff software developers assert their copyrights, they do it to stifle competition and are not legitimately protecting expression. Doing away entirely with the requirement that the parties' rights be determined through a fair use analysis in such cases would allow courts to shut their eyes to the possibility that developers are protecting expression in good faith. Allowing defendants in these instances to prevail by merely raising a copyright Misuse defense would be tantamount to a

⁴³ See Addendum 1, *infra*. In *Sega*, the entirely new products were the new compatible video games Accolade created, which also, not surprisingly, contained entirely new object code. These games were definitely transformative, because Accolade's "ultimate purpose was the release of . . . compatible games," and not to "'scoop' Sega's release of any particular game or games." *Sega*, 977 F.2d at 1522–23, 24 U.S.P.Q.2d at 1570 (emphasis added). Therefore, Accolade's games did not usurp the market for any of Sega's games, and the court stated that that would be particularly true "if the games are . . . not substantially similar," as Accolade contended. *See id.* at 1523–24, 24 U.S.P.Q.2d at 1571. All of these facts meant that there were viable markets for both Sega and Accolade games. There is no doubt that had the Accolade games been substantially similar to the Sega games, even though containing entirely new and original object code, the games would not have been transformative, and would have merely supplanted the original games. In other words, the goal of achieving *compatibility* or interoperability for one's product as a reason for reverse engineering is not the same as the goal of creating a *clone*. One cannot fairly designate the latter activity as a search for "compatibility." In an article dealing with copyright preemption of contractual provisions, Maureen O'Rourke appears to argue that the result of either type of activity is a "compatible product." *See* Maureen A. O'Rourke, *Drawing the Boundary between Copyright and Contract: Copyright Preemption of Software License Terms*, 45 DUKE L.J. 479, 498 n.71 (1995). Although she is well aware that a clone is likely to supplant the original, O'Rourke opined that "[t]heoretically . . . a decompiler could use only functional specifications obtained through decompilation [i.e., none of the original code] to create the clone." *Id.* As argued in this article, that statement is incorrect. Where the final product supplants the original, fair use will not be satisfied, and the reverse engineering process will have involved illegal intermediate copying of the original code, despite the fact that that code was not used in the end product.

⁴⁴ *Sony*, 203 F.3d at 606, 53 U.S.P.Q.2d at 1713 (citing 17 U.S.C. § 102(a)).

presumption of bad faith on the part of plaintiff software developers. This result would be clearly unreasonable.

2. The Fourth Fair Use Factor -- the Effect of the Use on the Potential Market for or Value of the Copyrighted Work

Rothman's interpretation and conclusions, as quoted in the second and third paragraphs of part II of this article, were flawed due to an incorrect reading of the court's discussion of the first fair use factor and due to an apparent misunderstanding of the interaction between the first and fourth fair use factors. Rothman argued that the proposition he discerned in the court's reasoning, and the conclusion he drew from it, were suggested by the following three considerations:

- 1) "[the court's] discussion of the true market effect of the VGS—an alternative platform for Sony games—on sales of Sony's platform was at best, superficial. The court did not attempt an in-depth analysis of the extent to which a PC-based platform for Sony games might reduce sales of a television based platform,"
- 2) the inability "to furnish the court with sufficient evidence to allow for a meaningful analysis of the economic loss factor" at the preliminary injunction stage, and therefore the likelihood that "courts will . . . continue to attribute significant weight to the noninfringing, thus transformative, nature of the final product," and
- 3) the "fundamental principle articulated in both *Sega* and *Sony*, namely, that only patent law, and not copyright, affords a monopoly on ideas and functional concepts," and "that copyright protects expression only"⁴⁵

Rothman followed the last quoted sentence in the third consideration by posing the question, "why, then, should the doctrine of fair use be employed to prevent a competitor from accessing and making *whatever use it wants* of unprotected matter embodied in a computer program."⁴⁶ The answer is straightforward: because copyright protects expression,⁴⁷ and the underpinning of copyright is the Constitution.⁴⁸ Thus, it is the court's duty to evaluate which parts are protected expression and which are not, and what

⁴⁵ Rothman, *supra* note 2, at 7.

⁴⁶ *Id.* (emphasis added).

⁴⁷ See *Sony*, 203 F.3d at 603, 53 U.S.P.Q.2d at 1710 (quoting *Sega*).

⁴⁸ See U.S. CONST. art. I, §8, cl. 8.

amount and type of copying constitutes fair use of protected expression and what does not.⁴⁹

In any case, the question Rothman posed is a strawman. The Fair Use Doctrine is not employed to prevent a competitor from accessing unprotected matter embodied in a computer program. Fair use is normally asserted as a defense. If a court applies the fair use factors properly, it will instead assure access to, and legal use of, uncopyrightable matter embedded in software, if the facts of the case warrant it. It is exactly because copyright protection is afforded to the software's expression, while at the same time it is denied to functional elements, that the fair use analysis must be applied, as the *Sony* court effectively stated.⁵⁰

Rothman argued that, the fact that “a computer program is protected by copyright” and contains “unprotected matter . . . highlights the need to develop special rules for computer programs,” because the owner of a copyright has an exclusive reproduction right that does not allow copying.⁵¹ However, by assuming that uncopyrightable matter in software is “unprotected matter,” Rothman began with an invalid premise. His assertion that “only patent law” affords protection to ideas and functional concepts is of course inaccurate, because trade secret protection is available as well.⁵² Finally, the special rule that Rothman has in mind, i.e., the copyright misuse defense in lieu of the fair use analysis in *all* reverse engineering cases, would leave nothing of substance to the copyrights one may assert in the expression contained within software, in essence causing software copyrights to become nugatory.

Rothman's second consideration, as quoted above, focused on the fourth fair use factor (effect on the potential market). By asserting that evidence for the fourth factor will be hard to come by at the preliminary

⁴⁹ See generally 17 U.S.C. §107.

⁵⁰ See *Sony*, 203 F.3d at 603, 53 U.S.P.Q.2d at 1710.

⁵¹ Rothman, *supra* note 2, at 7; 17 U.S.C. §106(1) (1994). This is similar to arguing that the fact that business methods are protected by patent rights highlights the need to develop special rules for business methods because the owner of a business method patent has a right to exclude others from practicing that method, thereby stifling competition. See generally *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1998).

⁵² See, e.g., Clifford, *supra* note 2, at 247-51, 277-78, 283-86; O'Rourke, *supra* note 43, at 496-97; Steven N. Dupont, *The Copyright and Trade Secret Protection of Communication Software: Placing a Lock on Interoperability*, 13 J. MARSHALL J. COMPUTER & INFO. L. 17, 33-37 (1994); David W. Carstens, *Legal Protection of Computer Software: Patents, Copyrights, and Trade Secrets*, 20 J. CONTEMP. L. 13, 65-74 (1994); David Bender, *Symposium: The Future of Software Protection: Protection of Computer Programs: The Copyright/Trade Secret Interface*, 47 U. PITT. L. REV. 907 *passim* (1986).

injunction stage, he suggested that this, together with his first and third considerations, would leave little room for meaningful application of the fair use doctrine.⁵³ However, he then concluded that courts will therefore attribute significant weight to the noninfringing, transformative nature of the final product.⁵⁴ This is of course a fair use (first factor) analysis, thus necessitating “meaningful application of the fair use doctrine.” The significance of this consideration as possible support for Rothman’s conclusions is thereby defeated.⁵⁵ Finally, the categorical causal expression “noninfringing, *thus* transformative . . . ,” as argued previously in this article, is invalid.

We then come to Rothman’s first consideration which, like the second one, focused on the fourth fair use factor. It is here that an apparent misunderstanding of the interaction between the first and fourth fair use factors emerges, which causes Rothman to make the erroneous statement that “a transformative product [which, according to Rothman, is one that *only* needs to be lacking *any* code of the original product] does not supplant the original product and thus does not cause a substantially adverse impact on the potential market of the original.”⁵⁶ First, we have discussed previously that the court did not hold that the level of transformation of a final product could be decided merely by looking at how much code from the original was copied and used. Therefore, paraphrasing the above quote, “a product that contains entirely new code does not supplant the original product” is an invalid statement. Consequently, again paraphrasing, “a product that contains entirely new code thus does not cause a substantially adverse impact on the potential market of the original” is also an invalid statement. As discussed previously, in notes 37 to 41 and accompanying text, one can find cases involving fact patterns that would violate these categorical statements.

Rothman’s assertion in the first consideration that “[the *Sony* court’s] discussion of the true market effect of the VGS . . . was at best, superficial”⁵⁷ does not reflect the true nature of the court’s reasoning. What is important to remember here is that the Ninth Circuit, in *Sega*, held that “[a]s applied, the fourth statutory factor, effect on the potential market for the copyrighted work, bears close relationship to the ‘purposes and character’ inquiry [of the first fair use factor] in that it, too, accommodates the distinction between the

⁵³ See Rothman, *supra* note 2, at 7.

⁵⁴ See *id.*

⁵⁵ Please refer to the following discussion on the interaction between the first and fourth fair use factors, which shows how the apparent difficulty with evidence for the fourth fair use factor is overcome.

⁵⁶ See Rothman, *supra* note 2, at 7.

⁵⁷ *Id.*

copying of works in order to make independent creative expression possible and the simple exploitation of another's creative efforts."⁵⁸ The *Sega* court then cited *Harper & Row*, in which the United States Supreme Court found "a use that effectively usurped the market for the copyrighted work *by supplanting that work* to be dispositive" in deciding the fourth fair use factor.⁵⁹ Hence, if one has a sufficient amount of persuasive evidence under the first fair use factor, there is, in effect, no lack of sufficient evidence under the fourth factor.

Thus, in conclusion, the fact that the *Sony* court "did not attempt an in-depth analysis, under the fourth fair use factor, of the extent to which a PC-based platform for Sony games might reduce sales of a television based platform"⁶⁰ does not signal "a significant departure from *Sega*," as Rothman argued.⁶¹ In fact, the court was following *Sega* as closely as it could.

III. THE COPYRIGHT MISUSE DEFENSE

Where does this leave Rothman's conclusion that there is little room left for meaningful application of the *Sega* rule or the fair use defense?⁶² It is respectfully suggested here that this conclusion fails. Rothman ended his discussion of the *Sony* court's opinion by arguing that, instead of the fair use defense, we need "an alternative legal basis, preferably from within copyright law itself" to deal with software reverse engineering--he proposed that this should be the copyright misuse defense.⁶³ But there is no statutory provision for a copyright misuse defense under the Copyright Act, and the defense is solely an equitable doctrine.⁶⁴

The copyright misuse defense did *not* in fact come "from within copyright law itself." The misuse doctrine as a defense was judicially

⁵⁸ *Sega*, 977 F.2d at 1523, 24 U.S.P.Q.2d at 1570.

⁵⁹ *See id.* (emphasis added); *Harper & Row*, 471 U.S. at 567-69, 225 U.S.P.Q. at 1084. Thus, courts would not be "[f]ollowing the lead in *Sony*" by continuing "to attribute significant weight to the [first fair use factor]," as Rothman predicted. *See* Rothman, *supra* note 2, at 7. Instead, courts would properly be following the lead of the Supreme Court in *Harper & Row*.

⁶⁰ Rothman, *supra* note 2, at 7.

⁶¹ *See id.* at 6.

⁶² *See id.* at 7.

⁶³ *See id.* at 7, 8.

⁶⁴ *See Atari*, 975 F.2d at 846, 24 U.S.P.Q.2d at 1026. There is of course a statutory provision dealing with misuse in the Patent statute. *See* 35 U.S.C. § 271(d) (1984). However, even that provision does not define which acts constitute patent misuse. Instead, it defines what kind of conduct does not rise to patent misuse.

recognized for the first time by the United States Supreme Court in *Morton Salt Co. v. G.S. Suppiger*, a case dealing with patent misuse.⁶⁵ Although the Supreme Court has previously given tacit approval to the copyright misuse defense,⁶⁶ no Supreme Court decision has as firmly established a copyright misuse defense as it has the patent misuse defense. The Fourth Circuit was the first to adopt a copyright misuse defense, by extending the rationale behind patent misuse to copyright law, in *Lasercomb America, Inc. v. Reynolds*.⁶⁷

When one looks at the cases that have dealt with the issue of copyright misuse, one recognizes a red line running through them. Those defendants who were found liable on the basis of copyright misuse generally had used proactive licensing measures to secure rights over subject matter that was not only outside the scope of the copyrights held on the work being licensed, but that was entirely outside the work itself. In those cases, such subject matter was not *normally inherent* in the copyrighted work to the extent that, in an action for copyright infringement by the copyright holder, the rights to such subject matter would necessarily have to be considered and determined by the court in deciding the issues of copyright infringement and fair use. In other words, in those copyright misuse cases the doctrine of Fair Use would be incapable of resolving the issues.⁶⁸

⁶⁵ See *Morton Salt Co. v. G.S. Suppiger*, 314 U.S. 488, 492, 52 U.S.P.Q. (BNA) 30, 33 (1942).

⁶⁶ See generally *U.S. v. Paramount Pictures, Inc.*, 334 U.S. 131, 77 U.S.P.Q. (BNA) 243 (1948); *U.S. v. Loew's, Inc.*, 371 U.S. 38, 135 U.S.P.Q. (BNA) 201 (1962).

⁶⁷ See *Lasercomb*, 911 F.2d at 976-77, 15 U.S.P.Q.2d at 1852.

