

RANDOM NUMBERS, CHAOS THEORY, AND COGITATION: A SEARCH FOR THE MINIMAL CREATIVITY STANDARD IN COPYRIGHT LAW

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– More Matter with less art.

– Madam, I swear I use no art at all.¹

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1. WILLIAM SHAKESPEARE, *HAMLET*, PRINCE OF DENMARK act 2, sc. 2, ln. 95 (Riverside ed. 1974) (conversation between the Queen and Polonius).

INTRODUCTION

The copyright axiom that creativity² is required for copyright validity is oft-times expressed, but has not been of great historic significance. As a professor from the 1970s could have said, "Copyright requires creativity—it requires that the author create the work by the author's own labor. Nothing more is required than not copying someone else's work."³ Today, however, the copyright creativity standard is no longer as simple as two complicating factors are evolving.⁴ From one side are questions raised by new technology that can exercise, or at least simulate, creativity using artificial intelligence techniques negating the need for human involvement in the work's creation.⁵ For these works, although the resulting work might be highly "creative," no human creative or expressive acts were needed, thus raising the issue of whether a copyright subsists in the generated expression.⁶ From the other side are questions raised by qualitatively insignificant, or at least legally insufficient, human labors involved in the work's generation. In some cases, the invention of a new technology might have made the creation of a work mechanical where formerly significant human creativity and labor would have been required.⁷

2. As will become clear, a simple, appropriate definition of the word creativity does not exist. See *infra* Section III.

3. See, e.g., BENJAMIN KAPLAN & RALPH S. BROWN, JR., CASES ON COPYRIGHT 57-104 (3d ed. 1978). See also Russ VerSteeg, *Sparks in the Tinderbox: Feist, "Creativity," and the Legislative History of the 1976 Copyright Act*, 56 U. PITT. L. REV. 549, 585 (1995) (discussing how the Supreme Court imposed a creativity standard that was not present in the 1976 Copyright Act).

4. The trends being discussed in this article were firmly recognized by the United States Supreme Court in *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 344 (1991). Before *Feist*, several circuits recognized the "sweat of the brow" theory of creativity for the purposes of a copyright. *Jewelers' Circular Publ'g Co. v. Keystone Publ'g Co.*, 281 F. 83, 88 (2d Cir. 1922); *Leon v. Pac. Tel. & Tel. Co.*, 91 F.2d 484, 486 (9th Cir. 1937). This theory maintained that as long as the author worked hard to produce the work, it contained sufficient creativity to be copyrighted. See *Jewelers' Circular*, 281 F. at 88; *Leon*, 91 F.2d at 486. *Feist* expressly rejected this theory and held, as a matter of constitutional law, that more creativity than that was required before a copyright would subsist. *Feist*, 499 U.S. at 352.

5. See generally Ralph D. Clifford, *Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up?*, 71 TUL. L. REV. 1675 (1997) [hereinafter Clifford, *Creative Computer Program*] (discussing the copyrightability of expressive works created using artificial intelligence techniques). Development of the computer techniques discussed in this 1997 article has continued apace. See John R. Koza, Martin A. Keane & Matthew J. Streeter, *Evolving Inventions*, SCI. AM., Feb. 2003, at 52 (commenting that "computer programs that function via Darwinian evolution are creating inventions that are novel and useful enough to be patented."). Cf. Lance Ulanoff, *Cognitive Machines*, P.C. MAG., July 2003, at 118 (describing progress in robotics and self-aware machines).

6. See Clifford, *Creative Computer Program*, *supra* note 5, at 1695. Indeed, with a truly creative computer program, the human cannot even claim to have originated the work. In many ways, this serves to distinguish the topic of Clifford, *Creative Computer Program*, from the subject of this paper. With a creative computer program, the human is not the author of the work, making the issue of the quantum of creativity needed superfluous. In this paper, the concern is not with a creative computer program that appears to be the author of a work; instead, the article will address how to measure the characteristics of the work that the human created in order to establish whether federal copyright protection is available.

7. See, e.g., *Stuart Entm't, Inc. v. Am. Games, Inc.*, No. 1-96-CV-90036, slip op. at 1-6 (S.D. Iowa Mar. 19, 1998) (discussing computer generated bingo cards), *aff'd*, 205 F.3d 1347 (8th

Consequently, although the resulting work might have once been recognized as "creative," modern technology has made it seem unimaginative and potentially without a subsisting copyright. In other cases, the work itself may have been produced without the expenditure of sufficient creative effort even though significant physical labor may have been exerted.⁸ A copyright in these works no longer exists as they lack "creativity," as that copyright requirement was reinterpreted in *Feist Publications, Inc. v. Rural Telephone Service Co.*⁹

This article explores the second type of expressive work, those where there is a question if the author's contribution is qualitatively sufficient, to determine how much creativity and of what type is required to sustain a copyright.¹⁰ Initially, the historic standards of creativity used before *Feist* was decided in 1991 will be presented. Then, after a brief

Gir., 1999) (table, opinion at 1999 WL 1144831). Very typically, as was the case in *Stuart*, the generation of the work depends on a random number generator. A "random number generator" is a computer program that can be used to generate a series of pseudorandom numbers. WEBSTER'S NEW WORLD DICTIONARY OF COMPUTER TERMS 480 (5th ed. 1994).

These numbers are pseudorandom because it is generally impossible to establish that they are "completely unpredictable" as would be the case for a true random number. Shawn Carlson, *Falling into Chaos*, SCL:AM., Nov. 1999, at 120, 121. Further, the sequence of computer-generated random numbers will repeat given a sufficiently long period of time. See George Marsaglia, *Random Number Generation* in ENCYCLOPEDIA OF COMPUTER SCIENCE 1499 (Anthony Ralston et al. eds., 4th ed. 2000) (describing random number generator algorithms and the difficulties in establishing that they produce sufficiently random numbers).

8. These are the classic "sweat of the brow" cases where some circuits would have recognized a copyright. See *Leon*, 91 F.2d at 486; *Jeweler's Circular*, 281 F. at 88. See also, Robert A. Gorman, *Copyright Protection for the Collection and Representation of Facts*, 76 HARV. L. REV. 1569 (1963); Jane C. Ginsburg, *Creation and Commercial Value: Copyright Protection of Works of Information*, 90 COLUM. L. REV. 1865 (1990). The Supreme Court has now rejected the sweat of the brow theory. See *Feist*, 499 U.S. at 359-60 (finding white pages of a telephone book not protected by copyright as they lack sufficient creativity).

Of course, historically, the quantity of human work necessary to produce the type of alphabetized directory involved in *Feist* was very significant as it is extremely difficult for humans to alphabetize a large list of names. It has only been the invention of the computer that makes the creation of an ordered list seem insignificant and mundane. See generally, 3 DONALD E. KNUTH, *THE ART OF COMPUTER PROGRAMMING* (1973) (discussing the algorithmic complexity of placing information into order). See *infra* Section II.A, discussing the consequences of increasing computerization on the copyrightability of works.

9. Compare *Feist*, 499 U.S. at 364 (disallowing a copyright in a directory) with *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 250 (1903) ("The least pretentious picture has more originality in it than directories and the like, which may be copyrighted.") (emphasis added) (dictum). See also *CCH Canadian Ltd. v. Law Soc'y of Upper Canada*, [2002] F.C. 187, ¶¶ 44-48, available at <http://decisions.fct-cf.gc.ca/fct/2002/2002fca187.html> (describing the extra creativity requirement under United States law and indicating that it is a departure from the English roots of copyright law) (last visited Feb. 3, 2005), *rev'd on other grounds*, [2004] S.C.R. 339, available at http://www.lexum.umontreal.ca/csc-scc/en/pub/2004/vol1/html/2004scr1_0339.html (last visited Feb. 3, 2005).

Feist, itself, involved the copyrightability of the white pages in a telephone book. *Feist*, 499 U.S. at 342. Rural, the regulated telephone utility in the area, had produced its directory because it was required to do so by law. *Id.* *Feist* had directly copied the list of names and phone numbers contained in Rural's telephone book in order to produce its own, competing telephone book. *Id.* at 343. Both the district court and the court of appeals held the copyright valid and awarded judgment to Rural. *Id.* at 344. The Supreme Court reversed on the issue of copyrightability. *Id.* at 364.

10. The author's analysis of the first type of work can be found in Clifford, *Creative Computer Program*, *supra* note 5.

discussion of *Feist*, the scientific basis of creativity will be explored. Next, the confusion regarding creativity that exists in the lower courts will serve to expose the source of misapplication of the law—a disconnect between how courts perceive creativity and its physiological origins. Finally, a new analytical approach of evaluating the presence of creativity will be suggested to refocus the *Feist* jurisprudence on its purpose and to make it consistent with the reality of thought and ingenuity in the human brain.