⁶⁸ Patent or copyright misuse cases often involve the conditioning of a license to use a primary *product* that is, or is covered by, a patent or copyright, on the use, or restriction on the use, of a *product* not covered by that patent or copyright. This is due to the fact that misuse is closely related to anticompetitive market effect, and often requires misuse of the demand of one product to unfairly influence or restrict demand or availability in the marketplace of another separate and unique product. See, e.g., *Lasercomb*, 911 F.2d at 976, 15 U.S.P.Q.2d at 1851-52 and cases cited therein. See also 35 U.S.C. § 271(d)(5) (1984). Exceptions to this are the cases of misuse that involve the acquisition of the patent or copyright through fraud on the PTO or Copyright Office, and misuse by virtue of the broadening, through contract, of the patent rights or copyrights granted on the product or work itself. In such cases the misuse is based primarily on the violation of the public policies underlying the Constitution's intellectual property clause and the Patent and Copyright Acts themselves. See U.S. CONST. art. I, § 8, cl. 8; Patent Act of 1952, 66 Stat. 792 (codified at 35 U.S.C. §§ 1-376) (1984); Copyright Act of 1976, 90 Stat. 2541 (codified at 17 U.S.C. §§ 1-1332) (1994). In such cases, however, the fair use doctrine is also unable to determine the issues, because, in the case of fraud on the PTO or Copyright Office, the actions of third parties do not enter the picture and only the actions of the copyright holder are scrutinized, or, in the case of contractual broadening of copyrights, the application of the fair use defense itself is in issue because of contractual

Thus, the *Lasercomb* court held that, while Lasercomb undoubtedly had the right to protect its copyrighted code (CAD/CAM die-making software), the defendant's copyright misuse defense was based on language in Lasercomb's standard licensing agreement, which tried to restrict its software licensees from creating their own CAD/CAM die-making software.⁶⁹ The court explained that the misuse arose from Lasercomb's attempt, through licensing, to use its copyright in a particular expression (its CAD/CAM die-making software) to control competition in an area outside of copyright, i.e. the idea of computer-assisted die manufacture.⁷⁰

Similarly, in *United States v. Loew's, Inc.*, the defendants were distributors of pre-1948 copyrighted motion pictures who, in selling to television stations, conditioned their license or sale of feature films on the buyer's acceptance of a package, or block, containing one or more unwanted or inferior films.⁷¹ This practice is known as block booking, and it is essentially a product tying agreement of the sort at issue in *Morton Salt*. The *Loew's* Court condemned the practice of the seller who, by virtue of his position in the market for the tying product (the primary subject of the license), had induced his customers to take the legally and economically distinct tied product along with the tying product.⁷² "The district judge [had] found that each copyrighted film block booked by [defendants] for television use was in itself a unique product," and with its own unique audience appeal.⁷³ The Supreme Court agreed.⁷⁴

Similarly, in *United States v. Paramount Pictures, Inc.*, a case dealing with several restrictive types of licensing provisions, the Supreme Court affirmed the District Court's holding that the defendant's practice of block booking "adds to the monopoly of a single copyrighted picture that of another copyrighted picture which must be taken . . . to secure the first."⁷⁵ Such an enlargement of the monopoly of a copyright on a particular picture was condemned in reliance on the *Morton Salt* principle, "which forbids the

provisions purporting to prohibit activities permitted under that doctrine. See also notes 89–90 and accompanying text, *infra*.

⁶⁹ See *Lasercomb*, 911 F.2d at 978, 15 U.S.P.Q.2d at 1853.

⁷⁰ See *id.* at 979, 15 U.S.P.Q.2d at 1854.

⁷¹ See *Loew's*, 371 U.S. at 47-50, 135 U.S.P.Q. at 205.

⁷² See *id.* at 45, 49, 135 U.S.P.Q. at 204-06.

⁷³ See *id.* at 48, 135 U.S.P.Q. at 205.

⁷⁴ See *id.*

⁷⁵ *Paramount Pictures*, 34 U.S. at 157, 77 U.S.P.Q. at 252.

owner of a patent to condition its use on the purchase or use of [other distinct] patented or unpatented materials.”⁷⁶

Conversely, in *Bellsouth Adver. & Publ’g Corp. v. Donnelley Info. Publ’g, Inc.*⁷⁷, the defendants in a copyright infringement action alleged the maintenance of monopoly power, or the attempt to attain monopoly power, by the plaintiff, and “that the [plaintiff’s] monopoly was effectuated by (1) refusing to supply Donnelley with the information required to compete in the market and (2) overexerting their intellectual property rights in copyrighted directories to prohibit the use of competition-essential, unprotected information.”⁷⁸ The defendants argued that the court should not enforce the copyrights because Bellsouth (“BAPCO”) had abused its copyright privileges.⁷⁹ The court decided, however, that application of the misuse defense in this case was out of the question because there was no anticompetitive violation.⁸⁰ Namely, BAPCO had, in the licensing agreement between the parties, not proactively prevented Donnelley from using unprotected information necessary for competition.⁸¹ The court held that this case was “different from the ordinary monopoly case because BAPCO’s right to restrict the copying of its work was recognized in them by the government,” and that “with regard to an exclusive right that is sanctioned by the government, the grantee must abuse the legitimate privileges that accompany the grant. In order to abuse these privileges, it is necessary that the grantee extend its exclusive right beyond the parameters inherent in the grant.”⁸² The court then agreed with the district court conclusion that there was no anti-competitive violation, because BAPCO had not “sought to extend the exclusionary power granted by the copyrights beyond the protection of the copyrighted directories.”⁸³ The court further explained that

⁷⁶ *Id.*

⁷⁷ *See generally* *Bellsouth Adver. & Publ’g Corp. v. Donnelley Info. Publ’g, Inc.*, 933 F.2d 952, 19 U.S.P.Q.2d (BNA) 1345 (11th Cir. 1991), *vacated and reh’g en banc granted*, 977 F.2d 1435 (11th Cir.1992).

⁷⁸ *See id.* at 960, 19 U.S.P.Q.2d at 1351. Although the ruling of the Circuit Court panel was vacated by a grant of rehearing en banc, the en banc panel did not reverse the district court’s ruling on the issue of copyright misuse, and did not touch upon that issue, since the ruling of the rehearing only needed to be based on resolution of the copyright infringement claim. *See* *Bellsouth Adver. & Publ’g Corp. v. Donnelley Info. Publ’g, Inc.*, 999 F.2d 1436, 1439 n.4, 28 U.S.P.Q.2d (BNA) 1001, 1003 n.4 (11th Cir. 1993).

⁷⁹ *See Bellsouth*, 933 F.2d at 960-61, 19 U.S.P.Q.2d at 1351.

⁸⁰ *See id.*

⁸¹ *See id.* at 961, 19 U.S.P.Q.2d at 1351.

⁸² *Id.*; *Accord Morton Salt*, 314 U.S. at 492-93, 52 U.S.P.Q. 30 at 32.

⁸³ *Bellsouth*, 933 F.2d at 961, 19 U.S.P.Q.2d at 1351. Thus, although the copyrighted work contained competition-essential, unprotected information, protecting the copyrights in

“[a]lthough enforcement of their copyright privileges does give BAPCO a competitive advantage . . . this advantage is legitimately within the range of sanctioned benefits,” because the “exclusionary rights in intellectual property . . . is an objective ‘for limited times’ countenanced by the Constitution and the copyright laws.”⁸⁴

A. *The Underlying Principles of the Misuse Defense*

In establishing the copyright misuse defense, the *Lasercomb* court, paraphrasing *Morton Salt*, stated that, “the public policy which includes [original works] within the granted monopoly excludes from it all that is not embraced in the [original expression]. It equally forbids the use of the [copyright] to secure an exclusive right or limited monopoly not granted by the [Copyright] Office and which it is contrary to public policy to grant.”⁸⁵ The keywords in this language are “not embraced” (in the expression), “use” (of the copyright) and “to secure” (a right or monopoly not granted), as explained in the following paragraphs. These unifying principles explain all previously mentioned misuse cases, as well as *Sony, Alcatel USA, Inc. v. DGI Technologies Inc.*,⁸⁶ and *DSC Communications Inc. v. DGI Technologies Inc.*⁸⁷ The latter two cases were cited by Rothman in support of his conclusion that the copyright misuse defense ought to completely replace the fair use defense in all reverse engineering cases.⁸⁸

Thus, in *Sony*, the copyrighted BIOS operating system software *did* “embrace in its expression” functional interface procedures inherent in those copyrighted works. The software did so to the extent that, in an action for copyright infringement by the copyright holder, the rights to that subject matter would necessarily have to be considered by the court in deciding the issues of copyright infringement and fair use.⁸⁹

court did not rise to the level of misuse because the rights to that unprotected information would necessarily be considered and decided by the court in deciding the issues of infringement and fair use, since the unprotected information was *inherent* in the work.

⁸⁴ *Id.*; *Accord Lasercomb*, 911 F.2d at 977–78, 15 U.S.P.Q.2d at 1852–53.

⁸⁵ *Lasercomb*, 911 F.2d at 977, 15 U.S.P.Q.2d at 1852.

⁸⁶ *Alcatel USA, Inc. v. DGI Techs., Inc.*, 166 F.3d 772, 49 U.S.P.Q.2d (BNA) 1641 (5th Cir. 1999).

⁸⁷ *DSC Communications Corp. v. DGI Techs., Inc.*, 81 F.3d 597, 38 U.S.P.Q.2d (BNA) 1699 (5th Cir. 1996).

⁸⁸ *See* Rothman, *supra* note 2, at 8 & n.21.

⁸⁹ In addition, this functional interface information inherent, embraced, and embedded in the expression does not constitute a viable product that could be separated from the expression in which it is embedded, so that, physically, only the expression could be

Furthermore, Sony did *not* proactively "use its copyright" through licensing measures "to secure a right or monopoly not granted," *i.e.*, rights in the interface procedures themselves.⁹⁰ It is true that Sony brought an action for copyright infringement against Connectix,⁹¹ but, since this is an exclusive right sanctioned by the government, this can clearly not be the kind of "use" of a copyright that the *Lasercomb* court had in mind when it discussed copyright misuse (with perhaps one caveat, discussed in part VI, *infra*). Sony also did not satisfy the "securing" element, because the act of filing a lawsuit does not secure any rights and the outcome of a lawsuit cannot be controlled by the plaintiff.

IV. TRADE SECRET PROTECTION AND FAIR USE

Sony did not make information about the uncopyrightable functional elements in its software available to the public,⁹² and it declined Connectix's requests for technical assistance.⁹³ However, that merely meant that Sony kept this information as a trade secret, which it was permitted to do. The policies and principles which the United States Supreme Court discussed in the famous case of *Kewanee Oil Company v. Bicron Corporation*⁹⁴ are also highly applicable to the intersection of copyright and trade secret protection.

transferred to the licensee under a license. (This is clearly different from, for example, the situation in *Morton Salt*, where salt tablets were required to be licensed along with the salt-depositing machine under the patent license at issue. 314 U.S. 488, 52 U.S.P.Q. 30). As such, it could not raise an illegal tying or blockbooking like issue, and application of the Misuse doctrine is therefore not necessary in such cases.

⁹⁰ See *Sony*, 203 F.3d at 607, 53 U.S.P.Q.2d at 1714. A broadening of the copyrights on a work through licensing measures, in an attempt to protect functional interface information, might raise both preemption and misuse concerns. See, *e.g.*, O'Rourke, *supra* note 43. The present author has no knowledge as to whether Sony required licensees to give up their fair use rights through a provision prohibiting reverse engineering, disassembly, or decompilation. This practice is, however, quite common in the industry. See also *infra* part VII.

⁹¹ See *Sony*, 203 F.3d at 601, 53 U.S.P.Q.2d at 1709.

⁹² See *id.* at 600, 53 U.S.P.Q.2d at 1707.

⁹³ See *id.* at 601, 53 U.S.P.Q.2d at 1709.

⁹⁴ *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 181 U.S.P.Q. (BNA) 673 (1974). In *Kewanee*, the defendants, former employees of the plaintiff, were held liable for misappropriation of the plaintiff's trade secrets, and the District Court granted the plaintiff injunctive relief. The Court of Appeals reversed on the ground that common law trade secret law conflicted with the patent laws. Reversing the appeals court determination of preemption by federal patent law, the United States Supreme Court held

A. The *Kewanee* Case

Paraphrasing the Supreme Court in *Kewanee*, "trade secret law protects items which would not be proper subjects for consideration for [copyright] protection."⁹⁵ In that case, the Court found that "the policy that matter once in the public domain must remain in the public domain is not incompatible with the existence of trade secret protection. By definition a trade secret has not been placed in the public domain."⁹⁶ Furthermore, it added in an accompanying footnote that "[a]n invention may be placed 'in public use or on sale' within the meaning of 35 U.S.C. §102(b) without losing its secret character."⁹⁷ In a similar manner, a copyrighted software product may be placed in public use or on sale without losing the secret character of the technical interface specifications embedded in its code.

Although a seemingly contradictory proposition, the Court in *Kewanee* stated that "trade secret law will encourage invention in areas where patent law does not reach,"⁹⁸ and "keeping [nonpatentable subject matter] secret encourages businesses to initiate new and individualized plans of operation, and constructive competition results."⁹⁹ These propositions are equally true if one substitutes the word "copyright" for the word "patent."¹⁰⁰

that federal patent law did not preempt state trade secret law, and that the two systems are not in conflict.

⁹⁵ *Id.* at 482, 181 U.S.P.Q. at 679.

⁹⁶ *Id.* at 484, 181 U.S.P.Q. at 679.

⁹⁷ *Id.* at 484 n.13, 181 U.S.P.Q. at 679 n.13 citing *Painton & Co. v. Bourns, Inc.*, 442 F.2d 216, 224 n.6, 169 U.S.P.Q. (BNA) 528, 533 n.6 (2d Cir. 1971), and *Metallizing Eng'g Co. v. Kenyon Bearing & Auto Parts Co.*, 153 F.2d 516, 520, 68 U.S.P.Q. (BNA) 54, 58 (2d Cir. 1946). In *Painton* and *Metallizing*, the courts held that even in the category of trade secret subject matter believed by its owner to constitute validly patentable subject matter an inventor could license the subject matter as a trade secret, while at the same time this could constitute a 'public use or sale' for priority purposes. *Painton*, 442 F.2d at 224, 169 U.S.P.Q. at 533; *Metallizing Eng'g*, 153 F.2d at 520, 68 U.S.P.Q. at 58. Because functional interface information embedded in software code does not constitute validly copyrightable subject matter, the publication of a copyrighted software product should not constitute the publication of the trade secret subject matter embedded in it. Such matter cannot be readily ascertained by humans when using the software. See *Architectronics, Inc. v. Control Systems, Inc.*, 935 F. Supp. 425 (S.D.N.Y. 1996); Clifford, *supra* note 2, at 250-51; David Bender, *supra* note 52, at 923, 928, 939-40, 945-46, 950-53, 956-57; see also Part VI (A)(1) *infra*.

⁹⁸ *Kewanee*, 416 U.S. at 485, 181 U.S.P.Q. at 680.

⁹⁹ *Id.* at 483, 181 U.S.P.Q. at 679.