I. THE HISTORIC COPYRIGHT CREATIVITY STANDARD

A. *The Burrow-Giles Decision*

The earliest important Supreme Court case to consider the question of the needed creativity in a copyrighted work was *Burrow-Giles Lithographic Co. v. Sarony*.¹¹ In the case, Sarony alleged that the defendant had infringed his copyright in a photograph he had produced of Oscar Wilde by printing 85,000 lithographic copies.¹² In response to the defendant's claim that photographs could not be copyrighted, the Court concluded that they were a writing of an author by holding:

An author in that sense is he to whom anything owes its origin; originator; maker; one who completes a work of science or literature. So, also, no one would now claim that the word "writing" in this clause of the constitution, though the only word used as to subjects in regard to which authors are to be secured, is limited to the actual script of the author, and excludes books and all other printed matter. By writings in that clause is meant the literary productions of those authors, and congress very properly has declared these to include all forms of writing, printing, engravings, etchings, etc., by which the ideas in the mind of the author are given visible expression.¹³

Contained within this early consideration of the nature of a copyrightable work are two key concepts. First, an author can be identified by determining who was responsible for expressing the work in a physical

11. 111 U.S. 53 (1884). Although *Burrow-Giles* was the first case to consider copyright creativity in depth, the Supreme Court had addressed the issue briefly five years earlier in *The Trademark Cases*, 100 U.S. 82 (1879). In those consolidated cases, the Court was requested to rule on the constitutionality of the first trademark statute adopted by the Congress. *See id.* at 91-92. One possible congressional power that had been exercised to adopt the statute was the Intellectual Property Clause, U.S. CONST. art. I, § 8, cl. 8. *See id.* at 93. [hereinafter I.P. Clause]. Concluding that trademark legislation could not be sustained under the I.P. Clause, the Court held that "it is only [writing] as are *original*, and are founded in the creative powers of the mind" that can be protected. *Id.* at 94. The Court did not conclude that a trademark necessarily would not qualify under this standard; instead, the Court pointed out that Congress had not required trademarks to be original in order to qualify for a trademark. *See id.* Consequently, although indicating that there was a creativity standard associated with the I.P. Clause, the Court did little to explain it. A detailed consideration of the case, therefore, does little to enhance an understanding of the copyright creativity standard.

12. *See Burrow-Giles*, 111 U.S. at 54.

13. *Id.* at 57-58 (quotation marks and citations omitted).

form.¹⁴ This aspect of copyright creativity will be termed "origin creativity." Second, an author can be identified as the individual who had at least one idea that is expressed in the perceivable work.¹⁵ This process of having a conception and reducing it to an articulation will be called "intellectual creativity."

This early standard of creativity expressed by the Court justifies the conclusion that copyright law was far more concerned with origin creativity than with intellectual creativity. Although there must have been an idea in the mind of the author, once this had been determined, no concern was expressed about the mechanisms chosen by the author to reduce that idea to expression. Additionally, once this idea is found, the Court seemed unconcerned with the underlying ingenuity or complexity of the idea. Consequently, the quantity of intellectual creativity needed, although existing, was clearly *de minimis*. If *Burrow-Giles* is applied to the facts in *Feist Publications, Inc. v. Rural Telephone Service Co.*,¹⁶ for example, one would conclude that the *Feist* directory was copyrightable. First, all parties admitted that the white pages had been created by the plaintiff, so the requirement of origin creativity is satisfied.¹⁷ Similarly, there was an idea in the minds of the corporate agents of the plaintiff, producing an alphabetical directory of subscribers, which had been reduced to a physical expression.¹⁸ Therefore, these would satisfy the minimal standards required by origin and intellectual creativity as defined by the *Burrow-Giles* Court.

B. The Bleistein Decision

The next important case for understanding the copyright creativity standard, *Bleistein v. Donaldson Lithographing Co.*,¹⁹ was decided in

14. See *id.* at 58 ("[C]ongress very properly has declared [copyrightable writings] to include all forms of writing, printing, engravings, etchings, etc., by which the ideas in the mind of the author are given visible expression.").

15. See *id.* ("[w]ritings . . . include all forms of [expression] by which the ideas in the mind of the author are given visible expression.").

16. 499 U.S. 340 (1991).

17. See *Feist*, 499 U.S. at 342.

18. See *id.* at 363.

19. 188 U.S. 239 (1903). *Baker v. Selden*, 101 U.S. 99, 101 (1879) (denying a copyright to the forms associated with a system of accounting) also could be considered to have addressed the amount of creativity needed for a copyright. Certainly, that is how the Second Circuit used the case in *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102 (2d Cir. 1951). More accurately, however, *Baker* should be seen as the Supreme Court's establishment of the idea-expression dichotomy and of the lack of copyrightability that results when the idea and the expression merge. The Court stated:

There is no doubt that a work on the subject of book-keeping, though only explanatory of well-known systems, may be the subject of a copyright; but, then, it is claimed only as a book. Such a book may be explanatory either of old systems, or of an entirely new system; and, considered as a book, as the work of an author, conveying information on the subject of book-keeping, and containing detailed explanations of the art, it may be a very valuable acquisition to the practical knowledge of the community. But there is a clear distinction between the book, as such, and the art which it is intended to illustrate. The mere statement of the proposition is so evident, that it requires hardly any argument to support

1903. In *Bleistein*, the Court again focused on the importance of origin creativity and minimized the amount of intellectual creativity needed to justify a copyright:

Others are free to copy the [source of a copyrighted picture]. They are not free to copy the copy. The copy is the personal reaction of an individual upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man's alone. That something he may copyright unless there is a restriction in the words of the act.²⁰

The Court assumed that if a work has been produced by someone, some aspect of that individual's personality would be reflected in it.²¹ This minimal reflection of personality sufficiently evidences the intellectual creativity to support a copyright; indeed, the Court noted that even the individual handwriting of the author would be enough.²² The Court indicated that only a "modest grade of art"²³ was needed to satisfy the intellectual creativity requirement of the Copyright Act with the mentioned examples indicating the extreme paltriness of the requisite.

Additionally, the Court was obviously concerned that allowing a court or jury to evaluate the quantity or quality of intellectual creativity contained in a work could defeat the primary purpose of the Copyright Act to increase the amount of expression created.²⁴ An evaluation of intellectual creativity could easily lead to a copyright system that encourages only expressions that appeal to those in the legal system.²⁵ In other

it. The same distinction may be predicated of every other art as well as that of book-keeping. A treatise on the composition and use of medicines, be they old or new; on the construction and use of ploughs, or watches, or churns; or on the mixture and application of colors for painting or dyeing; or on the mode of drawing lines to produce the effect of perspective, would be the subject of copyright; but no one would contend that the copyright of the treatise would give the exclusive right to the art or manufacture described therein.

Baker, 101 U.S. at 101-02. Subsequently, triggering the development of the idea-expression merger doctrine, the Court continued, "[the accounting system] is open and free to the use of the public. And, of course, in using the art, the ruled lines and headings of accounts must necessarily be used as incident to it." *Id.* at 104.

Now, the idea-expression dichotomy with its resulting merger doctrine have been codified. See 17 U.S.C. § 102(b) (1994); H.R. REP. NO. 94-1476, at 57 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5670 ("Section 102(b) in no way enlarges or contracts the scope of copyright protection under the present law. Its purpose is to restate, in the context of the new single Federal system of copyright, that the basic dichotomy between expression and idea remains unchanged."). See generally Alan L. Durham, *Speaking of the World: Fact, Opinion and the Originality Standard of Copyright*, 33 ARIZ. ST. L.J. 791, 797-801 (2001) (discussing idea-expression dichotomy).

20. *Bleistein*, 188 U.S. at 249-50 (citations omitted).

21. *Id.* at 250.

22. See *id.* ("[An author's work] expresses its singularity even in handwriting . . .").

23. *Id.*

24. *Id.*

25. See *id.* at 251-52.

It would be a dangerous undertaking for persons trained only to the law to constitute themselves final judges of the worth of pictorial illustrations, outside of the narrowest and

words, the risk that the Court seemed to be avoiding was that allowing an evaluation of the plenitude of intellectual creativity rather than only its presence could too easily turn into an exercise in commercial or judicial censorship.²⁶

Consequently, the Court stressed that origin creativity was almost sufficient in its own right to justify a copyright. Indeed, another's desire to copy the work seemed to provide all of the evidence that intellectual creativity was contained within the work, consequently sustaining its copyright.²⁷ Anything beyond origin creativity and extremely minimal intellectual creativity was relegated to a role in determining the scope of the copyright, not its validity.²⁸

The lower courts appreciated the limited requirement of creativity associated with a copyright:

Original in reference to a copyrighted work means that the particular work owes its origin to the author. No large measure of novelty is necessary All that is needed to satisfy both the Constitution and the statute is that the author contributed something more than a merely trivial variation, something recognizably his own. Originality in this context means little more than a prohibition of actual copying. No matter how poor artistically the author's addition, it is enough if it be his own.²⁹

So indeed, it is fair to conclude that the creativity requirement of the Intellectual Property Clause³⁰ was perceived to require practically noth-

most obvious limits. At the one extreme, some works of genius would be sure to miss appreciation. Their very novelty would make them repulsive until the public had learned the new language in which their author spoke At the other end, copyright would be denied to pictures which appealed to a public less educated than the judge. Yet if they command the interest of any public, they have a commercial value, it would be bold to say that they have not an aesthetic and educational value, - and the taste of any public is not to be treated with contempt.

Id.

The Court's concern is well founded. It is difficult to see how intellectual creativity can be evaluated except in the context of the field the work addresses. See MIHALY CSIKSZENTMIHALYI, CREATIVITY 27-29 (1996).

26. See *Bleistein*, 188 U.S. at 252 ("That these pictures had their worth and their success is sufficiently shown by the desire to reproduce them without regard to the plaintiffs' rights. We are of opinion that there was evidence that the plaintiffs have rights entitled to the protection of the law.") (citation omitted).

27. Compare *id.* (majority opinion) with *id.* at 253 (Harlan, J., dissenting).

No evidence, aside from the deductions which are to be drawn from the prints themselves, was offered to show that these designs had any original artistic qualities. The jury could not reasonably have found merit or value aside from the purely business object of advertising a show, and the instruction to find for the defendant was not error.

Id.

28. See *id.* at 251 (Harlan, J., dissenting) ("[The limited intellectual creativity] may be a circumstance for the jury to consider in determining the extent of Mr. Wallace's rights, but it is not a bar.").

29. *Alfred Bell*, 191 F.2d at 102-03 (quotation marks and footnotes omitted).

30. U.S. CONST. art. I, § 8, cl. 8.

ing in addition to origin creativity. Any variation that goes just beyond the trivial was deemed sufficient to satisfy intellectual creativity.

II. THE TRANSFORMATION OF THE STANDARD

A. Early Warning Signs

An early suggestion that the traditional, minimalist intellectual creativity requirement was no longer being blindly accepted by all of the Justices occurred in Justice Douglas's dissent to the denial of certiorari in *Lee v. Runge*³¹ in 1971. Justice Douglas examined the Intellectual Property Clause of the Constitution³² and expostulated that the requisite creativity required for a copyright should be at least as high as that required for a patent.³³ "No reason can be offered why we should depart from the plain import of this grant of congressional power and apply more lenient constitutional standards to copyrights than to patents."³⁴ Indeed, Justice Douglas's dissent suggested that the standard for copyright creativity should be higher than that required of a patent,³⁵ particularly when the conflict he perceived between the copyright power and the First Amendment was considered.³⁶

Although this desire to reexamine the standard of copyrightability appears to occur suddenly without any prior substantial judicial activity in the area, its timing can be appreciated as reflecting the changes occurring in the societal importance of copyright at the time the *Lee* case was presented to the Court in the early 1970s.³⁷ The original minimalist intel-

31. 404 U.S. 887 (1971) (denying cert.) (Douglas, J., dissenting).

32. U.S. CONST. art. I, § 8, cl. 8.

33. *Lee*, 404 U.S. at 889-90 (Douglas, J., dissenting).

34. *Id.* at 890 (Douglas, J., dissenting) (footnote omitted).

35. Justice Douglas explained his understanding of the patent standards as follows:

Patents which did not serve the broad goals of furthering scientific advancement and bettering the lot of mankind have been held invalid because they lacked utility, did no more than combine existing inventions, were obvious to someone schooled in the art, or sought to monopolize ideas within the public domain. It is not obvious that respondent's system of facial exercises was patentable under these standards. It arguably amounted to nothing more than an application of existing knowledge based upon sources available to all men. We have repeatedly held that patents so devoid of novelty were invalid. To create a monopoly under the copyright power which would not be available under the patent power would be to betray the common birthright of all men at the altar of hollow formalisms.

Id. at 891 (Douglas, J., dissenting) (citations omitted).

36. See *id.* at 893 (Douglas, J., dissenting).

The arena of public debate would be quiet, indeed, if a politician could copyright his speeches or a philosopher his treatises and thus obtain a monopoly on the ideas they contained. We should not construe the copyright laws to conflict so patently with the values that the First Amendment was designed to protect.

Id.

37. See, e.g., Stephen Breyer, *The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs*, 84 HARV. L. REV. 281 (1970) (discussing a change in copyright materials, such as computer programs, and the change in copyrighted material reproduction technology, such as copiers). Indeed, the Supreme Court would find itself deeply involved in the debate over the proper intellectual property treatment of computer technology throughout the 1970s. See *Gottschalk v. Benson*, 409 U.S. 63, 63 (1972); *Parker v. Flook*, 437 U.S. 584, 584 (1978).

lectual creativity standard had developed when the primary work protected by copyright was a book or other expression created by placing ink on a paper substrate. This technology made reproduction of the work difficult. During this era, while it might be expensive, or at least labor intensive, to create a copyrighted work, it was far more expensive to reproduce the work itself.³⁸ By the 1970s, however, duplication costs had started to decrease dramatically, first because of the photocopier but, ultimately, and far more significantly, because of the computer.³⁹ Consequently, where earlier the intellectual creativity expressed within a work could be considered of comparatively minor import as it contributed less significantly to the expense of generating the work than the difficulties of reproduction did, by the time the *Lee* case was decided, the costs of reproduction were declining,⁴⁰ and would continue to decrease precipitously,⁴¹ thus increasing the economic import of the intellectual creativity in the work.

Further, without belittling the importance these earlier works had to the development of society and intellection, they were not as pivotal to the economy as many copyrighted expressions are today. It is hard to imagine, now, how our society would be able to operate without the use of massive computer systems, the software for which is within the ambit of copyright.⁴² For both of these reasons, the requirement of greater intellectual creativity for copyright, foreseen by Justice Douglas in *Lee*, ultimately became doctrine in *Feist*.

38. See Breyer, *supra* note 37, at 295 (approximately 85% of a publisher's costs of producing a book come from non-royalty associated expenses).

39. Cf. A.J. Meadows, *Economic and Social Factors*, in *THE FUTURE OF THE PRINTED WORD* 149, 151 (Philip Hills ed., 1980) (number of lines of type that could be set was fairly constant through about 1950, but has "shot up" since then); Shirley Horner, *About Books*, N.Y. TIMES, July 23, 1989, § 12NJ, at 19.

40. Photocopying was a significantly less expensive method of reproduction than typesetting. The labor required by photocopying was comparatively insignificant in quantity and, as importantly, could be performed by comparatively unskilled individuals. Once computer technology started being used to reproduce copyrighted works, much of the cost of typesetting disappeared. See generally OLDRICH STANDERA, *THE ELECTRONIC ERA OF PUBLISHING* 235-37 (Elsevier Science Publishing Co., Inc. 1987) (describing the increasing role of and decreasing costs from computer technology).

41. Once digitized, the cost of reproduction, often with the same quality as the original, becomes not much more than the cost of the medium upon which the work is recorded. Today, with the Internet, the cost of the medium is, effectively, zero. See *The Internet Society—A Fine Balance*, THE ECONOMIST, Jan. 25, 2003, 2003 WL 6244750, at http://www.economist.com/opinion/displayStory.cfm?story_id=1534271 (last visited Feb. 5, 2005). Consequently, where formerly the costs of reproduction were the most significant component of distributing a copyrighted work to the public, today, the cost of intellectual creation transcends other expenses.

42. See 17 U.S.C. § 101 (1994) (defining computer program). See also RAYMOND T. NIMMER, *THE LAW OF COMPUTER TECHNOLOGY* § 1:1 (3d ed. 2003) ("Since the 1980s, copyright law has been a major form of protection and property rights for computer programs, databases, software technology . . .").

B. *The Feist Decision*

In *Feist Publications, Inc. v. Rural Telephone Service Co.*⁴³ decided in 1991, an effectively unanimous Supreme Court⁴⁴ altered⁴⁵ the amount of intellectual creativity that must be found for a work to be copyrightable by determining that the white pages of a telephone book did not qualify.⁴⁶ The Court stated:

To qualify for copyright protection, a work must be original to the author. Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity. To be sure, the requisite level of creativity is extremely low; even a slight amount will suffice. The vast majority of works make the grade quite easily, as they possess some creative spark, no matter how crude, humble or obvious it might be. Originality does not signify novelty; a work may be original even though it closely resembles other works so long as the similarity is fortuitous, not the result of copying.⁴⁷

The necessary quantum of intellectual creativity under *Feist* seems significantly different than the Court's earlier elaboration of the standard in *Bleistein v. Donaldson Lithographing Co.*⁴⁸ While all *Bleistein* required was that the work contain enough creative expression that someone else desired to copy it,⁴⁹ now the work must "possess some creative spark."⁵⁰ Unfortunately, the Court provided no clear guidance on what a "creative spark" is.⁵¹ How, then, are we to evaluate the quantity of intel-

43. 499 U.S. 340 (1991).

44. Justice Blackmun concurred in the judgment, but did not write an opinion to explain why he did not join the opinion of the Court signed by the other eight Justices. See *Feist*, 499 U.S. at 341.

45. See *supra* note 9.

46. *Feist*, 499 U.S. at 364.

47. *Id.* at 345 (citations and quotation marks omitted).

48. 188 U.S. 239 (1903).

49. See *supra* note 27 and accompanying text.

50. *Feist*, 499 U.S. at 345.