¹⁰⁰ In *Kewanee*, the Supreme Court commenced its consideration of the question whether the States are forbidden to protect the subject matter of trade secrets by discussing *Goldstein v. California*, 412 U.S. 546, 178 U.S.P.Q. 129 (1973), a case involving

Particularly in the area of software, which can be developed by a single enterprising individual with little capital investment, the Court's rationale for allowing state trade secret protection besides federal statutory intellectual property protection rings true:

Disallowing trade secret protection for such subject matter would place "[s]maller companies . . . at a distinct economic disadvantage, since the costs of . . . self help could be great, and . . . [t]he innovative entrepreneur with limited resources would tend to confine his research efforts to himself and . . . would not likely share his secret with a manufacturer who cannot be placed under [a] binding legal obligation to pay a license fee or to protect the secret. The result would be to hoard rather than disseminate knowledge. Instead, then, of licensing others . . . the trade secret holder would tend . . . [to] engage in the time-consuming and economically wasteful enterprise of constructing duplicative manufacturing and marketing mechanisms for the exploitation of the invention. The detrimental misallocation of resources and economic waste that would thus take place if trade secret protection were abolished with respect to employees or licensees cannot be justified by reference to any policy that the federal [intellectual property] law seeks to advance."¹⁰¹ "Trade secret law promotes the sharing of knowledge, and the efficient operation of industry; it permits the individual inventor to reap the rewards of his labor by contracting with a company large enough to develop and exploit it."¹⁰²

The language in the preceding quote clearly does not endorse the type of free rein competition that large corporations would be able to engage in if a fair use requirement for reverse engineering was abolished and substituted with a general rule, as proposed by Rothman, that a software developer's secrecy regarding his technical interface specifications constitutes copyright misuse,¹⁰³ thereby essentially creating an unconditional right

"writings." *Kewanee*, 416 U.S. at 478-79, 181 U.S.P.Q. at 677. Citing to the *Goldstein* case, the Court stated: "As we noted earlier, trade secret law protects items which would not be proper subjects for consideration for patent protection under 35 U. S. C. § 101. As in the case of the recordings in *Goldstein v. California*, Congress, with respect to nonpatentable subject matter, has drawn no balance; rather, it has left the area unattended, and no reason exists why the State should not be free to act." *Kewanee*, 416 U.S. at 482-83, 181 U.S.P.Q. at 679 (footnote omitted; internal quotation marks omitted). *See also Lasercomb*, 911 F.2d at 973, 15 U.S.P.Q.2d at 1849 (recognizing the similarity of rationales underlying the law of patents and the law of copyrights). The *Lasercomb* court also explained that "the treatment of these two aspects of intellectual property by the framers of our Constitution, and the later statutory and judicial development of patent and copyright law in this country persuade us that parallel public policies underlie the protection of both types of intellectual property rights." *Id.* at 974, 15 U.S.P.Q.2d at 1849-50.

¹⁰¹ *Kewanee*, 416 U.S. at 486-87, 181 U.S.P.Q. at 680.

¹⁰² *Id.* at 493, 181 U.S.P.Q. at 682.

¹⁰³ *See* Rothman, *supra* note 2, at 8.

of access to the trade secrets. This could lead to a result arguably analogous to that in trademark reverse confusion cases, where a larger company with greater financial ability and trademark/product recognition in the marketplace could easily overwhelm the smaller original software developer by quickly flooding the market with a product substantially similar or identical to that of the smaller developer.¹⁰⁴ This is exactly the kind of result that the first and fourth fair use factors try to prevent, by looking at the extent to which the new product supplants the original product, and the effect on the original product's market.

The Supreme Court in *Kewanee* stated that "neither the patent nor trade secret laws forbid" that "an inventor . . . keep his discovery completely to himself,"¹⁰⁵ and reiterated that "trade secret law does not forbid the discovery of the trade secret by fair and honest means."¹⁰⁶ The combined message of these two statements is that one is not guaranteed an unconditional right of access to another's trade secrets, and that gaining access to them must be done fairly and honestly. Thus, in the case of technical interface specifications embedded in software, the attempt at discovery by reverse engineering leads (in most cases) to copyright infringement, which is an "[un]fair and [dis]honest means,"¹⁰⁷ unless it can be held to constitute fair use.

¹⁰⁴ See, e.g., *Sands, Taylor & Wood Co. v. Quaker Oats Co.*, 978 F.2d 947, 24 U.S.P.Q.2d 1001 (7th Cir. 1992), *cert. denied*, 507 U.S. 1042, 113 S. Ct. 1879, 123 L. Ed. 2d 497 (1993); see also Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 978, 1026-27 (1993) ("[T]he simple truth is that permitting decompilation allows a second comer to create a market substitute and reap the benefits of a successful program after others have incurred the risk and expense of its development . . . Freedom to decompile . . . eliminates any incentive to produce an innovative or creative expression of one's own, thereby debilitating one of the basic objectives of the copyright regime.").

¹⁰⁵ *Kewanee*, 416 U.S. at 491, 181 U.S.P.Q. at 681-82.

¹⁰⁶ *Id.* at 490, 181 U.S.P.Q. at 681.

¹⁰⁷ See *id.* at 475-76, 484, 181 U.S.P.Q. at 676, 679 ("The law . . . protects the holder of a trade secret against disclosure or use when the knowledge is gained, not by the owner's volition, but by some 'improper means,' Restatement of Torts § 757 (a), which may include theft, wiretapping, or even aerial reconnaissance."). The protection of trade secrets is not limited "to a breach of confidential relationship when the facts of the case do raise the issue of some other wrongful conduct." *E.I. duPont deNemours & Co., Inc. v. Christopher*, 431 F.2d 1012, 1015, 166 U.S.P.Q. 421, 167 U.S.P.Q. 1 (5th Cir. 1970), *cert. denied*, 400 U.S. 1024, 91 S. Ct. 581, 27 L. Ed. 2d 637 (1971). In *E.I. duPont*, the court recognized that trade secret misappropriation cases can be based on "a trespass, or other illegal conduct . . ." *Id.* at 1014, 166 U.S.P.Q. at 421.

Although reverse engineering that involves intermediate copying of software has been held to constitute fair use,¹⁰⁸ there are situations in which it is not likely to constitute fair use, such as when a plaintiff's competitor has reverse engineered the plaintiff's product for the illegitimate purpose of creating a clone of that product.¹⁰⁹ In other words, as long as a defendant's methods and reasons for reverse engineering are found legitimate under the Fair Use Doctrine, focusing on an analysis of the defendant's final product under the first and fourth factors, the defendant would have legally discovered the plaintiff's trade secrets and could not be punished. This would end the case and, therefore, the copyright misuse defense would not be necessary. Indeed, that is how *Sony* was decided.¹¹⁰ It is for the above reasons that the fair use analysis *has* to be applied in software reverse engineering cases.¹¹¹ At this time, please refer to Addendum 2, illustrating the relationship between copyright infringement and trade secret misappropriation in cases of reverse engineering, disassembly, or decompilation of computer programs.

B. *The Alcatel Case*

In *Alcatel*, which Rothman cited in support of his conclusions, the plaintiff Alcatel¹¹² brought an action for copyright infringement and misappropriation of trade secrets against DGI.¹¹³ The Fifth Circuit affirmed the judgment below in favor of Alcatel on both of its claims.¹¹⁴ In this case,

¹⁰⁸ See, e.g., *Sony*, 203 F.3d at 603-608, 53 U.S.P.Q.2d at 1710-14; *Sega*, 977 F.2d at 1520-27, 24 U.S.P.Q.2d at 1568-74; *Atari*, 975 F.2d at 842-44, 24 U.S.P.Q.2d at 1022-24.

¹⁰⁹ See *infra* discussion of the *Alcatel* case.

¹¹⁰ See *Sony*, 203 F.3d at 608, 53 U.S.P.Q.2d at 1714.

¹¹¹ See Addendum 2 on the relationship between copyright infringement and trade secret misappropriation in cases of reverse engineering, disassembly, or decompilation of computer programs.

¹¹² Alcatel USA, Inc. was formerly known as DSC Communications Corp., the same plaintiff as in the second case in Rothman's footnote 21, where he cited it as DCS [sic] Communications Corp. v. DGI Techs., Inc. See Rothman, *supra* note 2, at 9 n.21.

¹¹³ See *Alcatel*, 166 F.3d at 777, 49 U.S.P.Q.2d at 1642. In *Alcatel*, the defendant engaged in copying and reverse engineering of the plaintiff's software and firmware, because it needed to discover the trade secrets embedded in the code, i.e., the interface information. It needed this information to enable the manufacture of its own microprocessor expansion cards that could perform the same functions as, and would compete with, the plaintiff's cards, which controlled the plaintiff's telephone switching systems. Alcatel's software license required customers to use the software only in conjunction with equipment manufactured by Alcatel.

¹¹⁴ See *id.*

just as in *Sony*, plaintiff's copyrighted operating system software and firmware "embraced in its expression" functional interface procedures.¹¹⁵ However, Alcatel *did* proactively "use" its copyright through licensing measures "to secure . . . [a] right or . . . monopoly not granted"¹¹⁶ by the Copyright Office, *i.e.*, rights in the microprocessor cards themselves.¹¹⁷

It was also true that Alcatel did not make information about the unprotected functional elements in its software available to the public, and prohibited its customers from disclosing its software to third parties.¹¹⁸ However, that merely meant that Alcatel kept this information as a trade secret, which it was permitted to do.¹¹⁹ As previously stated, such trade secrets are free to be discovered independently as long as legitimate and fair means are used. In this case, however, the defendant's methods of discovery were found to be improper under the Misappropriation of Trade Secrets Doctrine.¹²⁰ In arguing this claim, Alcatel was able to prove "that DGI did not use legitimate disassembly or reverse engineering to acquire [Alcatel's] trade secrets,"¹²¹ and that DGI unlawfully obtained a copy of Alcatel's operating system software by misleading and deceiving one of Alcatel's licensees.¹²² The court agreed that these were "means which fall below the generally accepted standards of commercial morality and reasonable conduct."¹²³ In *Atari Games Corporation v. Nintendo of America Inc.*, the Federal Circuit held that "[t]o invoke the fair use exception, an individual must possess an authorized copy of a literary work."¹²⁴ In that case, "Atari was not in authorized possession of the Copyright Office copy of [the program at issue]," and therefore, "any copying" could "not qualify as a fair use."¹²⁵ Similarly, the methods employed by DGI in obtaining access to a copy of Alcatel's software opened it to trade secret misappropriation,

¹¹⁵ *See id.* at 777-79, 49 U.S.P.Q.2d at 1643-44.

¹¹⁶ *Lasercomb*, 911 F.2d at 977, 15 U.S.P.Q.2d at 1852.

¹¹⁷ *See Alcatel*, at 793-94, 49 U.S.P.Q.2d at 1656-57.

¹¹⁸ *See id.* at 777-78, 49 U.S.P.Q.2d at 1643.

¹¹⁹ *See id.* at 784-85, 49 U.S.P.Q.2d at 1648-49; *see also supra* note 52 and accompanying text.

¹²⁰ *See id.* at 779-80, 49 U.S.P.Q.2d at 1644-45.

¹²¹ *Id.* at 784, 49 U.S.P.Q.2d at 1649.

¹²² *See id.* at 785, 49 U.S.P.Q.2d at 1649.

¹²³ *Id.*

¹²⁴ *Atari*, 975 F.2d at 843, 24 U.S.P.Q.2d at 1024.

¹²⁵ *Id.*

effectively disqualifying it from applying the fair use defense.¹²⁶ Thus, as in *Sony*, we see again an interaction between the trade secret protection of uncopyrightable elements in software, and the fair use analysis.

1. Additional Factors That Foreclosed Fair Use in *Alcatel*

Interestingly, it would appear that a finding of unfair practices under the Trade Secret Misappropriations Doctrine, or any other doctrine, could foreclose a court's utilization of the fair use analysis under the Copyright Act, while a finding of fair use would foreclose a finding of trade secret misappropriation.¹²⁷ This makes sense, because these two analyses represent, in essence, two opposite sides of the same coin.¹²⁸

The *Alcatel* case provides additional facts to support this proposition. First, *Alcatel*'s assertion of a state claim for unfair competition by misappropriation against DGI.¹²⁹ Because the state unfair competition claim was preempted,¹³⁰ this misappropriation doctrine could not inform the court as to

¹²⁶ The fair use doctrine was intended to be "an equitable rule of reason." Harper & Row, 471 U.S. at 560, 225 U.S.P.Q. at 1081. "It is old hat that a court called upon to do equity should always consider whether the petitioning party has acted . . . with unclean hands." *Texaco Puerto Rico, Inc. v. Department of Consumer Affairs*, 60 F.3d 867, 880, ___ U.S.P.Q. ___ (1st Cir. 1995). See *Alcatel*, 166 F.3d at 794, 49 U.S.P.Q.2d at 1657.

¹²⁷ That is, assuming there was no breach of a confidential relationship, *if* a valid contractual confidential relationship existed between the plaintiff and the defendant. Note, however, that requiring a promise to keep confidential information that has been given access to a secret is not the same as requiring a promise to not reverse engineer, disassemble, or decompile in an attempt to keep one's information secret. The latter does not constitute a valid trade secret contract.

¹²⁸ See also Addendum 2.

¹²⁹ See *Alcatel*, 166 F.3d at 785-89, 49 U.S.P.Q.2d at 1649-53.

¹³⁰ The court agreed with the defendants that "under the discrete facts of this case . . . the claim[] [was] preempted by the [federal] Copyright Act." *Id.* at 788, 49 U.S.P.Q.2d at 1652. Although such a state claim is specifically designed to protect the labor or "sweat equity" that goes into creating a work (in contrast to copyright law's focus on the value of creativity), *Alcatel* "consistently framed its misappropriation count in the context of DGI's use of its firmware, operating system software, and . . . manuals," (as opposed to the "uncopyrightable information . . . contained within these copyrightable works") and "these works . . . 'come within the subject matter of copyright.'" *Id.* at 786, 49 U.S.P.Q.2d at 1650. Had *Alcatel* framed its unfair competition count in terms of the "use of uncopyrightable information . . . contained within . . . copyrightable works" the misappropriation claim would likely not have been preempted by the Copyright Act, because the acts that would have formed the basis for its misappropriation claim would

the issue of fairness of defendant's conduct.¹³¹ If the state unfair competition count had not been preempted due to flawed pleadings, Alcatel would have likely prevailed on that unfairness issue as well.¹³² According to this article, that would have provided the court with an additional reason for *not* needing to apply the Copyright Act's fair use analysis under the specific facts of that particular case.

Second, the *Alcatel* court *did* in fact have an additional reason for not needing to apply the copyright fair use analysis. Just as in *Sony*,¹³³ the court in *Alcatel* found the defendants liable for copyright infringement on the basis of intermediate copying.¹³⁴ Currently, this result in reverse engineering cases should not be surprising. In *Sony*, the defendant could successfully raise the fair use defense to its copying.¹³⁵ In *Alcatel*, however, the defendant, aside from being found liable for direct infringement,¹³⁶ was additionally found liable for contributory infringement as a matter of law, because it had knowingly induced and caused Alcatel switch owners (licensees of Alcatel) to violate Alcatel's exclusive right to reproduce its software.¹³⁷ Unlike regular copyright infringement, for which one may be held liable in the absence of intent or knowledge that one was infringing, contributory infringement requires a plaintiff to prove that the defendant had, "with knowledge of the infringing activity" of another, "induce[d], cause[d] or materially contribute[d] to [that] infringing conduct."¹³⁸ This level of culpability is clearly higher than a finding of regular copyright infringement. Therefore, the fact that the defendants in *Alcatel* were proven to have contributorily infringed meant that their heightened culpability stood in the way of a fair use defense in that case as well.¹³⁹

The foregoing reasons explain why fair use was not applied in *Alcatel*. In sum, a fair use analysis was *not* passed by on the basis of a decision

not have touched "on interests clearly protected by the Copyright Act." *Id.* at 788-89, 49 U.S.P.Q.2d at 1652.

¹³¹ *See id.* at 788-89, 49 U.S.P.Q.2d at 1652.

¹³² *See id.* at 779, 785, 49 U.S.P.Q.2d at 1644-45, 1649.

¹³³ *See Sony*, 203 F.3d at 598-99, 53 U.S.P.Q.2d at 1706; *see also id.* at 602-03, 53 U.S.P.Q.2d at 1710.

¹³⁴ *See Alcatel*, 166 F.3d at 791, 49 U.S.P.Q.2d at 1654.

¹³⁵ *See id.* at 602, 53 U.S.P.Q.2d at 1709.

¹³⁶ *See Alcatel*, 166 F.3d at 791, 49 U.S.P.Q.2d at 1654.

¹³⁷ *See id.*, 49 U.S.P.Q.2d at 1655.

¹³⁸ *Gershwin Publ'g Corp. v. Columbia Artists Management, Inc.*, 443 F.2d 1159, 1162, 170 U.S.P.Q. (BNA) 182, 184-85 (2d Cir. 1971).

¹³⁹ *See supra* note 126 and accompanying text.

by the *Alcatel* court that the misuse defense could be an alternative legal basis for deciding all software reverse engineering cases. Therefore, the *Alcatel* case does not provide support for Rothman's argument that the misuse defense should be applied in all reverse engineering cases in substitution of the fair use defense.

V. FAIR USE IN *SONY*, BUT NOT MISUSE; MISUSE IN *ALCATEL*, BUT NOT FAIR USE: AVAILABILITY AND APPLICATION OF THESE DEFENSES

This part provides answers to the questions why the defendant in *Alcatel* needed the misuse defense to prevail and why the defendant in *Sony* only needed the fair use defense? As mentioned previously, *Alcatel* represented an action for copyright infringement and misappropriation of trade secrets against DGI, which Alcatel won.¹⁴⁰ Alcatel's copyrighted operating system software and firmware "embraced in [its expression]"¹⁴¹ functional interface procedures, therefore, it fell squarely within the Copyright Act, and the Fair Use Doctrine would normally have been applied, absent any unfair practices by the defendant.¹⁴² The only reason why the court did not perform the fair use analysis was because it had found the defendants *already* liable for unfair conduct.¹⁴³ Therefore, the court's ruling had nothing to do with a new approach to software reverse engineering cases.

However, Alcatel *did* proactively "use" its copyright through licensing measures "to secure [a] . . . right or . . . monopoly not granted"¹⁴⁴ over subject matter that was not inherent in the copyrighted work, *i.e.*, rights in, or a monopoly over, the microprocessor cards themselves.¹⁴⁵ This was *not* the case in *Sony*, where Sony did *not* proactively use licensing measures to secure rights in subject matter not embraced or inherent in the expression of its software.¹⁴⁶ Even though Sony refused to assist Connectix when it asked for assistance, its licensing practices were proper.¹⁴⁷

Moreover, Sony's refusal to assist merely represented a legitimate corporate choice based on a business decision not to divulge trade secrets to

¹⁴⁰ See *Alcatel*, 166 F.3d at 777, 49 U.S.P.Q.2d at 1642.

¹⁴¹ *Lasercomb*, 911 F.2d at 977, 15 U.S.P.Q.2d at 1852.

¹⁴² See *Alcatel*, 166 F.3d at 799, 49 U.S.P.Q.2d at 1661.

¹⁴³ See *id.* at 784-85, 791-92, 49 U.S.P.Q.2d at 1648-49, 1655.

¹⁴⁴ *Lasercomb*, 911 F.2d at 977, 15 U.S.P.Q.2d at 1852.

¹⁴⁵ See *Alcatel*, 166 F.3d at 793-94, 49 U.S.P.Q.2d at 1656-57.

¹⁴⁶ See *Sony*, 203 F.3d at 607, 53 U.S.P.Q.2d at 1714.

¹⁴⁷ See *id.* at 601, 53 U.S.P.Q.2d at 1709.

a competitor.¹⁴⁸ This falls far short of the kind of culpability required to successfully assert a misuse defense. If *Alcatel* is any indication, the culpability of a plaintiff who has misused his copyrights must be at least of such a level that the culpability of the defendant may equitably be ignored or cancelled out.¹⁴⁹ Even more to the point with regard to Rothman's argument in favor of using the equitable misuse defense in *all* cases dealing with reverse engineering, the court in *Alcatel* cited authorities holding that "if . . . the plaintiff has no unclean hands [then] . . . the defendant's unclean hands may preclude it from advancing equitable defenses."¹⁵⁰ Thus, equity would stand in the way of implementing Rothman's proposal, at least in cases where the plaintiff's hands are clean and the defendant's are unclean.

Sony, following the above reasoning, undoubtedly had the right to protect against copying of its copyrighted work because the government recognizes this right. Thus, protecting this right in court cannot be misuse. Under its action for copyright infringement, the rights to the embraced or the embedded functional elements would necessarily have to be considered and decided by the court in deciding the issue of fair use. Therefore, the misuse defense would have been unnecessary.

Alcatel also had the right to protect against copying of its copyrighted work by bringing an action in a court of law. Following the reasoning in this article, if the defendant had not been liable for trade secret misappropriation and contributory infringement, it could have validly raised a fair use defense, just as the defendants in *Sony* and *Sega* had done.¹⁵¹ However, even if the Court had performed a fair use analysis, the issue of the licensees' right of access to, or use of competing microprocessor cards for use in Alcatel's switches would *not* have been dealt with in deciding fair use because the cards were subject matter outside of the copyright laws (not embedded in expression). Because the microprocessor cards constituted matter outside the copyright laws, capable of standing on its own as a product, the proactive licensing measures by Alcatel naturally raised the question of whether plaintiff had impermissibly broadened the scope of its

¹⁴⁸ See *Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147, 1185-87, 32 U.S.P.Q.2d 1385, 1415-17 (1st Cir. 1994). In that case, the court reiterated that the "Supreme Court has suggested that an otherwise reasonable yet anti-competitive use of a copyright should not be deemed a *per se* violation of the Sherman Act," *Id.* at 1185, 32 U.S.P.Q.2d at 1415 (internal quotation marks omitted), and "an author's desire to exclude others from use of its copyrighted work is a presumptively valid business justification." *Id.* at 1187, 32 U.S.P.Q.2d at 1417.

¹⁴⁹ See *Alcatel*, 166 F.3d at 794, 49 U.S.P.Q.2d at 1657.

¹⁵⁰ *Id.* at 794 n.92, 49 U.S.P.Q.2d at 1661 n.92.

¹⁵¹ See *Sony*, 203 F.3d at 602-03, 53 U.S.P.Q.2d at 1709-10; *Sega*, 977 F.2d at 1518, 24 U.S.P.Q.2d at 1566.

copyright grant. To settle the rights to that subject matter, the court was required to look at the misuse defense to ensure substantial justice in *Alcatel*.¹⁵² This was not required in *Sega* or *Sony*.

As a sidenote, this article takes the position that it is possible that the defendant's reverse engineering in *Alcatel* would not have qualified as fair use. The final product, the purpose for which reverse engineering had been performed, was a substitute microprocessor card for plaintiff's switching equipment.¹⁵³ The court in *Alcatel* stated that "[Alcatel] was the only manufacturer of expansion cards for its own switches . . . [and the defendant corporation] was founded to design and sell such cards for use with [Alcatel] switches."¹⁵⁴ Thus, the only reason why defendant needed to reverse engineer plaintiff's software was for the purpose of "duplicating [the cards'] functionality."¹⁵⁵ It then designed its own cards to perform "these same functions" to enable control of Alcatel's equipment, *i.e.*, the hardware switches.¹⁵⁶

¹⁵² Application of the fair use analysis implies that the court recognizes, as an initial matter, that the plaintiff has an enforceable copyright, and that the court has the duty to protect those rights. In *Lasercomb* the court stated: "The Supreme Court held that, as a court of equity, it would not aid [a plaintiff] in protecting its patent when [the plaintiff] was using that patent in a manner contrary to public policy." *Lasercomb*, 911 F.2d at 975-76, 15 U.S.P.Q.2d at 1851 citing *Morton Salt*, 314 U.S. 488, 490-92, 52 U.S.P.Q. 30, 32-33 (1942). In *Morton Salt* the court refused to enforce Morton's patent because its patent license required that licensees use only Morton's unpatented salt tablets with Morton's patented salt-depositing machine, *id.*, a scenario matched by that in *Alcatel*, where Alcatel's software license required that licensees use only Alcatel's microprocessor cards in conjunction with its licensed software. See *Alcatel*, 166 F.3d at 793, 49 U.S.P.Q.2d at 1656. The *Alcatel* court, recognizing that "[Alcatel] seems to be attempting to use its copyright to obtain a patent-like monopoly over unpatented microprocessor cards," *id.*, was precluded as a court of equity, on the authority of *Morton Salt* and *Lasercomb*, from protecting Alcatel's copyrights in its expression through the application of a fair use analysis. See *Lasercomb*, 911 F.2d at 979 & n.22, 15 U.S.P.Q.2d at 1854 & 1856 n.22 (plaintiff barred by defense of copyright misuse from suing for infringement of its copyright in software). An additional reason for why the application of the misuse doctrine is required in such cases is that they usually involve interested parties (victims of the plaintiff's licensing scheme) besides those involved in the litigation. See, *e.g.*, *id.* at 973, 15 U.S.P.Q.2d at 1849; *Alcatel*, 166 F.3d at 793-94, 49 U.S.P.Q.2d at 1656-57. While the fair use defense can be raised by those who are defendants in litigation, it cannot resolve the rights of those other interested parties, because the fair use analysis focuses on a defendant's actions. The misuse defense, on the other hand, focuses on the plaintiff's actions.

¹⁵³ See *Alcatel*, 166 F.3d at 778, 49 U.S.P.Q.2d at 1643.

¹⁵⁴ *Id.*

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

In other words, since the defendant had the "purpose" and "object" of creating a final product that would perform the same functions as that of the plaintiff (software that could control the operation of plaintiff's switching systems), the defendant in *Alcatel* might have encountered problems under the first and fourth fair use factors because its product would have superseded the objects of the original product and would have supplanted that product. On the other hand, the defendant added additional features to its own software,¹⁵⁷ which would have raised the issue of whether the final product was thereby made sufficiently transformative to escape liability.¹⁵⁸ If, however, fair use could not have been found,¹⁵⁹ the defendant would not have been able to fairly discover the trade secrets plaintiff held in the functional elements of its software.

With regard to the *availability* of the misuse defense, if a plaintiff has indeed blatantly misused his copyrights through illegal licensing measures, then the copyright misuse defense should be available prior to trial, to bar the infringement suit from going to trial.¹⁶⁰ However, to the extent the parties in an action prefer to have certainty with respect to their rights, this pre-trial availability and application of the misuse defense is not ideal because the merits of the case would not have been reached yet. The court would not have passed on the legality of the defendant's activities, nor would the defense allow the defendant to prospectively copy the proprietary matter at issue, because the issue of fair use would not have been evaluated yet. It is not the purpose of the misuse doctrine to settle the rights of the parties to the property involved, but rather to prevent the assertion of plaintiff's rights against infringers where those rights have been misused in

¹⁵⁷ *Id.*

¹⁵⁸ Although the final product still would have superseded the objects of the original product, and would have supplanted that product, it could be argued that it would not "merely" supersede those objects, but also "adds something new, with a further purpose . . . , altering the [original] with new expression" *Sony*, 203 F.3d at 606, 53 U.S.P.Q.2d at 1712. Thus, the "extent the new work is 'transformative,'" *id.*, would have become the crucial inquiry. In *Atari* the court noted that the substantial similarity test "prevent[s] a plagiarist from escaping infringement by making immaterial changes in the protected work." *Atari*, 975 F.2d 844, 24 U.S.P.Q.2d at 1024; *see also Sega*, 977 F.2d at 1517-18, 1527-28, 24 U.S.P.Q.2d at 1565, 1574. Thus, if DGI's product was found substantially similar to Alcatel's product, it could have been found insufficiently transformative, despite the fact that it contained entirely new, and presumably original code. *See Alcatel*, 166 F.3d at 779, 49 U.S.P.Q.2d at 1644; *see also note 42 supra*; Addendum 1 *infra*.

¹⁵⁹ Although the second factor will generally favor defendants, the third factor "is of very little weight" "when the final product does not itself contain infringing material." *Sony*, 203 F.3d at 606, 53 U.S.P.Q.2d at 1712 (internal quotation marks omitted).

¹⁶⁰ *See Lasercomb*, 911 F.2d at 979 & n.22, 15 U.S.P.Q.2d at 1854 & 1856 n.22.

past and present practices.¹⁶¹ The remedy which the *Alcatel* court granted illustrates this because it neither approved of the defendant's infringing practices nor granted the defendant permission to copy the plaintiff's proprietary matter. Rather it withheld the plaintiff's remedy "tailored . . . as relief from DGI's copyright infringement."¹⁶² Thus, a defendant would continue to copy at its own peril even after a pre-trial finding of copyright misuse by the plaintiff.