51. See *id.* at 345-46. Professor Woodmansee argues the notion of a "creative spark" underlying a copyrighted expression is a "romantic" concept owing its origin to European culture of the nineteenth century. Martha Woodmansee, *Response to David Nimmer*, 38 HOUS. L. REV. 231, 231 (2001). She argues:

The conclusion that my discipline has reached over the past thirty years is that the distinction ["between 'sweat of the brow' and truly creative 'authorial' works"] is specious—that it is arbitrary and frequently a source of serious harm. Empirical research into the nature of composition, and creative production generally, has shown that we are always already cutting and pasting; and historical research has shown that the inclination to represent some creative productions as somehow more truly creative is rather recent. Not until the end of the eighteenth century do we find poets, publishers, and parliamentarians insisting on the originality of (some) creative work. The impetus for this Romantic (mis)representation of creative activity was the expansion—the first big expansion—in the market for printed books. In an effort to achieve visibility in a growing sea of printed matter, creative producers began to insist on the originality of their work: "My work is innovative; yours is merely hackwork."

Id. at 232 (footnotes omitted).

lectual creativity contained within a work; indeed, how are we to recognize intellectual creativity when we see it?

Unfortunately, upon dissection, the *Feist* decision fails to answer this basic question; indeed, the Court provides contradictory statements about the nature of the creativity needed. The Court's description of the intellectual creativity requisite indicated expressly that novelty was not required.⁵² Two works, identical by happenstance, were each to remain copyrightable. Further, as long as there was at least a "crude, humble or obvious" element of creativity within the work, a copyright would subsist.⁵³ The problem with this expression as guidance on the standard of minimal copyright creativity is that the work before the Court in *Feist*, in fact, had a humble and obvious element of creativity in it, at least under the law as it was understood before *Feist*. The idea of listing customers in alphabetic order, although not characterizable as brilliant, is touched with some creativity of the most obvious kind. "Obvious," after all, means something that is "easily seen, recognized, or understood; open to view or knowledge; evident [or] lacking in subtlety."⁵⁴ Listing names in alphabetical order unequivocally satisfies this definition. Consequently, the Court must have meant something more than its stated "crude, humble or obvious" element analysis would suggest.

The confusion between the Court's expression of a new copyright intellectual creativity standard and the application of it becomes even more apparent later in the opinion. The Court indicated that the white pages in question were uncopyrightable as they were "entirely typical."⁵⁵ Because being typical suggests lacking novelty,⁵⁶ the Court therefore implicitly rejected the copyright in the white pages because of its lack of novelty.⁵⁷ This conclusion directly contradicts the Court's earlier statements that expressly indicated that novelty was not required.⁵⁸ This, then,

Those that see creativity as the Supreme Court did in *Feist* have been termed "inspiration-alists." Ben Shneiderman, *Creating 7: User Interfaces for Supporting Innovation*, 7 ACM TRANSACTIONS ON COMPUTER-HUMAN INTERACTION 114, 116 (Mar. 2000). Inspirationists view creativity as "a dramatic breakthrough [that] magically appears." *Id.* The Court seems to have a history of seeing creativity as an inspirationist. See *Cuno Eng'g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 91 (1941) (invention must be based on a "flash of creative genius").

52. See *Feist*, 499 U.S. at 346. "Novel" is defined as "of a new kind; different from anything seen or known before." RANDOM HOUSE UNABRIDGED DICTIONARY 1327 (2d ed. 1993).

53. *Feist*, 499 U.S. at 345.

54. RANDOM HOUSE UNABRIDGED DICTIONARY 1339 (2d ed. 1993).

55. *Feist*, 499 U.S. at 362.

56. Compare RANDOM HOUSE UNABRIDGED DICTIONARY 2046 (2d ed. 1993) ("Typical" is defined as: "of the nature of or serving as a type or representative specimen") with *id.* at 1327 ("Novel" is defined as: "of a new kind; different from anything seen or known before").

57. See *Feist*, 499 U.S. at 362.

58. See *supra* note 52 and accompanying text. The Court continued in this vein when it stated, "[T]here is nothing remotely creative about arranging names alphabetically in a white pages directory. It is an age-old practice, firmly rooted in tradition and so commonplace that it has come to be expected as a matter of course." *Feist*, 499 U.S. at 363. In other words, the white pages lack creativity because everyone else does it that way.

raises the core question: What is "creativity" and how can the courts recognize it?

III. WHAT IS CREATIVITY, ANYWAY?

As the Court has transformed the understanding of the term "creativity" in copyright law, using the term in such phrases as "creative spark"⁵⁹ indicating that more than origin creativity is needed, an understanding of human-based artistic or intellectual creativity⁶⁰ becomes mandatory. There is no singular definition of this type of creativity, however.⁶¹ Therefore, before undertaking an analysis of the copyright requisite, it is necessary to examine the various meanings of creativity to determine what subset of them constitute the relevant group for copyright law. As the Court's reference to creativity seems to demand a determination that there is sufficient human-based creativity associated with the work,⁶² the two disciplines that are most apropos for deriving the Court's

As a practical matter, it is hard to imagine what the intellectual creativity requirement can mean if novelty is not a significant factor to be examined in the analysis. See Robert J. Sternberg, *The Creativity Paradox: Why Everyone and No One Seems to Appreciate Creative Work*, 30 APA MONITOR ONLINE, Nov. 1999, at <http://www.apa.org/monitor/nov99/scispeak.html> ("A creative idea is one that is novel and good.") (last visited Feb. 6, 2005).

59. Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340, 345 (1991).

60. See 1 THE NEW SHORTER OXFORD ENGLISH DICTIONARY 544 (1993) ("Having the quality of creating; able to create; of or pertaining to creation, *spec.* inventive, imaginative, showing imagination as well as routine skill; intended to stimulate the imagination.").

61. See CSIKSZENTMIHALYI *supra* note 25, at 25 ("The problem is that the term 'creativity' as commonly used covers too much ground. It refers to very different entities, thus causing a great deal of confusion."). See also DEAN KEITH SIMONTON, *GENIUS AND CREATIVITY: SELECTED PAPERS* 263 (1997) (discussing why some works are considered "more famous" than others); DAVID JONES, *CREATIVITY* 1 (1984) ("There is little agreement amongst researchers about the nature of creativity; the topic is approached from a wide range of differing psychological and philosophical perspectives. There is not even agreement about how creativity can be identified"); JAMES FREEMAN ET AL., *CREATIVITY—A SELECTIVE REVIEW OF RESEARCH* 2 (2d ed. 1971) ("Current views on the nature of creativity differ widely and cannot easily be separated from views on intelligence and intelligence testing, the assessment of special aptitudes and abilities, learning theory, personality theory, and the psychology of thinking.").

Even a dictionary lists multiple definitions that express different aspects of creativity. Compare RANDOM HOUSE UNABRIDGED DICTIONARY 472 (2d ed. 1993) (defining "creative" and "creativity" as including the "state" of being creative, the ability to be creative, and the results of having been creative), with 1 THE NEW SHORTER OXFORD ENGLISH DICTIONARY 544 (1993) (defining "creative" as "1. Having the quality of creating; able to create; of or pertaining to creation, *spec.* inventive, imaginative, showing imagination as well as routine skill; intended to stimulate the imagination. 2. Productive.").

Professor Shneiderman divides the description of creativity into three camps of scholars. The first are the "inspirationalists" who see creativity as occurring dramatically and suddenly. See Shneiderman *supra* note 51, at 116. Second are the "structuralists" who describe creativity as a more iterative approach where the current body of thought is restructured into a new work. See *id.* at 116–17. The final group are the "situationalists" who approach creativity as socially triggered and being ultimately the result of a value judgment made by the idea's originator's peers. See *id.* at 117.

62. At this stage of the argument, it is necessary to assume that human creativity exists. Whether this is true is subject to some scientific and philosophic debate. See DOUGLAS R. HOFSTADTER & DANIEL C. DENNETT, *THE MIND'S I* 283 (Bantam ed. 1982).

Not only does our conscious minds activity create permanent side effects at the neural level; the inverse holds too: Our conscious thoughts seem to come bubbling up from subterranean caverns of our mind, images flood into our minds eye without our having any idea where they came from! Yet when we publish them, we expect that we—not our sub-

meaning are human psychology and neurobiology,⁶³ although some of the work of computer scientists working with artificial intelligence adds to the understanding.⁶⁴ Both primary fields have actively studied creativity, attempting to establish its scientific basis.

Indeed, the recent study of creativity by psychologists provides highly compelling analytical tools with which to begin a cogent analysis of copyright creativity. Researchers have split the consideration of creativity into four separate studies: "(1) the creative process, (2) the creative product, (3) the creative person, and (4) the creative situation."⁶⁵ In addressing copyrights and whether sufficient intellectual creativity is contained within the work, the primary focus should be on the product,⁶⁶ although the process⁶⁷ used to produce the work is also relevant.⁶⁸ The other two aspects of creativity are not relevant, as copyright law should not care about how creative the individual who created the work was in general as long as the copyrighted work was touched with sufficient intellectual creativity. After all, brilliant works have been produced by

conscious structures—will get credit for our thoughts. This dichotomy of the creative self into a conscious part and an unconscious part is one of the most disturbing aspects of trying to understand the mind. If—as was just asserted—our best ideas come bubbling up as if from mysterious underground springs, then who really are we? Where does the creative spirit really reside? Is it by an act of will that we create, or are we just automata made out of biological hardware, from birth until death fooling ourselves through idle chatter into thinking that we have 'free will'? If we are fooling ourselves about all these matters, then whom—or what—are we fooling?

Id.

63. A typical first source, legal opinions defining creativity, does not prove fruitful. As was the case in *Feist*, the opinions either do not attempt to define the term, see *Stuart Entm't, Inc. v. Am. Games, Inc.*, No. 1-96-CV-90036, slip op. at 1-6 (S.D. Iowa Mar. 19, 1998), *aff'd*, 205 F.3d 1347 (8th Cir. 1999) (table, opinion at 1999 WL 1144831), or define it on a "we will recognize it when we see it" basis, see *Boisson v. Banian, Ltd.*, 273 F.3d 262, 268 (2d Cir. 2001) ("[creativity] simply means a work independently created by its author, one not copied from pre-existing works, and a work that comes from the exercise of the creative powers of the author's mind, in other words, the fruits of the author's intellectual labor." (quotation marks and citations omitted)). The *Boisson* court's definition of creativity is no more than saying, "creativity is creative."

64. See generally Deborah K. Smith, David B. Paradise, & Steven M. Smith, *Prepare Your Mind for Creativity*, 43 COMM. OF THE ACM 110, 111 (July 2000); Linda Candy & Ernest Edmonds, *Introducing Creativity to Cognition*, CREATIVITY & COGNITION 3 (1999).

65. Donald W. MacKinnon, *Creativity: A Multi-faceted Phenomenon*, in CREATIVITY: A DISCUSSION AT THE NOBEL CONFERENCE 17, 19 (John D. Rostansky ed., 1970).

66. "Anything that is experienced or made by man . . . may be a creative product." *Id.* at 24.

67. The description of a creative process is more complicated than of a creative product, containing a series of steps that lead from a perceived problem to a solution—"a complex set of cognitive and motivational processes, and emotional processes too, that are involved in perceiving, remembering, imagining, appreciating, thinking, planning, deciding, and the like." *Id.* at 20-21.

68. There is an indication in *Feist* that the Court was concerned with both of these aspects of creativity:

[*Burrow-Giles*] described copyright as being limited to 'original intellectual conceptions of the author,' and stressed the importance of requiring an author who accuses another of infringement to prove 'the existence of those facts of originality, of intellectual production, of thought, and conception.' The originality requirement articulated in . . . *Burrow-Giles* remains the touchstone of copyright protection today.

Feist, 499 U.S. at 346-47 (internal citations omitted).

authors who never created any others.⁶⁹ The law should be interested in how the work was generated, not in any inherent characteristics of the author's personality. Similarly, being in a creative situation is irrelevant to evaluating whether an expression satisfies the intellectual creativity requirement of the law as, again, it is the results that are important. For example, although many institutions of higher education have established highly creative environments in which to work,⁷⁰ this does not mean that a telephone directory created at one of these institutions is copyrightable.⁷¹ Accordingly, the analysis for copyright purposes should be focused on the product and the way it was produced.

A product can be creative in its own right. Most people who examine a painting by Monet, read a play by Shakespeare, or listen to a symphony by Beethoven would describe the work as creative without any concern as to how the work was generated. Therefore, it would be possible for the law to only concern itself with the product. However, there is a potential problem with so narrow an analysis. If only the product is examined with no examination of methodology of production, it will prove impossible to separate human-generated creative works from those generated by sophisticated computer programs based on autonomous artificial intelligence techniques.⁷² For these latter works, it would not only be difficult to establish a requisite amount of intellectual creativity, it would be impossible to establish origin creativity.⁷³ Consequently, a combination of techniques is needed: a creative product is apparently required, but the creativity in the product must be the result of a human-based creative process.⁷⁴

69. See, e.g., HARPER LEE, *TO KILL A MOCKINGBIRD* (1960) (winner of the Pulitzer Prize for Fiction in 1961). As far as anyone knows, Ms. Lee has not produced another work. See *Other Work by Harper Lee*, available at <http://mockingbird.chebucto.org/otherwork.html> (last modified May 25, 2000). Of course, the same was thought of Mr. Toole's great work on New Orleans, *A Confederacy of Dunces*. JOHN KENNEDY TOOLE, *A CONFEDERACY OF DUNCES* (1980). The book was published posthumously after the author committed suicide at the age of thirty-one and also was a Pulitzer Prize winning work. For years, this appeared to be Mr. Toole's only work, but in 1989 an additional novel, *THE NEON BIBLE*, was published.

70. Simple measurements of this are the quantity and quality of the academic work done by the faculty of the institution and the degree of success alumni of the institution have.

71. See *Feist*, 499 U.S. at 340.

72. Autonomous artificial intelligence requires the creation of a computer program that is "artificially intelligent" by being capable of producing new expressive works. Clifford, *Creative Computer Program*, *supra* note 5, at 1677-80. Further, the program must be "autonomous" allowing it to operate without requiring the programmer to specify, or even understand, how to generate the new work. See *id.* at 1694 & n.124. For example, the program described in *Creative Computer Program* was able to generate novel musical compositions despite the fact that its creator could not. *Id.*

73. See Clifford, *Creative Computer Program*, *supra* note 5, at 1694-95; See generally DOUGLAS R. HOFSTADTER, *GÖDEL, ESCHER, BACH: AN ETERNAL GOLDEN BRAID* 606-09 (1979) (discussing philosophical rights to claim authorship between an "author" and a "meta-author" where the author is the creative computer program and the meta-author is the creator of the computer program).

74. This does not mean that the product must necessarily be completely created by human labor. The use of mechanical assistance to produce the work has long been acceptable. Writers have their typewriters (or now computers); painters have their brushes (or now computers) and musicians

In an examination of the creative process, Professor Csikszentmihalyi's description serves as a useful starting point:

The creative process has traditionally been described as taking five steps. The first is a period of preparation, becoming immersed, consciously or not, in a set of problematic issues that are interesting and arouse curiosity The second phase of the creative process is a period of incubation, during which ideas churn around below the threshold of consciousness The third component of the creative process is insight, sometimes called the "Aha!" moment . . . The fourth component is evaluation, when the person must decide whether the insight is valuable and worth pursuing The fifth and last component of the process is elaboration [T]his classical analytic framework leading from preparation to elaboration gives a severely distorted picture of the creative process [as it] is less linear than recursive.⁷⁵

Professor Csikszentmihalyi's conclusion that the process is not linear is important. The various steps of creativity occur simultaneously. Specifically, "We often talk of our mental activities as being subdivided among sensing, thinking, and acting phases. But trouble arises because few things happen at one point in time and space. All of the interesting actions in the brain involve spatiotemporal patterns of cellular activity"⁷⁶

However, his description of the process as "recursive" is too limiting to be fully accurate. Recursive systems are comprised of a linear approach to a problem that is repeated multiple times on the same subject.⁷⁷ For example, the process of writing often becomes recursive as it enters the editing stage. What was written is examined and changed to more accurately set forth the thoughts of the author. Then, the edited version is re-edited recursively until the author is satisfied with the results. This iterative approach of taking an object that is the result of a particular process and reapplying the same process to it makes the approach recursive.

have their violins (or now computers), all without adversely affecting the copyrightability of the work they produce. It is only where the computer replaces the human's creativity that the existence of a copyright becomes questionable. See Clifford, *Creative Computer Program*, *supra* note 5, at 1686-87.

75. CSIKSZENTMIHALYI, *supra* note 25, at 79-80. Professor Csikszentmihalyi's definitional approach to a creative process is quite similar to the five part definition provided by Professor MacKinnon. Compare *id.* with MacKinnon, *supra* note 65, at 20.

76. WILLIAM H. CALVIN, *HOW BRAINS THINK* 43 (1996) [hereinafter CALVIN II].

77. See RANDOM HOUSE UNABRIDGED DICTIONARY 1614 (2d ed. 1993) ("pertaining to or using a rule or procedure that can be applied repeatedly"). See generally John McCarthy, *Recursion*, in *ENCYCLOPEDIA OF COMPUTER SCIENCE* 1507-09 (Anthony Ralston et al. eds., 4th ed. 2000) (describing mathematical and computer-based recursive functions and how they work).

While this recursive reworking of an expression is not irrelevant to the ultimate work's creativity,⁷⁸ it misses a very important aspect of it; indeed, the aspect of it most associated with a "creative spark", Professor Csikszentmihalyi's "Aha! moment."⁷⁹ It is becoming increasingly clear that the moment of inspiration that underlies intellectual creativity cannot be linear or even just recursive.⁸⁰ Think, for a moment, of the slang term "couch potato" for someone who watches too much television.⁸¹ While many individuals may sit on a couch to watch television, a direct connection to the word "potato" does not exist. When the term was coined,⁸² it seems impossible that any formulaic and deterministic transformation resulted in the two words being combined. Likewise, there does not seem to be any process that could be applied and then reapplied to the words, or the concepts, "couch" and "potato" that would transform them into the modern slang term for an obsessive television watcher. Something more is needed or, to be more accurate, something less is required.