On the other hand, if a court grants a full trial despite a strong likelihood that a plaintiff has misused his copyrights, then the court would be well advised to perform a fair use analysis (provided the defendant's unclean hands do not preclude it) if the software inherently embraced the functional elements, because the remedy for copyright misuse is preclusion of the plaintiff from prevailing on an action for infringement of the misused copyright, not invalidation of the copyright.¹⁶³ Therefore, if the fair use issue had not been decided in the same action, the court and the parties would have wasted valuable time and money, because a plaintiff is free to bring another suit for infringement after it has purged itself of the misuse.¹⁶⁴ All of the foregoing issues substantiate the reasons why a copyright misuse defense cannot replace the application of the fair use doctrine.

VI. TRADE SECRET PROTECTION REVISITED

The defendant in *Alcatel* was held liable for contributory infringement because of misleading and deceiving one of Alcatel's licensees.¹⁶⁵ This practice also opened the defendant up to liability for misappropriation of trade secrets, which in turn foreclosed a fair use analysis.¹⁶⁶ The Supreme Court stated in *Kewanee*,

[T]here is [an] inevitable cost to the basic decency of society when one firm steals from another. A most fundamental human right, that

¹⁶¹ *Id.*; see also *supra* note 152.

¹⁶² *Alcatel*, 166 F.3d at 799, 49 U.S.P.Q.2d at 1661.

¹⁶³ See *Lasercomb*, 911 F.2d at 979 & n.22, 15 U.S.P.Q.2d at 1854 & 1856 n.22.

¹⁶⁴ See *id.*

¹⁶⁵ See *Alcatel*, 166 F.3d at 791, 49 U.S.P.Q.2d at 1655.

¹⁶⁶ From an economic standpoint, the marginal expected gain (the expected damage award) from bringing a trade secret misappropriation claim in addition to a copyright claim will most likely exceed the marginal cost of bringing that additional claim, because the probability of success on the trade secret misappropriation claim increases greatly when it is clear that copyright infringement has occurred and the defendant's use will not qualify as fair use.

of privacy, is threatened when industrial espionage is condoned or is made profitable; the state interest in denying profit to such illegal ventures [by providing and enforcing trade secret rights] is unchallengeable [and] . . . [n]othing in the patent law requires that States refrain from action to prevent industrial espionage.¹⁶⁷

Nor is there anything in the copyright law that prohibits the enforcement of trade secrets embedded in software.¹⁶⁸ The concurring opinion in *Kewanee* posited that,

[T]he question presented in this case is whether Congress, in enacting the patent laws, intended merely to offer inventors a limited monopoly in exchange for disclosure of their invention, or instead to exert pressure on inventors to enter into this exchange by withdrawing any alternative possibility of legal protection for their inventions . . . [and concluded] that the former is the case.¹⁶⁹

We can safely conclude that the same is true for the intersection of the copyright and trade secret laws. Originally, before the availability of copyright protection for software, the computer software industry almost exclusively relied on trade secret protection.¹⁷⁰ When market conditions changed, the industry also became interested in copyright protection.¹⁷¹

The Final Report by the Commission on New Technological Uses of Copyrighted Works ("CONTU"), which reflects Congressional intent in the area of computer programs and copyright,¹⁷² expressly stated that, "[t]he availability of copyright for computer programs does not, of course, affect the availability of trade secrecy protection. Under the [Copyright] Act of 1976 only those state rights that are equivalent to the exclusive rights granted

¹⁶⁷ *Kewanee*, 416 U.S. at 487, 181 U.S.P.Q. at 680.

¹⁶⁸ "[T]rade secret law protects items which would not be proper subjects for consideration for patent protection under 35 U.S.C. § 101. As in the case of the recordings in *Goldstein v. California*, [412 U.S. 546, 570 (1973)] Congress, with respect to nonpatentable [and noncopyrightable] subject matter, has drawn no balance; rather, it has left the area unattended, and no reason exists why the State should not be free to act." *Kewanee*, 416 U.S. at 482-83, 181 U.S.P.Q. at 679.

¹⁶⁹ *Kewanee*, 416 U.S. at 494, 181 U.S.P.Q. at 684 (Marshall, J., concurring).

¹⁷⁰ *See Bender*, *supra* note 52, at 909-911.

¹⁷¹ *See id.*

¹⁷² *See Midway Mfg. Co. v. Strohon*, 564 F. Supp. 741, 750 n.6, 219 U.S.P.Q. (BNA) 42, 53 n.6 (N.D. Ill. 1983); *Sega*, 977 F.2d at 1519 n.5, 24 U.S.P.Q.2d at 1567 n.5.

therein . . . are preempted."¹⁷³ The Report added, "[t]hat copyright would not provide the sole right and remedy for unauthorized use of a protected work neither is unique to the protection of proprietary interests in computer-readable works nor is it a situation to be considered undesirable."¹⁷⁴ This is in accord with the Supreme Court's position in *Kewanee*, where it concluded that "Congress, by its silence over these many years, has seen the wisdom of allowing . . . trade secret protection. Until Congress takes affirmative action to the contrary, States should be free to grant protection to trade secrets."¹⁷⁵

Trade secret protection, therefore, is and should be freely available for subject matter that does not qualify for copyright protection. The fair use analysis can grant a defendant "legal" access to such trade secrets on a case-by-case basis, but access to trade secrets is not, and should not be a guaranteed unconditional right of a competitor if the subject matter of the trade secret was never placed in the public domain.¹⁷⁶ The *Sega* court stated that "[i]f disassembly of copyrighted object code is *per se* an unfair use, the owner of the copyright gains a *de facto* monopoly over the functional aspects of his work —aspects that were expressly denied copyright protection by Congress."¹⁷⁷ However, by this language, the court did not hold that disassembly of code is, or should be, a *per se* fair use. The court's "*de facto* monopoly" language must be read in light of the result that would obtain when using the copyright law doctrine of fair use as a *per se* bar to access of uncopyrightable subject matter. Therefore, the *Sega* court's language does not condemn *de facto* exclusive rights to uncopyrightable elements arising from efforts to maintain them as trade secrets that cannot be fairly discovered when the fair use factors, as applied to a specific fact pattern, do not condone it. Even the Supreme Court allowed such a trade secret monopoly in *Kewanee*.¹⁷⁸ In that case, the majority was not even swayed by the fact that a patentable but not patented product could get protection running into

¹⁷³ The National Commission On New Technological Uses of Copyrighted Works, Final Report, at 18 (July 31, 1978) (hereinafter "*CONTU*, Final Report"); See also H. R. Rep. No. 94-1476, 94th Cong., 2d Sess., at 132 (1976), reprinted in 1976 U.S.C.C.A.N. 5659, 5748. ("The evolving common law right[] of . . . trade secrets . . . would remain unaffected [by the 1976 Copyright Act] as long as the cause[] of action contains elements . . . that are different in kind from copyright infringement.").

¹⁷⁴ *CONTU*, Final Report, at 40.

¹⁷⁵ *Kewanee*, 416 U.S. at 493, 181 U.S.P.Q. at 682.

¹⁷⁶ The condition for rightful access to the trade secrets is, of course, that the defendant must attempt to gain access to them by proper means, and not through theft, wiretapping, aerial reconnaissance, trespass or some other wrongful or illegal conduct. See *supra* note 107 and accompanying text.

¹⁷⁷ *Sega*, 977 F.2d at 1526, 24 U.S.P.Q.2d at 1573 (emphasis in original).

¹⁷⁸ See *Kewanee*, 416 U.S. at 495-96, 181 U.S.P.Q. at 683 (Douglas, J., dissenting).

perpetuity through a court imposed permanent injunction, as a result of the intellectual property holder choosing trade secret protection over patent protection, as mentioned by the dissent in that case.¹⁷⁹

More importantly for the type of unpatentable trade secrets (functional interface information) embedded in software code, even the dissent in *Kewanee* agreed that "[t]rade secrets often are unpatentable. In that event there is no federal policy which is contravened when an injunction to bar disclosure of a trade secret is issued."¹⁸⁰ Similarly, functional interface information is uncopyrightable and, consequently, no federal copyright policy is contravened when trade secret rights in that subject matter are enforced.¹⁸¹ As stated earlier, the federal policy that matter once in the public domain must remain in the public domain is not incompatible with the existence of trade secret protection for functional interface information.¹⁸² Due to the nature of software, such information has not been placed in the public domain because humans cannot directly read the object code. These uncopyrightable aspects can only be discovered and examined after *prima facie* illegal copying. As argued in this article, only the fair use analysis can evaluate and ensure the legitimacy of discovery of such trade secrets based on the facts of each individual case.

Two passages in the Supreme Court's *Kewanee* opinion may be a source of concern for some; however, these apparent concerns can be overcome. The first passage is that "trade secret law provides far weaker protection in many respects than the patent law," with the second passage stating, "[w]here patent law acts as a barrier, trade secret law functions relatively as a sieve."¹⁸³ The apparent concerns these two passages may raise in copyright law are: (1) since copyright law does not protect technical interface information, trade secret law provides far greater protection to such

¹⁷⁹ See *id.*

¹⁸⁰ *Id.* at 497 n.3, 181 U.S.P.Q. at 683 n.26 (Douglas, J., dissenting).

¹⁸¹ Trade secret protection for such subject matter does not conflict with the policies underlying the federal copyright laws because "[w]ith trade secrets of [uncopyrightable] subject matter, the [copyright] alternative would not reasonably be available to the [software developer]." *Kewanee*, 416 U.S. at 485, 181 U.S.P.Q. at 679.

¹⁸² See *supra* note 97 and accompanying text.

¹⁸³ *Kewanee*, 416 U.S. at 489-90, 181 U.S.P.Q. at 681. This "weaker protection/barrier/sieve" terminology was used by the Court in discussing reasons why trade secret protection should be allowed, along with patent protection, for even *clearly patentable subject matter*. The Court reasoned that trade secret protection for such subject matter does not contravene the federal policies behind the patent laws because due to the strength of a patent that will surely issue, the availability of weaker trade secret protection presents no real risk of deterrence from applying for a patent. This scenario presented the most viable preemption argument for the Court.

elements in software than the copyright laws; and (2) trade secret law may act as a sieve relative to patent law, but relative to copyright law it acts as a complete barrier with respect to uncopyrightable technical elements embedded in copyrighted software.¹⁸⁴

In answering these concerns, recall that the Supreme Court in *Kewanee* held that trade secret protection for "nonpatentable subject matter" and "patentable subject matter that the owner knows will not meet the standards of patentability" did not conflict with the policies underlying the federal patent laws¹⁸⁵ because "the patent alternative would not reasonably be available to the inventor."¹⁸⁶ Hence, in such cases, trade secret law provides far greater protection to such matter than the patent laws, and the Court did not find that objectionable. Instead, the Court stated that "it will have a decidedly beneficial effect on society."¹⁸⁷ Similarly, the copyright alternative is not available to uncopyrightable technical interface information, and thus, the "weaker protection/barrier/sieve" issues of preemption (strength and nature of rights to functional interface information under copyright law relative to strength and nature of rights to functional interface information under trade secret law) are non-issues under both of the above raised apparent concerns.

The two quoted passages appear to raise another issue: namely, how the strength of trade secret rights is affected by virtue of the trade secrets being embedded in copyrighted software. But, as long as substantial similarity, the level of transformation of a defendant's final product, and effect of the use upon the potential market for the plaintiff's product are real issues (regardless of whether the product incorporated any of the plaintiff's code, or none of it), the fair use analysis will be applied to determine the protection that will be afforded to copyrighted and trade secret subject matter, as well as the fairness or propriety of defendant's actions.¹⁸⁸ This should effectively mitigate any extra barrier believed to exist by virtue of trade secret rights being asserted along with copyrights, because fair use of the expression and the trade secrets will be granted where the facts so allow.

While plaintiffs are usually able to argue successfully before a court that they have a reasonable and good faith belief that the defendant's product

¹⁸⁴ To the author's knowledge, these concerns have never been formulated in this manner by others.

¹⁸⁵ *Kewanee*, 416 U.S. at 484-85, 181 U.S.P.Q. at 679-80.

¹⁸⁶ *Id.* at 485, 181 U.S.P.Q. at 679.

¹⁸⁷ *Id.*, 181 U.S.P.Q. at 680.

¹⁸⁸ See *Sony*, 203 F.3d at 606-08, 53 U.S.P.Q.2d at 1712-14.

is likely to supplant, and supersede the objects of, plaintiff's product,¹⁸⁹ it is nevertheless recommended that a plaintiff prevent the appearance that it is using its copyrights to prevent access to uncopyrightable subject matter. This can be achieved by adding a trade secret misappropriation cause of action to the copyright infringement cause of action. Thus, any inference is dispelled that the plaintiff is impermissibly expanding the scope of its copyrights by using those rights in an attempt to fortify uncopyrightable subject matter.¹⁹⁰ In light of *Sony*, a plaintiff can validly proceed with a copyright infringement action based on a founded belief that the first and fourth fair use factors will not be met by the defendant (even if defendant's final product uses none of plaintiff's code), and the plaintiff will be alleging a non-frivolous claim for misappropriation of trade secrets as long as it has a chance to prevail on its copyright infringement action.¹⁹¹

¹⁸⁹ See, e.g., *id.*, 203 F.3d at 598-99, 601-02, 53 U.S.P.Q.2d at 1706-07, 1709. However, *Sega* may be an example of a case where the plaintiff could not have had a reasonable belief that defendant's final product would merely supersede the objects of plaintiff's product.

¹⁹⁰ Such an inference would be unreasonable because the common law cause of action for trade secret misappropriation contains elements that are different in kind from copyright infringement, see, e.g., *Alcatel*, 166 F.3d at 784, 49 U.S.P.Q.2d at 1648; see also *supra* note 173, and because the subject matter (functional interface information) of the trade secret is uncopyrightable. Courts have experience distinguishing such subject matter from copyrightable expression by utilizing analyses related to the doctrines of fair use, the idea-expression dichotomy, and the merger doctrine.

¹⁹¹ Note, however, that trade secret misappropriation must still be separately proven. It must also be pointed out here that the act that gives rise to the copyright infringement is not the same as the act that gives rise to the trade secret misappropriation. The act that gives rise to the copyright infringement is the copying of plaintiff's work. At that stage, trade secrets are not discoverable. In other words, while defendant will immediately be liable for copyright infringement, it is not yet liable for trade secret misappropriation. Strictly speaking, the act of discovering a trade secret involves the viewing and synthesizing of the information, while infringement involves copying. Additionally, it is the ultimate *use* of the trade secret that in the end determines liability in this context because its discovery has already involved intermediate copyright infringement, and therefore its final *use* must be a fair use. Thus, while acts of copyright infringement have already been completed, one needs to wait and see what the ultimate use of the trade secret is to determine whether it gives rise to misappropriation. See also Addendum 2.