There is increasing scientific evidence that chance is the primary source for novel thoughts.⁸³ As Professor Calvin describes it, creative thoughts can be generated in a process that starts with chance,⁸⁴ noise,⁸⁵ or an error⁸⁶ within the brain.

78. As Willa Cather reportedly said, "It is not the writing but the rewriting that counts." Elsie Goth Marshall, 1936: *Red Cloud*, THE NEBRASKA ALUMNUS (1936), available at <http://www.unl.edu/Cather/works/nonfiction/bohllke/interviews/1936.htm> (last visited Feb. 5, 2005).

79. CSIKSZENTMIHALYI, *supra* note 25, at 79-80. It is also important to recognize that the "aha! moment" may be of very low significance. Many ideas recognized as creative by the scientific community will be significantly less than a theory that unifies physics. See Lawrence W. Barsalou & Jesse J. Prinz, *Mundane Creativity in Perceptual Symbol Systems*, in CREATIVE THOUGHT 267 (Thomas B. Ward et al., eds. 1997) (describing the type of creativity that underlies everyday activities); Smith, *supra* note 64, at 111-12 & figures 1 & 2 (providing descriptions and examples of the continuum of creativity).

80. See CALVIN I, *supra* note 76, at 29 ("[S]tudies of chaos and complexity have been teaching us [that] determinism is really a nonissue . . ."). Cf. JAMES H. AUSTIN, CHASE, CHANCE, AND CREATIVITY: THE LUCKY ART OF NOVELTY 69 (MIT Press ed. 2003) ("[S]erendipity [results from] unexpected good luck, as the result of accident and sagacity . . .").

81. RANDOM HOUSE UNABRIDGED DICTIONARY 460 (2d ed. 1993). To understand why the author chose this term as an example, cf. Paul Thagard, *Coherent and Creative Combinations*, in THOMAS B. WARD, ET AL., CREATIVE THOUGHT 138-39 (1997) (describing the author's first exposure to the term "web potato"). Although Thagard's article addresses how we understand, rather than create, novel expressions, it nevertheless provides an excellent example to consider the non-deterministic way our minds generate new thoughts.

82. The 1976 creation of the term is attributed to Robert Armstrong, a cartoonist, who also illustrated. JACK MINGO, THE OFFICIAL COUCH POTATO HANDBOOK (1983). See http://www.sjvls.org/cgi-bin/bens_02/100455 (last visited Dec. 7, 2003).

83. See WILLIAM H. CALVIN, THE CEREBRAL CODE 21 (1996) [hereinafter CALVIN II] (among the six "essential aspects" of creativity are that "[v]ariant patterns . . . be produced by chance.").

84. *Id.*

85. Cf. *id.* at 66 (the "pitter-patter of inputs" from outside of the brain can change the brain's response). To a limited extent, taking advantage of noise to generate creative ideas has been confirmed. An artificial intelligence researcher named Stephen Thaler used noise to cause a neural network of computers to produce novel designs for such things as automobiles. See Stephen Thaler, *Neural Nets that Create and Discover*, PC AI, May-June 1996, at 16-18.

86. Cf. CALVIN II, *supra* note 83, at 100 (noting that creative thoughts require "relaxing error correction" to ideas being formed).

Our more intelligent mental states are sometimes said to flirt around the "edge of chaos." This term is from complexity theory, which envisages an adaptive system that ranges between a rigid order and a more flexible disorder, controlling the degree of permitted disorder. We may range from satisfaction at getting something right (convergent thinking) to blue-sky divergent thinking; in those more creative moments, some of our cortical systems may be poised near the edge of chaos.⁸⁷

When described as being near the edge of chaos or chaotic, a reference is being made to the scientific and mathematic theory of chaos that was first postulated in the late twentieth century.⁸⁸ The theory establishes that complex deterministic systems, those labyrinthine systems where the output is controlled by the input,⁸⁹ can generate patterns that appear random despite their deterministic nature.⁹⁰ To be considered complex under the theory, the system must be sensitive to the initial conditions affecting the system⁹¹ and subject to feedback where the current status of the system serves as one of the inputs that controls its next status.⁹² For example, consider an avalanche. The inputs for an avalanche include the quantity of accumulated snow flakes, the topology of the particular mountain slope, the vegetation on the mountain, the current weather pattern, and a perturbing event such as a loud sound, an extreme skier, or even one more snow flake.⁹³ Avalanches are sensitive to these starting conditions—without snow, for example, no avalanche will occur. The primary feedback affecting the system is the quantity and quality of snow already on the mountain. Although the inputs are understood, knowing exactly when an avalanche will occur is impossible.⁹⁴ Sometimes, one extra snow flake will cause an avalanche while other times it will not, even where all of the other initial conditions on the mountain appear to be the same.⁹⁵ Thus, avalanche occurrences can be described as chaotic.

87. *Id.* at 67.

88. Tony Crilly, *The Roots of Chaos—a Brief Guide*, in *FRACTALS AND CHAOS* 193, 193 (A.J. Crilly et al. eds., 1991).

89. See *RANDOM HOUSE UNABRIDGED DICTIONARY* 542 (2d ed. 1993) ("determinism" describes the theory that "all events . . . have sufficient cause.").

90. Crilly, *supra* note 88, at 195. See Mike King, *The New Metaphysics and the Deep Structure of Creativity and Cognition*, in *CREATIVITY & COGNITION* 93, 95 (1999).

91. Crilly, *supra* note 88, at 196–97.

An essential hallmark of chaos . . . is the extreme sensitivity of the system to initial conditions . . . [This] is popularly known as the 'butterfly effect,' because the single flap of a butterfly's wings would theoretically alter the initial conditions of a . . . system and could thus give rise to drastically different . . . patterns at a later time.

Id.

92. JOHN BIGGS, *FRACTALS: THE PATTERNS OF CHAOS* 19 (1992).

93. See National Snow & Ice Data Center, *Avalanche Awareness* ¶ 5 (Dec. 22, 2002), <http://nsidc.org/snow/avalanche/> (last visited Feb. 5, 2005).

94. Cf. *id.* ¶ 9 (defining a sliding scale of input factors that increase the risk of avalanche).

95. See BIGGS, *supra* note 92, at 18 (Chaotic systems "exhibit[] an extreme sensitivity to their initial conditions. The very slight difference in their starting points [make] a very large difference in their fates.").

While a fundamental characteristic of chaos is unpredictability, this uncertainty will occur within a domain that is known as the system's "strange attractor."⁹⁶ Although a chaotic system is "unpredictable in detail, one *can* predict the patterns and ranges of a system's movement."⁹⁷ For example, it may be unpredictable with any certainty when an avalanche will occur, but there is an outside boundary of conditions where the probability of an avalanche becomes certain. If there is too much snow and the mountain slope is too steep, an avalanche will occur although it may be impossible to predict exactly when. This pattern of where the system's conditions will trigger the chaotic event is called its strange attractor.⁹⁸ Understanding the strange attractor associated with a chaotic system is highly advantageous as it sets forth the system's outermost limits and can be used to make predictions about the system's behavior.⁹⁹ In other words, the system's strange attractor makes it possible to understand globally what is impossible to predict locally.

Suggesting that the brain's chaotic nature is a—or even the—source of human creativity is increasingly common.¹⁰⁰ Like an avalanche, the brain is a complex system that is sensitive to its environment and is subject to feedback. There are an estimated 100 billion neurons in a human brain,¹⁰¹ each of which connects to between 1,000 and 10,000 others.¹⁰² This gives a total of approximately 1.0×10^{80} different paths for a signal to follow through the brain.¹⁰³ The brain perceives its environment through the five systems of sensory apparatuses—hearing, taste, smell, vision and touch—each of which is itself complex.¹⁰⁴ The use of feedback within the brain has been recognized¹⁰⁵ and is easily demonstrated. Consider a person who is on a diet. His or her brain receives a signal

96. Crilly, *supra* note 88, at 200–02.

97. BIGGS, *supra* note 92, at 18, 21.

98. Crilly, *supra* note 88, at 200.

99. *See id.* at 202.

100. *See* CALVIN II, *supra* note 83, at 21 (the "six essential aspects of the creative darwinian (sic) process [include that] variant patterns must sometimes be produced by chance."). *See also*, Henry Krystal & Andrew D. Krystal, *Psychoanalysis and Neuroscience in Relationship to Dreams and Creative*, in CREATIVITY AND AFFECT 185, 196 (Melvin P. Shaw & Mark A. Runco eds., 1994) ("One critical feature of any model of creativity is the ability to generate novel behavior. As we shall see below, 'chaotic,' nonlinear systems are capable of generating novel, unpredictable behavior and are, therefore, useful models of creativity."). Cf. CALVIN I, *supra* note 76, at 29 ("[A]s studies of chaos and complexity have been teaching us; determinism is really a nonissue.").

101. Sci. Am. Frontiers, *Changing Your Mind* (Dec. 22, 2002), available at <http://www.pbs.org/saf/1101/teaching/teaching2.htm> [hereinafter *Changing Your Mind*] (last visited Feb. 5, 2005). If, as current research indicates, the Glial cells also play an important role in the thought process, the number of involved cells would grow to almost ten times this number. *See* R. Douglas Fields, *The Other Half of the Brain*, SCI. AM., Apr. 2004, at 55.