A. *The Policies Underlying the Copyright Act and the Copyright Clause: Why Publication and Secrecy Can Constitutionally Co-Exist*

Ralph D. Clifford argued in a recent article that both a trade secret right and a copyright in a work cannot be asserted at the same time, and that the misuse defense must be utilized to prevent the enforcement of the copyright if such attempt is made.¹⁹² Although he acknowledges that Congress intended trade secret rights and copyrights to coexist, Clifford does not believe that “both copyright law—which mandates disclosure—and trade secret law—which mandates secrecy—can be used simultaneously,” and asserts that “disclosure and secrecy can[not] coexist.”¹⁹³ He further states that “a simultaneous claim of copyright and trade secret protection constitutes a form of constitutional double-think . . . leading to the conclusion that the misuse defense should be—indeed, constitutionally must be . . . expanded to prevent [copyright] owners from engaging in unconstitutional doublethink.”¹⁹⁴

1. “Publication” versus “Disclosure”

Clifford’s arguments as quoted above are based on the fact that “[u]nder the 1976 Act . . . copyright applies as soon as the work is ‘fixed[?] [and] no publication need occur to claim a federal copyright . . . [whereas] [u]nder the pre-1976 copyright system, trade secret status was lost, by definition, upon publication.”¹⁹⁵ He then concludes that “[u]nder the 1976 act . . . an author can apparently claim his or her copyright while refusing to disclose the contents of the work to the public.”¹⁹⁶ Clifford also argues that “[s]ection 1(4)(ii) of the Uniform Trade Secrets Act establishes that efforts that are reasonable under the circumstances to maintain [a] trade secret’s secrecy” are needed . . . [and] [c]learly, publication as defined in the Copyright Act, the distribution of copies . . . of a work to the public by sale or other transfer of ownership, or by rental, lease or lending, “demonstrates a lack of reasonable effort.”¹⁹⁷

¹⁹² See Clifford, *supra* note 2, at 287.

¹⁹³ *Id.* at 251.

¹⁹⁴ *Id.* at 252.

¹⁹⁵ *Id.* at 250.

¹⁹⁶ *Id.* at 251.

¹⁹⁷ *Id.* at 250, n.11 (citations omitted).

This article takes issue with Clifford's positions. His arguments with respect to the inconsistency between copyright law's mandate of disclosure and trade secret law's mandate of secrecy appear to be founded on a confusion between "publication" of a work of authorship and "disclosure" of trade secrets.

First, the Copyright Act does not mandate disclosure. The Copyright Act only expects publication in return for the copyright grant, and publication is not the same as disclosure. "Publication," as defined under the Copyright Act, merely refers to the transfer of "copies" of "a work."¹⁹⁸ The act of publication, alone, has no bearing on whether the author's rights in the work's copyrightable and uncopyrightable content are being transferred, released, or limited in any way by transferring a copy. In fact, there is a clear intent under the Copyright Act to distinguish the transfer of a copy from the transfer of any rights in the contents of the work fixed in that copy.¹⁹⁹ As argued previously in this article²⁰⁰, distribution or publication of software does not disclose the trade secrets embedded in the copyrighted expression, since humans cannot directly read the object code, and the trade secrets can only be discovered and examined after reverse engineering activities involving *prima facie* illegal copying of the expression.²⁰¹

Second, even if we assume, *arguendo*, that disclosure is the same as publication and that the Copyright Act mandates publication, it is only the *final work* that needs to be "published." The Copyright Act does not mandate disclosure of copyrightable subject matter, nor of uncopyrightable subject matter such as trade secrets, which was not intended to be conveyed to the public through publication in the first place. By analogy, the legal status of such subject matter is on a par with the content left out of the final version of a book, which the author has determined shall not be published. Choices made by an author such as these do not violate any Constitutional

¹⁹⁸ See 17 U.S.C. § 101 (2000).

¹⁹⁹ See *Id.* § 202 ("Ownership of copyright as distinct from ownership of material object").

²⁰⁰ See discussion *supra* Part VI.

²⁰¹ See also *Architectronics, Inc. v. Control Systems, Inc.*, 935 F. Supp. 425 (S.D.N.Y. 1996), where the court indicated that distribution of object code does not disclose the contained trade secrets because they "may have been concealed within impenetrable programming codes, making reverse engineering difficult or impossible." *Id.* at 433. The court's conclusion is correct, but the "impenetrable" language cannot be taken literally. Reverse engineering need not be impossible for valid trade secret rights to exist. However, it is clear from its use of the phrase "difficult or impossible" that the court understood this. See also *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 848 28 U.S.P.Q.2d (BNA) 1503, 1521 (10th Cir. 1993) ("[T]hat some of the constants might be 'reverse engineered' through mathematical trial and error . . . does not deprive the constants of their status as trade secrets.").

purpose or public policy. On the contrary, it would create a disincentive to the purposes behind the Copyright Act to hold that it would. If an author is required to publish any and all facts he discovers in the process of investigation or research for his “work,” it would inhibit the discovery process for fear of attack, ridicule, disrepute, backlash, or for fear that the end product’s integrity and marketability will be seriously affected. The author’s rewards would decrease accordingly, resulting in the inability to recoup the initial investment. Requiring disclosure of any and all facts discovered would also statutorily force an author to “speak,” which the First Amendment forbids the government from doing.²⁰²

Thus, copyright law does not mandate disclosure, just as trade secret law does not mandate secrecy but merely demands that reasonable efforts be taken under the circumstances to maintain secrecy to make it possible for trade secrecy status to be asserted, and to make it legally acceptable for a court to enforce a trade secret claim. In other words, with regard to trade secrets embedded in copyrighted software, no situation arises where a 100% disclosure requirement and a 100% secrecy requirement would normally coexist. Thus, under normal circumstances, “unconstitutional doublethink” will not occur and the misuse of copyright defense need not be utilized to avoid that “problem.”²⁰³

Clifford wrote that it “has been reiterated in many . . . cases both under patent law and copyright law”²⁰⁴ that progress is promoted through the disclosure of the work to the public, and he cites several cases in support of this proposition.²⁰⁵ However, the statements made by these cited courts only

²⁰² Harper & Row, Publishers, Inc. v. Nation Enters., 471 U.S. 539, 559, 225 U.S.P.Q.(BNA) 1073, 1080 (1985).

²⁰³ The phrase “under normal circumstances” is used here to reflect the concern that contractual prohibitions on reverse engineering, disassembly, or decompilation *do* create a situation where 100% secrecy of functional interface information directly conflicts with the publication of literary elements that receive the benefit of a copyright monopoly, and which should be available at least under the fair use doctrine. See discussion *infra* part VII.

²⁰⁴ Clifford, *supra* note 2, at 275.

²⁰⁵ See Clifford, *supra* note 2, at 275 n.176 and accompanying text. Again, while *disclosure* does apply to the Patent Act, it does not apply to the Copyright Act. Publication, or distribution, is not synonymous with disclosure. The cases Clifford cited in support are *Fogerty v. Fantasy, Inc.*, 510 U.S. 517, 527, 29 U.S.P.Q.2d (BNA) 1881, 1885 (1994) (“[C]opyright law ultimately serves the purpose of enriching the general public through access to creative works”); *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417, 429, 220 U.S.P.Q. (BNA) 665, 672 (1984) (“[A copyright monopoly] is intended . . . to allow the public access to the products of [the author’s] genius after the limited period of exclusive control has expired.”); *U.S. v. Paramount Pictures*, 334 U.S. 131, 158, 77 U.S.P.Q. (BNA) 243, 253 (1948) (“It is said that reward to the author or

conveys the principle that the progress "of science" envisioned by the Constitution is promoted by the Copyright Act if creative expression, used by an author to convey the information he intends to convey to the public (by publication), is granted copyright protection. The statements by these courts do not stand for the proposition that the purposes of the Copyright Act and the Constitution are hindered if non-publication of expression (not intended to be published in the first place) will cause the non-disclosure of facts contained in that material, even if a copyright monopoly is granted on the expression.²⁰⁶

The Copyright Act was not intended to create an incentive to publish, distribute, or disclose the *factual content* contained in an expression, because it does not grant a monopoly on such subject matter. The copyright laws directly promote proliferation and distribution of authors' *expression* only, to thereby *indirectly* promote the sciences.²⁰⁷ The only laws where disclosure of facts is of *direct* concern, in relation to the purposes underlying those laws, are: (1) the patent laws, which *directly* promote the proliferation of ideas and uncopyrightable concepts through a monopoly on them in return for *disclosure*, and (2) the trade secret laws, which *directly* promote the proliferation of ideas and uncopyrightable concepts through a recognition of rights in return for reasonable efforts to maintain *non-disclosure*. Thus, since copyright's statutory incentive only relates to copyrightable expression, the non-disclosure of factual matter, and granting trade secret rights thereon (if appropriate), does not run afoul of the purposes underlying the copyright laws.

Clifford further argues that "unlike the Patent Act, the Copyright Act contains no mandatory provision that requires a copyright holder to disclose the work;"²⁰⁸ and further stated that,

artist serves to induce release to the public of the products of his creative genius."); and *Baker v. Selden*, 101 U.S. 99, 103, (1879) ("The very object of publishing a book on science or the useful arts is to communicate to the world the useful knowledge which it contains.").

²⁰⁶ Significantly, while the Copyright Act does grant copyright protection to unpublished matter, the fair use doctrine provides that "[t]he fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the [fair use] factors." 17 U.S.C. § 107 (2000).

²⁰⁷ Indeed, the Constitutional Copyright Clause phrases it exactly so: "To promote the Progress of Science . . . by *securing* for limited Times to Authors . . . *the exclusive Right to their . . . Writings.*" U.S. CONST. art. I, § 8, cl. 8 (emphasis added). See also *Harper & Row*, 471 U.S. at 558, 225 U.S.P.Q. at 1080 (1985) ("[I]t should not be forgotten that the Framers intended copyright itself to be the engine of free expression. By establishing a marketable right to the use of one's expression, copyright supplies the economic incentive to create and disseminate ideas.")

²⁰⁸ Clifford, *supra* note 2, at 277.

in contrast to the patent law where such conduct would be impossible, it has become practical for an author to engage in conduct that constitutes doublethink—a full copyright monopoly can be claimed by an author who never discloses his or her work to the public. In other words, the author is able to claim the copyright monopoly without being required to pay the constitutionally required price. As there is no mechanism within the statute to prevent the author from taking advantage of doublethink, the court should turn to the only existing mechanism that can prevent this abuse—the misuse of copyright defense.²⁰⁹

Although there are many analogies between copyright law and patent law, this is a case of carrying the analogy with the patent laws too far. As explained above, the Patent Act specifically requires disclosure of facts and ideas because, unlike the Copyright Act, it grants a monopoly directly on those facts and ideas. Further, an author does in fact pay the constitutionally required price, especially in the case of firmware, by virtue of the existence of the Fair Use Doctrine and by the fact that the range of practices that doctrine allows becomes greater the further the work lies from the core of traditionally copyrightable subject matter.²¹⁰ Hence, the ease with which one gets permission to discover (non)copyrightable subject matter contained within computer code accordingly becomes greater, and to that extent the author pays a price because his copyrights accordingly become weaker. Therefore, the Misuse Doctrine is not needed to prevent “doublethink” because meaningful application of the Fair Use Doctrine directly deals with the issue, as argued previously in this article.

2. A “Work” versus a “Product”

The passage quoted in the foregoing discussion, as well as other passages in Clifford’s article, confuse publication or distribution of the *work* with disclosure of ideas contained within the work. For example, Clifford asks “what happens where an author distributes *a work*, while making deliberate attempts to prevent disclosure of the ideas contained within? In other words, can an author simultaneously claim both a copyright and a trade secret in the *same work*?”²¹¹ He concludes that “[t]he constitutionally mandated answer is ‘no.’”²¹² We shall see that this is incorrect.

²⁰⁹ *Id.*

²¹⁰ See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579, 29 U.S.P.Q.2d 961 (1994) (“[T]ransformative works . . . lie at the heart of the fair use doctrine’s guarantee of breathing space within the confines of copyright . . .”).

²¹¹ *Id.* at 283 (emphasis added) (footnote omitted).

²¹² *Id.*

To pose the question, as Clifford does, as whether one can claim both copyright and trade secret in the *same work* is to misunderstand the scope of the Copyright Act's subject matter (as defined in § 102(a) and §102(b) of the Copyright Act) and displays a misunderstanding of what the Copyright Act is intended to promote directly through its grant of protection. The key is the definition of a "work," as understood under the Copyright Act. Copyright protection does not extend to any non-expressive elements.²¹³ Thus, in essence, the "work" of an author is only the copyrightable expression, which may embody or describe facts, ideas, concepts, or functional interface information²¹⁴ that do not get the benefit of copyright protection. Since trade secret protection does apply to such non-copyrightable elements, the two schemes of protection can be claimed simultaneously in the same *product*, such as software or firmware, albeit not in the same "work."

With regard to computer programs, Clifford recognizes that designing a protection scheme for a computer program using copyright and trade secret, together, is "quite common."²¹⁵ He goes on to state that "[a]s the program itself is distributed, the author will insure that each purchaser enters into a valid license agreement which imposes an appropriate duty of confidentiality on the purchaser."²¹⁶ His conclusion is that,

[i]f this dual protection scheme is successful, the author can both have and eat his copyright cake. He or she obtains and uses the monopolistic feast of rights granted by the Copyright Act, but discloses nothing to society in exchange. This is doublethink. As the Copyright statute provides no means for controlling the double-think, the misuse defense becomes an appropriate mechanism for implementing the constitutional balance contained in the Intellectual Property Clause.²¹⁷

According to this article, however, the real issues are whether each purchaser's confidentiality agreement is indeed valid,²¹⁸ and whether

²¹³ While it may appear that the "total concept and feel" approach would allow non-expressive elements to be protected under copyright, careful consideration will reveal that matter protectable under that test does constitute independently and originally created expression. Functional interface information would not qualify for protection even under that test, mainly because it is dictated by external factors so that it does not meet the requirement of originality under § 102(a) of the Copyright Act. *See* 17 U.S.C. §102 (a) & (b) (2000).

²¹⁴ *See* 17 U.S.C. §101 (2000) (defining "Architectural work," "Compilation," "Derivative work," "Pictorial, graphic, and sculptural works"). *See also id.* §§ 102, 103.

²¹⁵ Clifford, *supra* note 2, at 285 n.217, 286 n.221 and accompanying text.

²¹⁶ *Id.* at 286 (footnote omitted).

²¹⁷ *Id.* (footnote omitted).

²¹⁸ In a true confidentiality contract one shares trade secrets with another in return for consideration and a promise to keep them confidential. If the licensee pays consideration

contractual provisions prohibiting the reverse engineering, disassembly, or decompilation of software or firmware are enforceable. The latter type of prohibitions constitute licensing measures restricting software users' public domain rights under the fair use doctrine. As intimated earlier in this article, a broadening of the copyrights on a work through licensing measures—in an attempt to protect copyrighted expression or functional interface information—may raise both preemption and misuse concerns due in part to violations of the public policies underlying the Copyright Act and the Constitutional Copyright Clause. To that extent, this article shares Clifford's concern.²¹⁹

Software and firmware are given copyright protection as literary works, and the literary elements consist partly of non-visible code (in the case of firmware, the greatest part). This means that, upon publication, these non-visible literary elements, which are given monopoly-like protection, cannot be read directly by humans;²²⁰ in this sense, the purposes of the Copyright Act and the Constitution will be thwarted *if* the fair use rights of purchasers or users of the software are impaired in any way.²²¹ If one were to

and promises confidentiality without getting access to any trade secrets it may either be a contract without consideration and mutuality, or a breach of contract. The licensing of source code by software providers under strict confidentiality terms and at a higher price than a mere license for object code raises no problems, as long as the confidentiality terms relate to uncopyrightable matter.

²¹⁹ The author deals with the issue of preemption of such contractual provisions in a separate article. See Eric Douma, *The Uniform Computer Information Transactions Act and the Issue of Preemption of Contractual Provisions Prohibiting Reverse Engineering, Disassembly, or Decompilation*, 11 ALB. L.J. SCI. & TECH. 249 (2001).

²²⁰ It is not being argued here that software or firmware should not be protected because the code cannot be read by humans without the use of technology. Section 102 of the Copyright Act, legislative intent, and case precedent are clear on the issue of whether a work of authorship has to be perceivable by human eyes or without the help of a device: It does not. See *Sega*, 977 F.2d at 1519–20, 24 U.S.P.Q.2d at 1567. Instead, the argument is that particularly in such cases, the case against allowing impairment of fair use rights becomes very strong, in part because the subject matter lies far from the intended core of copyright protection, making attempts at broadening of the copyrights on that matter particularly egregious.

²²¹ An attempt at prohibiting fair use protected acts performed on software or firmware might be likened with such an attempt by the author of a book describing an extremely valuable business method, used by the same author in his successful business. The author is in essence trying to get a promise from the purchaser of the book to not open it up and read the text (presumably only for fear that the purchaser will illegally use the expression used to convey the information), but to gain the knowledge of the business method only from the book's outward appearance. It is obvious that if the purchaser cannot gain all the knowledge to learn the business method from the outward appearance of the book, he would be allowed, under fair use, to read and make fair use of, the

reverse engineer a work, these literary expressive elements would be conveyed, (and, as a result, the functional interface information embedded in them) to the owner of the copy. Even if the copyright owner did not intend to convey them to the public, the trade secrets will have been legitimately discovered *if* the fair use factors, as argued in this article, are satisfied by the final product—otherwise the result is unfair to the author of the original work.²²²

This article concludes that the concerns which Clifford raised in his article are either non-existent or disappear. This is because, contrary to what he claims, the Copyright statute provides a means for controlling what he calls “double-think,” *as long as the fair use doctrine continues to be meaningfully available and applicable* in cases involving the reverse engineering, disassembly, or decompilation of software or firmware. Under those circumstances, the misuse defense is not an appropriate mechanism, and is not needed for implementing and maintaining the constitutionally required balance of rights under the Intellectual Property Clause.²²³

VII. CONTRACTS PROHIBITING REVERSE ENGINEERING, DISASSEMBLY, OR DECOMPILATION

The main rationale for the inclusion of provisions prohibiting reverse engineering, disassembly, or decompilation of software or firmware in license agreements is: (1) a programmer is likely to obtain a significant amount of protected expression in the process, and (2) it is very difficult in practice to discover and police copying of that expression.²²⁴ The conclusion

information inside. Although in the case of software this also requires the intermediate step of *copying* the literary elements, due to the nature of code, courts have allowed that too under the fair use doctrine. Thus, this allows access to the information needed by a competitor to fully implement the idea which is outwardly conveyed by the software, namely, that of the particular software’s manner of operability. To a certain extent, the book’s author has a legitimate concern that others will use his business method and start competing directly with his own business. In the case of software and firmware however, the fair use doctrine’s first and fourth factors can ensure that such competition is done in a fair manner, and not by infringing the author’s rights in order to get an unfair competitive advantage.

²²² Perhaps it should be repeated here that trade secret law regards reverse engineering as a fair means of acquiring trade secrets; but in the case of copyrighted software or firmware that does not necessarily mean that the reverse engineering is fair use of the copyrighted expression. To discover legitimately trade secrets in software, one must meet the fair use analysis as argued in this article.

²²³ See U.S. CONST. art. I, § 8, cl. 8.

²²⁴ See O’Rourke, *supra* note 43, at 516-17.

then follows that copyright holders concerned about abuse of the *limited* decompilation permission granted by the *Atari/Sega/Sony* line of cases must resort to fair use prohibitions in license agreements.²²⁵ However, the adjective “limited” in this context does not signify that a programmer is limited in the method or quantity of intermediate copying,²²⁶ but rather is limited in the ultimate objects or purposes for which he may conduct such activities, as clarified in this article.

The broad allowance of intermediate copying by the *Sony* court suggests that courts in software reverse engineering cases should be more concerned with abuse of the first and fourth fair use factors, and less with abuse of the third factor, particularly in cases where the amount of new and original code in a defendant’s final product is significant.²²⁷ The application of the fair use analysis along the lines suggested in *Sony*, and as explained in this article, allows one initially to focus primarily on features of a defendant’s final product, and its objects, purposes, and character.²²⁸ Since that is what a court will focus on in an infringement case, a software developer

²²⁵ See *id.* at 517.

²²⁶ That is quite clearly the message of the *Sony* case. See also Rothman, *supra* note 2, at 6 (“[T]he court in *Sony* refused to attribute legal importance to the method of reverse engineering employed, to the quantitative issue of how much intermediate copying a particular method required, or to the temporal issue of whether unprotected interface specifications were studied prior to creating a noninfringing product, or simultaneously with and as part of the process of creating such a product.”).

²²⁷ Considering that the main rationale for using anti-reverse engineering, disassembly, or decompilation provisions was that the copyright owner wanted to prevent major copying of his copyright protected code, there is clearly no credible argument anymore for including these provisions in licenses. In Rothman’s words, the *Sony* decision “leaves little room for any meaningful application” of these provisions. See Rothman, *supra* note 2, at 7. One can hardly argue instead that these provisions are still necessary to protect functional interface information, because that conduct would rise to the level of leveraging one’s copyrights to gain rights to matter uncopyrightable, i.e. misuse. Any rationale for enforcing such provisions based on the fear that original expression may make it into the competitor’s final product is defeated by the requirement for preemption under § 301 of the Copyright Act, because in that case the contractual provision’s function would be to prevent illegal copying, and it would therefore create a legal right equivalent to one granted under § 106 of the Copyright Act. See also Douma, *supra* note 219. Furthermore, since direct proof of copying has always been rare in copyright infringement, *Whelan.*, 797 F.2d at 1231-32, 230 U.S.P.Q. at 487, and plaintiffs typically rely on the indirect method of proof anyway (by showing access and substantial probative similarities), a rationale for enforcing the provisions based on the difficulty of adducing direct proof of copied code in a competitor’s final product seems self-serving.

²²⁸ In fact, one could partly view the analysis under the first fair use factor as involving a “total concept and feel” or “look and feel” comparison between plaintiff’s and defendant’s final products. See also *supra* notes 41-42 and accompanying text.

should also focus on it in determining a likelihood of illegitimate reverse engineering by a competitor who developed a competing and very similar piece of software. Conveniently, this approach does not initially require access to the code of defendant's final product.²²⁹ By this method, the responsibilities of the copyright owner are to monitor the market for products that might violate the first and fourth fair use factors. Thus, policing and monitoring the market are made easier, and do not require monitoring or initial discovery of either the intermediate copying of plaintiff's code or use of that code in a potential defendant's final product.

Furthermore, a right to reverse engineer, disassemble, or decompile a competitor's software or firmware *must* be recognized now to determine whether that final product infringes or not; this is necessary to empower potential plaintiffs to follow up in practice on the ambit of the *Sony* court's decision, which holds that any intermediate copying is not infringement as long as the final product does not infringe.²³⁰ Thus, a copyright holder's

²²⁹ In the abstraction stage of the substantial similarity test a computer program can be parsed into at least six levels of generally declining abstraction: (i) the main purpose, (ii) the program structure or architecture, (iii) abstract data types, (iv) algorithms and data structures, (v) source code, and (vi) object code. See John W.L. Ogilvie, *Defining Computer Program Parts Under Learned Hand's Abstractions Test in Software Copyright Infringement Cases*, 91 MICH. L. REV. 526 (1992). The main purpose of a program is a description of the program's function or what it is intended to do. See *id.* at 534; *Computer Assocs.*, 982 F.2d at 697, 23 U.S.P.Q.2d at 1245 ("ultimate function or purpose"); *Whelan*, 797 F.2d at 1238, 230 U.S.P.Q. at 490–91 ("purpose"). Although the main purpose is an unprotectable element, a potential plaintiff will be assisted in determining the issue of copying if both programs' purposes are first compared in their entirety so that "an initial holistic comparison may reveal a pattern of copying that is not obvious when only components are examined." *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 841, 28 U.S.P.Q.2d (BNA) 1503, 1515 (10th Cir. 1993) "[U]nprotected elements can have a probative value in determining whether the defendant copied the plaintiff's work." *Id.* at 833 n.7, 28 U.S.P.Q.2d at 1507 n.7. Furthermore, in the case of software that produces a screen display to reflect its functioning, although screen output cannot be direct evidence of infringement of the underlying code, "[t]here is no reason ... why material falling under [the audiovisual] copyright category could not be indirect, inferential evidence of the nature of [the literary code] covered by another copyright." *Whelan*, 797 F.2d at 1244, 230 U.S.P.Q. at 497. "Insofar as everything that a computer does, including its screen outputs, is related to the [code] that operates it, there is necessarily a causal relationship between the [code] and the screen outputs. The screen outputs must bear *some* relation to the underlying [code], and therefore they have some probative value." *Id.*; *Accord Sega*, 977 F.2d at 1520, 24 U.S.P.Q.2d at 1567; See also *supra* notes 41–42. In other words, both the audiovisual screen output expression and the literary code expression represent, to a certain extent, the same computer program in a different manner.

²³⁰ See, e.g., *Sony*, 203 F.2d at 604, 53 U.S.P.Q.2d at 1711. Although the *Atari/Sega/Sony* line of cases allows a defendant all the intermediate copying necessary to discover

good-faith belief in a likelihood of infringement by a potential defendant's final product means that "there is good reason for studying or examining"²³¹ the underlying code, and this should constitute, in itself, a "legitimate interest in gaining . . . access"²³² to such code by means of reverse engineering, disassembly, or decompilation, when this is "the only means of gaining access to"²³³ that potentially infringing code.²³⁴

Finally, since this article has argued that a defendant's acts in developing a new software product may violate the fair use factors as well as

functional uncopyrightable elements under the fair use doctrine, these cases do not permit the use of plaintiff's original protected expression in the defendant's final product beyond such amounts as are permitted and/or necessary under the fair use and/or merger doctrines. "Within the limited context of *intermediate* infringement, we find the semantic distinction between 'studying' and 'use' to be artificial, and decline to adopt it for purposes of determining fair use." *Id.* (emphasis added). This language, and the language of the statutory fair use section itself ("research"), appear to support an argument that a potential plaintiff may, under the fair use doctrine, reverse engineer, disassemble, or decompile a potential defendant's software product for purposes of finding out whether it incorporates plaintiff's protected expression, after having made the initial determination that the product will likely violate the 'objects, purposes, and character' inquiry of the first fair use factor, as well as the fourth fair use factor.

²³¹ *Sega*, 977 F.2d at 1520, 24 U.S.P.Q.2d at 1567.

²³² *Id.*

²³³ *Id.*

²³⁴ *Id.* It should be noted here that the *Sega* court's statement that "[t]he need to disassemble object code arises, if at all, only in connection with operations systems, system interface procedures, and other programs that are not visible to the user when operating," *Id.*, 24 U.S.P.Q.2d at 1567, must be limited to the context in which it was expressed, i.e., the discovery of "ideas and functional concepts." In light of the *Sony* decision, a copyright holder clearly has a "need" to determine whether underlying code in a final product infringes original protected code of the copyright holder. To enable that determination, copyright holders have a need to disassemble (or reverse engineer, or decompile) in connection with operating systems (and other programs not visible to the user when operating), as well as in connection with programs such as "word processing programs, spreadsheets, and video game[s]." *Id.* This is true despite the fact that, according to the *Sega* court, such programs' "ideas and functional concepts" are "readily discernible without the need for disassembly," *Id.*, because "the operation of such programs is visible on the computer screen." *Id.* Note too, that the *Sega* court's strict distinction between application software and system software has been criticized. See Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2377 (1994) ("[T]he widespread utility of and acceptance of graphical user interfaces led to their migration into operating systems, such as Microsoft's Windows."). It must be emphasized that the right to reverse engineer, disassemble, or decompile to research potentially infringing code would still not create a *per se* right to perform these activities, because a potential plaintiff must first have a good faith belief that there is a likelihood of infringement.

cause the misappropriation of trade secrets (in addition to copyright infringement), the threat of an additional cause of action for contractual breach of a provision prohibiting reverse engineering is not necessary to secure protection for copyrighted expression or functional interface information. The moment a company realizes that its trade secrets may have been misappropriated, it will also have a copyright infringement claim on its hands; and vice versa, the moment it realizes that its copyrights may have been infringed, it will also have a trade secret claim on its hands —this should be sufficient deterrence.²³⁵ However, to ensure that a company will be able to prevail on the trade secret claim, it is recommended that it not resort to dubious contractual provisions that are likely to fail on theories of misuse and/or preemption.²³⁶ Instead, it should take additional technological measures to make discovery of technical interface information more difficult, and monitor the market for likely infringement and/or misappropriation.²³⁷

Charles Nesson, director of Harvard Law School's Berkman Center for Internet and Society, has recently stated that "the industry doesn't deserve the law's protection if a 15-year-old can decipher the code,"²³⁸ and that in such a case, "[b]asically, the industry is asking the law to do all the work to protect the industry's intellectual property."²³⁹ That statement is equally applicable in the context of industry-wide contractual provisions prohibiting reverse engineering, disassembly, or decompilation. Instead of prohibiting fair use protected activities, taking additional technological measures to make such activities more difficult and costly to perform is more consistent with the software industry's wish to keep functional interface information a trade secret.