102. *Brain Facts & Figures* (Dec. 22, 2002), available at <http://faculty.washington.edu/chudler/facts.html> (last visited Feb. 5, 2005) [hereinafter *Brain Facts & Figures*].

103. *Changing Your Mind*, *supra* note 101.

104. *See Brain Facts & Figures*, *supra* note 102 (indicating that approximately 100,000,000 neurons are in the auditory cortex and about 538,000,000 neurons are in the visual cortex) (last visited Feb. 5, 2005). Along with the external senses, the brain receives internal signals about the body's condition, e.g., hunger.

105. *See* CALVIN I, *supra* note 76, at 126 (describing "round-trip[s]" of neural signals).

from the body indicating hunger.¹⁰⁶ The brain's first response is to obtain some food. This first thought, though, is reprocessed (if the diet is successful) and rejected, as satisfying the hunger will interfere with the diet. The reprocessing is a form of feedback as one thought triggers another.

Given inputs, complexity, and feedback, chaos is the result.¹⁰⁷ Thus, understanding intellectual creativity requires it to be considered against the background of chaos. Intellectual creativity may represent nothing more than the brain taking advantage of its own static.

How the brain functions despite the environment of chaos requires consideration of how a thought is generated within the brain. It is fairly well established that different neurons within the brain are specialists.¹⁰⁸ The ones associated with thought, and presumably creativity, are located in the cerebral cortex.¹⁰⁹ As a thought is being formed, "I am eating an orange," for example, different groups of neurons are triggered to react. For example, the neurons associated with an orange color, a round shape, a juicy mouth-feel, a citrus smell, and a citrus taste may all fire.¹¹⁰ When enough of these neurons discharge, the electrochemical signals generated are described by a strange attractor in the brain that is associated with orange-ness.¹¹¹ Of course, as the brain deals with electrochemical signals, if the neuron activation pattern in the brain occurs, the thought will be formed even if the actual experience is not being had. One does not need to be eating an orange to be able to savor the orange-ness of the experience.

To appreciate the next step, how these generated thoughts reach the level of consciousness, it is important to remember that the brain generates a multitude of thoughts simultaneously.¹¹² While current science cannot provide a definitive understanding of the details that underlie how one thought becomes central over others,¹¹³ there is a basic conceptual framework. Professor Calvin posits that there must be a yet unobserved mechanism of copying that propagates a particular idea as represented in a neuron in the brain, what he terms a "cerebral code," through more and more neurons.¹¹⁴ Eventually, a sufficient number of neurons adopt the same cerebral code, establishing a "committee" of neurons to fully de-

106. For example, the neurotransmitter known as neuropeptide Y appears to trigger hunger. See *Emory Researchers Find Hunger Regulated by Novel Neurotransmitter*, available at <http://whsc.emory.edu/releases/1998may/050198yerkes.html> (last modified May 8, 1998).

107. See BIGGS, *supra* note 92, at 19.

108. See CALVIN I, *supra* note 76, at 118-20.

109. See CALVIN II, *supra* note 83, at 52. But cf. James M. Bower & Lawrence M. Parsons, *Rethinking the "Lesser Brain,"* *SCI. AM.*, Aug., 2003, at 51 (discussing recent research that is establishing a more important role for the cerebellum).

110. See CALVIN II, *supra* note 83, at 108.

111. See *id.*

112. Cf. *id.* at 137 (describing how the brain processes multiple ideas).

113. Cf. *id.* at 123.

114. See *id.* at 121.

velop the thought with its various associations.¹¹⁵ To explain how a particular thought reaches consciousness from all of the thoughts occurring simultaneously, Professor Calvin proposes a Darwinian selection process.¹¹⁶ The thought that recruits the largest number of additional neurons to serve on its committee reaches cognizance.¹¹⁷ Professor Calvin's theory has received increasing support from other researchers.¹¹⁸

The process described above does not seem capable of generating a creative thought, however, as it appears only capable of regenerating thoughts that have already occurred. Yet, several things can go "wrong" in the process that can trigger new thoughts.

First, a pattern of neurons might fire that are a novel combination. While the brain may attempt to force this new pattern to fit within one already known, if different enough, it may keep it separate and start establishing a new attractor.¹¹⁹ "Thinking outside of the box" demonstrates this. In this process, people deliberately attempt to come up with novel solutions to a problem. This is achieved by trying to force the brain to create a new attractor for an existing pattern of thought. Of course, it does not need to be intentional. Most of us have had the experience of having two unrelated thoughts in juxtaposition lead to a novel conclusion.

Alternatively, although the neural pattern is the same, it may not trigger the same attractor. As a result, the conscious mind will interpret the pattern differently.¹²⁰ For whatever reason, although an orange is seen, the conscious mind thinks about rabbits.

Either of these methods will generate a novel thought. Sometimes this is deliberate, but for many "aha"-type moments, the novel thought appears to come from nowhere. In these cases, the chaos in the brain provides a compelling explanation. Whether it was the random firing of neurons or a random creation of a new attractor, a new thought is generated that successfully recruits sufficient neuron support to reach consciousness. However, whatever novelty is found only exists because of the chaos in the brain and is, effectively, capricious. Consequently, crea-

115. See *id.* at 127-28.

116. See *id.* at 150-51.

117. See *id.*

118. See Michael Shermer, *The Major Unsolved Problems in Biology*, *SCI. AM.*, Mar. 2004, at 103-04 (indicating that "a Darwinian fashion of neuronal variation and selection . . . has considerable support from neuroscience research."). Professor Calvin's proposal has also obtained a support from workers in artificial intelligence as a computer program using a similar technique has been able to discover new inventions that are novel enough to be considered patentable. See John R. Koza, Martin A. Keane & Matthew J. Streeter, *Evolving Inventions*, *SCI. AM.*, Feb. 2003, at 52.

119. Professor Calvin describes the old thoughts as "cerebral ruts" which "predispose [the cerebral cortex] to produce a repertoire of spatiotemporal patterns [already known]." CALVIN I, *supra* note 76, at 109. He indicates, however, that new patterns can be created, even at the expense of those already established. *Id.*

120. The source of puns, perhaps?

tivity, far from being the brain's highest form of thought, may indeed be its lowest. If it were not for the randomness generated by our physically complex electrochemical brains, our ability to engender novel thoughts might be no greater than that of an earthworm.

IV. WE'VE GOT TROUBLE RIGHT HERE IN COPYRIGHT CITY¹²¹

The increased focus on the "creative" effort necessary to produce a work for which a copyright is claimed (particularly the use of the term "creative spark")¹²² in *Feist Publications, Inc. v. Rural Telephone Service Co.*¹²³ has introduced significant difficulties for courts trying to determine the scope of copyright. Courts often declare that the plaintiff's work is insufficiently creative, consequently lacking a subsisting copyright.¹²⁴ Unfortunately, the decisions do not follow any uniform theory,¹²⁵ stating only that the work lacks "creativity," thus failing to articu-

121. With apologies to MEREDITH WILSON, *Ya Got Trouble*, from THE MUSIC MAN (Angel 1957) ("Oh, we've got trouble right here in River City . . .").

122. *Feist*, 499 U.S. at 345.

123. 499 U.S. 340 (1991).

124. -See, e.g., *Bridgeman Art Library, Ltd. v. Corel Corp.*, 36 F. Supp. 2d 191, 195-97 (S.D.N.Y. 1999) (photographs of art works in the public domain lack sufficient creativity for copyright); *Stuart Entm't, Inc. v. Am. Games, Inc.*, No. 1-96-CV-90036, slip op. (S.D. Iowa Mar. 19, 1998) (computer-generated bingo cards lack sufficient creativity for copyright), *aff'd*, 205 F.3d 1347 (8th Cir. 1999) (table, opinion at 1999 WL 1144831); *Torah Soft Ltd. v. Drosnin*, 136 F. Supp. 2d 276, 276 (S.D.N.Y. 2001) ("Bible code" lacks sufficient creativity for copyright).

125. To be clear, it is not the author's position that the courts have failed totally in applying *Feist's* intellectual-creativity requirement. When dealing with a database—a "clearly identified collection of data, such as a telephone book . . ." WEBSTER'S NEW WORLD DICTIONARY OF COMPUTER TERMS 145 (5th ed. 1994)—the courts have done a better job, at least at the appellate level. *Compare Lynx Ventures, LLC v. Miller*, 190 F. Supp. 2d 652, 659 (D. Vt. 2002) (finding that a database was not sufficiently creative as a whole), *rev'd*, 45 Fed. App. 68, 2002 WL 31007386 (2d Cir. 2002) with *Lynx Ventures, LLC v. Miller*, 45 Fed. App. 68, 71, 2002 WL 31007386 (2d Cir. 2002) (finding that the database was sufficiently creative when its component parts were examined). Of course, the work litigated in *Feist* was a database, see *Feist*, 499 U.S. at 342-44, which may have eased the difficulty for the lower courts of applying intellectual creativity standards.