²³⁵ An additional breach of contract action based on breach of a provision prohibiting reverse engineering, disassembly, or decompilation may also run into the problem of duplicative remedies based on the same acts by a defendant. *See Douma, supra* note 219.

²³⁶ *See generally id.*, *supra* note 219.

²³⁷ This approach is also more practical. A company that relies on contractual prohibitions of fair use acts, and which takes no steps to make reverse engineering more difficult, would have to monitor a potentially infringing mass market for breach of contract. On the other hand, a company that makes reverse engineering substantially more difficult to perform would only need to monitor that segment of the market consisting of viable competitors with the resources and interest to engage in such time-consuming and costly activities.

²³⁸ John Gibeaut, *Facing the Music*, A.B.A. J., Oct. 2000, at 37, 40. (Quoting Charles Nesson.) Nesson was referring to recent litigation by the film industry against those who posted a program on the Web that allows illegal copying of movie DVD's by cracking industry codes used to protect the copyrighted material. The program that was posted had been written by a 15-year old Norwegian!

²³⁹ *Id.*

Section 1(4)(ii) of the Uniform Trade Secrets Act requires efforts that are reasonable under the circumstances to maintain the trade secret's secrecy. Producers of software can only be assured that the trade secret rights they claim in software will be held valid and enforceable if the efforts to maintain secrecy are indeed reasonable. Restricting the fair use rights of all owners and users of software or firmware -- rights that are constitutionally-protected and required for the legal implementation of the Copyright Clause's purposes -- is not an "effort reasonable under the circumstances," where other legal means for preventing copying and keeping functional interface information secret are available. Impairing the purposes and public policies behind the Copyright Act and the Constitution through contractual provisions should not be permitted.²⁴⁰ To the extent such contractual prohibitions amount to a misuse of the copyright based on an antitrust violation, these restrictions should also not pass the rule of reason analysis.²⁴¹

VIII. CONCLUSION

It is understandable that the commentators whose works were discussed in this article, and probably many others, would like to see special rules for computer programs. However, the approach Rothman argued does not have practical or legal merit. Contrary to the argument that there is no

²⁴⁰ Other commentators have also argued that inclusion of a reverse engineering prohibition in a license agreement constitutes copyright misuse: "If the [*Lasercomb v. Reynolds*] precedent holds and it is further concluded that the Copyright Act preempts state law enforcing contractual prohibition of reverse engineering, *Lasercomb* powerfully implies that the copyright in a program distributed subject to the contract restriction is wholly and universally unenforceable until the misuse is purged." David A. Rice, *Public Goods, Private Contract and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 U. PITT. L. REV. 543, 550-51 (1992) (footnote omitted). However, if *Lasercomb* holds, and it has, the Copyright Act need not first preempt such a contractual prohibition, because the misuse doctrine applies on its own rationale, and does not first require a preemption finding.

²⁴¹ See Ramona L. Paetzold, Comment, *Contracts Enlarging a Copyright Owner's Rights: A Framework for Determining Unenforceability*, 68 NEB. L. REV. 816, 831-33 (1989) (suggesting that contracts eliminating fair use rights be evaluated for enforceability under rule of reason standard and opining that "contract provisions prohibiting decompilation or reverse engineering of mass-marketed computer software should be preempted") *Id.* at 833. It should also be remembered that the fair use doctrine was itself intended to be "an equitable rule of reason." Harper & Row, 471 U.S. at 560, 225 U.S.P.Q. at 1081 (quoting H.R. REP. NO. 1476, 94'65, reprinted in 1976 U.S.C.C.A.N. 5659, 5679). It would seem an obvious violation of the Congressional intent and the public policies behind the Antitrust and Copyright laws to impair the proper functioning of that rule of reason.

room left for meaningful application of the fair use doctrine, this article has argued that the application of that doctrine to software reverse engineering cases is crucially necessary. Instead, there is no room left for meaningful or legal application of provisions prohibiting reverse engineering, disassembly, or decompilation. The temptation to interpret *Sony* as if it made a significant departure from *Sega* was great, and the temptation to find support for that argument in *Alcatel* was even greater, because *Sony* was a relatively easy case, while *Alcatel* was a complex case. Easy cases and complex cases are said to make bad law—this time, an easy case and a complex case caused Mr. Rothman to argue the need for the Misuse Doctrine instead of the Fair Use Doctrine to analyze all software reverse engineering cases.

The approach which Clifford took in his article also has no merit. Simultaneous copyright and trade secret rights can indeed co-exist in one particular software product, and simultaneous copyright and trade secret claims are not against the public policies underlying the Intellectual Property Clause or the Copyright Act. Clifford's argument for the application of the Misuse Doctrine in such cases was based on a faulty interpretation of the relevant definitions in the Copyright Act, and on a fundamental misunderstanding of the subject matter covered by copyrights. To the extent fair use rights are left intact, the protection of functional interface information in software and firmware under trade secret law does not rise to misuse of the copyrights granted on the expressive elements.

In summary, this article has argued and concludes that: (1) the fair use doctrine can, indeed must, still be meaningfully applied in the context of software reverse engineering cases, and enforcing one's copyrights in court does not constitute copyright misuse, (2) copyrights and trade secret rights can co-exist simultaneously in the same product, such as a piece of software, and this does not constitute copyright misuse, (3) licensing measures prohibiting fair use protected activities rise to the level of copyright misuse, (4) trade secret rights in functional interface information should be fortified through reasonable measures involving the use of a program, code, device, or similar electronic or physical limitation to restrict use of the information, instead of the use of dubious licensing provisions, (5) the *Sega/Atari/Sony* line of cases makes contractual provisions that prohibit fair use protected activities meaningless and obsolete, and their use should be discontinued, (6) any rationale for why such provisions might still be needed fails on the basis of copyright misuse or preemption, (7) the fair use analysis is the only available way to balance properly the interests involved where it concerns the use of uncopyrightable functional interface information obtained, or obtainable, through the reverse engineering, disassembly, or decompilation of products containing copyrighted expression, and (8) the "fair means of discovery" requirement of trade secret law requires the satisfaction of the fair use factors (with a focus on the first and fourth factors) in the context of

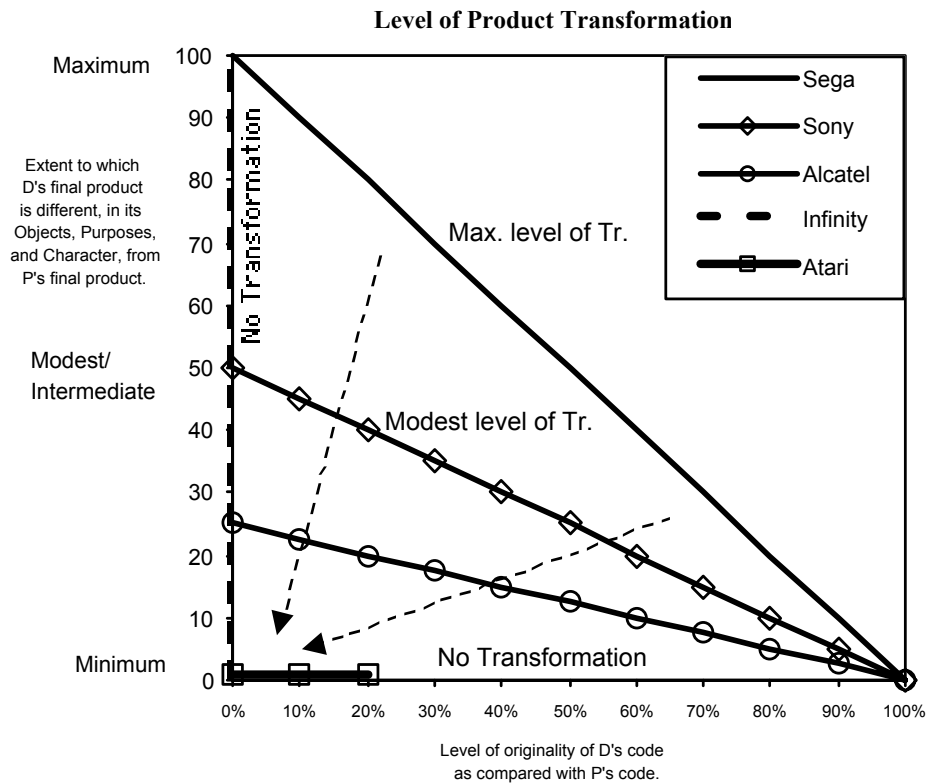
trade secrets discovered through activities involving intermediate copying of copyright protected expression in software code.

ADDENDUM I

Figure 1 represents the interaction between the object, purpose, or character of a product, and the expressive elements of the software underlying that product. It plots the levels of transformation of the defendants' final products in the *Sega*, *Sony*, *Alcatel*, *Infinity*, and *Atari* cases. A final product's transformation curve is obtained by:

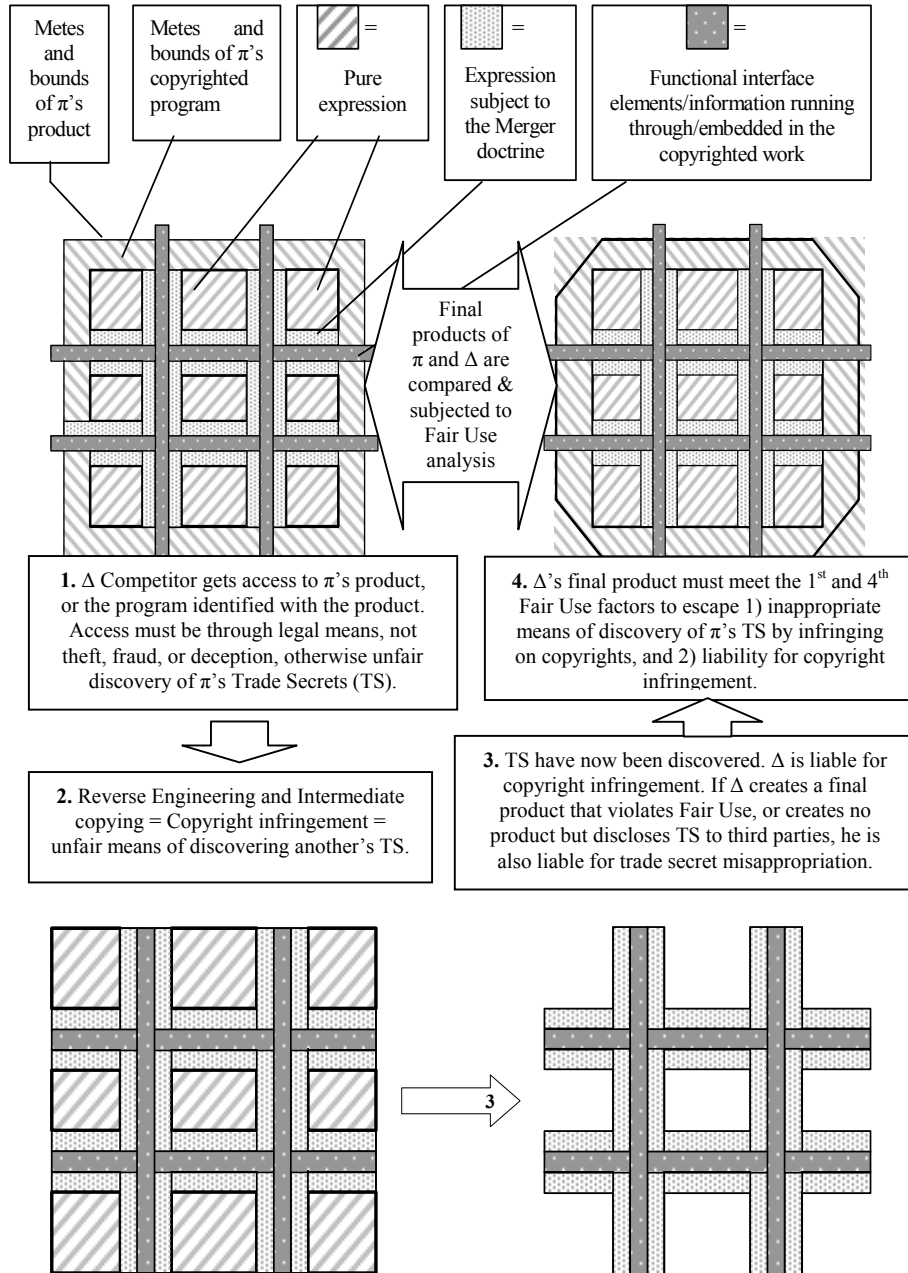
- 1) estimating the percentage of non infringing original expression in the code of defendant's final software product, and marking that number on the X-axis,
- 2) estimating/evaluating/analyzing the defendant's departure from the objects, purposes, and character of the plaintiff's final product, giving it a number between 0 (exactly the same objects, purposes, character) and 100 (completely different objects, purposes, character), and marking that number on the Y-axis, and
- 3) connecting the markings on the X- and Y-axis to form a line, with the dashed arrows representing the direction of decreasing levels of transformation.

The graph is illustrative only and represents estimates based on case readings.



ADDENDUM 2

Schematic of Software Reverse Engineering Process



Flowchart Explanation

Δ Competitor first gets access to a copy of π 's product (1). Δ next reverse engineers π 's product and violates π 's copyrights to enable discovery of Trade Secrets (TS) (2). Δ then synthesizes the TS for use in its competing product (3). Δ must then a) not use the TS for a commercial purpose and not disclose them to others, or, b) use the TS for a commercial purpose in a manner that does not violate the 1st and 4th Fair Use factors (4). If Δ does a) or b) he is not liable for copyright infringement or TS misappropriation. If not, he is liable for both. If he does b) but discloses the TS to third parties, he might still be liable for TS misappropriation.