As was the case in *Feist*, most databases are collections of facts which, in themselves, are not copyrightable. See, e.g., *Matthew Bender & Co., Inc. v. West Publ'g Co.*, 158 F.3d 674, 681 (2d Cir. 1998), *cert. denied*, 526 U.S. 1154 (1999). The only protectable aspect of a factual database, therefore, comes from the selection of the facts, see *Eckes v. Card Prices Update*, 736 F.2d 859, 863 (2d Cir. 1984) (database resulting from the selection of the "best" baseball cards was copyrightable), the way the facts are expressed, see *Lynx Ventures, LLC v. Miller*, 45 Fed. App. 68, 71, 2002 WL 31007386 at *3 (2d Cir. 2002) (written description of tree species may qualify for copyright protection), *Montgomery County Ass'n of Realtors, Inc. v. Realty Photo Master Corp.*, 878 F. Supp. 804, 810 (D. Md. 1995) ("marketing puffery" contained in database is copyrightable), *aff'd* 91 F.3d 132 (4th Cir. 1996) (table), or in the way the database is organized, cf. *Boisson v. Banian, Ltd.*, 273 F.3d 262, 269-70 (2d Cir. 2001) (the arrangement of the letters of the alphabet on a quilt was a sufficiently creative arrangement to warrant copyright protection). Even with these protections, as many commentators have argued, copyright provides limited protection for a factual database, particularly one seeking to be comprehensive rather than selective. See, e.g., Henry Beck, *Copyright Protection for Compilations and Databases after Feist*, 8 No. 7 COMPUTER LAW. 1, 1 (1991) (*Feist* "may have set the stage for a veritable 'gold rush' of information reorganization, reconstruction and redistribution by persons other than those who have collected and compiled the information in the first instance."); Jane C. Ginsburg, *No "Sweat?" Copyright and Other Protection of Works of Information after Feist v. Rural Telephone*, 92 COLUM. L. REV. 338, 339 (1992) ("The Court thus stripped away or sharply reduced the copyright protection afforded a variety of 'information products,' from directories and mailing lists to computerized databases."); Susan H. Nycum, *Protection of Electronic*

late a workable definition of creativity, in particular, one that incorporates an understanding of creativity's physiological sources. This leaves the declared law incapable of being reconciled and of little help in predicting future results. A few examples will establish this premise.

A. *Works Based on Nature*

*Satava v. Lowry*¹²⁶ is a remarkable case. The plaintiff Satava was an artist in glass.¹²⁷ He created a glass sculpture of a jellyfish floating in a larger glass envelope.¹²⁸ The defendant Lowry made a very similar sculpture.¹²⁹ In proceedings under the Copyright Act seeking a preliminary injunction, the district court determined that Satava was likely to succeed in the action and enjoined Lowry from making sculptures that were substantially similar to Satava's.¹³⁰ The Ninth Circuit reversed, holding that the trial court used an improper legal standard.¹³¹ To justify its decision, the court stated two obvious propositions: that to qualify for a copyright, a work must contain creative expression, and that the copyright obtained did not extend to any ideas, facts, or public domain material contained within the work.¹³² The court then examined Satava's sculpture and determined that effectively everything in the work of art lacked creativity as it was an idea or something else that was in the public domain.¹³³ As examples, the court discounted any creativity in a glass-in-glass jellyfish as that design "naturally follow[s] from the idea of such a sculpture."¹³⁴ The court also disallowed Satava from claiming "aspects of his sculptures resulting from either jellyfish physiology or from their depiction in the glass-in-glass medium."¹³⁵

Satava's combination of elements that made up his sculpture fared no better with the court. While acknowledging "that a combination of

Databases, 14 No. 8 COMPUTER LAW. 12, 14 (1997) ("Because many databases consist of content like that in the *Feist* case, they do not qualify for copyright protection.").

Of course, not all databases collect facts. If the database is comprised of non-factual data, its copyright is much broader. See *CCC Info. Serv. Inc. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 64-68 (2d Cir. 1994) (database of used car prices copyrightable as the prices were the author's opinion, not facts), *cert. denied*, 516 U.S. 817 (1995); *CDN, Inc. v. Kapes*, 197 F.3d 1256, 1260 (9th Cir. 1999) (same for database of coin prices).

126. 323 F.3d 805 (9th Cir.), *cert. denied*, 540 U.S. 983 (2003).

127. *Satava*, 323 F.3d at 807.

128. *Id.* A photoreproduction of the sculpture can be seen in the opinion on page 808 and can be viewed online at [http://www.ca9.uscourts.gov/ca9/newopinions.nsf/FE4764BC4E4D78A788256CEE00814B67/\\$file/0216347.pdf?openelement](http://www.ca9.uscourts.gov/ca9/newopinions.nsf/FE4764BC4E4D78A788256CEE00814B67/$file/0216347.pdf?openelement) (last visited Dec. 7, 2003).

129. *Satava*, 323 F.3d at 808-09. Mr. Lowry's sculpture is likewise reproduced in the court's opinion on page 809 and can be found on the Ninth Circuit's web page.

130. *Id.* at 809 n.2.

131. *Id.* at 810.

132. *Id.*

133. See *id.* at 810-11.

134. *Id.* at 810.

135. *Id.*

unprotectable elements may qualify for copyright protection,"¹³⁶ the court determined that *Satava's* jellyfish statue failed to meet the *Feist* creativity standard.¹³⁷ Specifically, "The selection of the clear glass, oblong shroud, bright colors, proportion, vertical orientation, and stereotyped jellyfish form, considered together, lacked the quantum of originality needed to merit copyright protection."¹³⁸

To appreciate the difficulties that the rule established in *Satava* will cause, consider the following hypothetical judicial opinion:

Both parties have created statues of men that are remarkably similar to each other. Despite the defendant's apparent copying of the plaintiff's work, the plaintiff's claim of copyright infringement must fail. The individual elements of plaintiff's statue are completely dictated by the fact that a life-like sculpture of a man was made. As a result, such elements as the legs, arms, torso, and head of the sculpture are not included within the plaintiff's copyright, nor can the actual look or position of any of these items be claimed in so far as they are dictated by the physiological shape and movement of a human male. Further, the sculpture is not qualified for a copyright as a combination as "[t]he selection of the [marble], [pedestal], [white] color[], proportion, vertical orientation, and stereotyped [human] form, considered together, lacks the quantum of originality needed to merit copyright protection." *Satava v. Lowry*, 323 F.3d 805, 811 (9th Cir.), cert. denied, 124 S. Ct. 472 (2003). Consequently, the statue entitled, "Michelangelo's David"¹³⁹ is not sufficiently creative to be protected by copyright.

Through the hypothetical, the consequences of *Satava* become clear. Under it, all realistic art seems to be excluded from the ambit of copyright protection. The court interpreted the *Feist* intellectual creativity requirement without also giving credit to the copyright doctrine of preventing copying.¹⁴⁰ While there may have been a question in *Satava* of whether the defendant's jellyfish sculpture was a substantially similar

136. *Id.* at 811 (emphasis omitted).

137. *Id.*

138. *Id.*

139. A photograph of this well-known statue is available at <http://pharaohs.addr.com/david.jpg> (last visited Feb. 5, 2005). This statue is generally acknowledged to be one of Michelangelo's best works and one of the most important sculptures of the Renaissance. See H.W. JANSON, HISTORY OF ART 425 (2d ed. 1977). Obviously, for the sake of the hypothetical, it must be assumed that Michelangelo produced the statue contemporaneously.

140. See *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 249 (1903) ("Others are free to copy the original. They are not free to copy the copy."). See also *Superior Form Builders, Inc. v. Dan Chase Taxidermy Supply Co.*, 74 F.3d 488, 492 (4th Cir.) (holding that realistic animal sculptures are copyrightable), cert. denied 519 U.S. 809 (1996); *Masquerade Novelty, Inc. v. Unique Indus., Inc.*, 912 F.2d 663, 671 (3d Cir. 1990); *F.W. Woolworth Co. v. Contemporary Arts, Inc.*, 193 F.2d 162, 165 (1st Cir. 1951), aff'd 344 U.S. 228 (1952) (only addressing damages); *Prestige Floral, S.A. v. Cal. Artificial Flower Co.*, 201 F. Supp. 287, 291 (S.D.N.Y. 1962) (holding that realistic flower sculptures are copyrightable).

copy of the plaintiff's work,¹⁴¹ there should have been no question that the plaintiff's sculpture was sufficiently creative for a copyright to subsist.¹⁴²

The *Satava* court made three fundamental mistakes in its decision. First, it misconstrued the origin creativity requirement by necessitating that the work not be modeled on anything,¹⁴³ not just on a pre-existing work.¹⁴⁴ Second, the *Satava* court seemed to ignore the full consequences of the plaintiff having obtained certificates of registration from the Copyright Office.¹⁴⁵ Once obtained, the plaintiff's works are presumed to be copyrightable,¹⁴⁶ including that sufficient originality was demonstrated in their creation.¹⁴⁷ Finally, and most importantly, the *Satava* court improperly imported a patent-like novelty requirement into copyright. After all, both the plaintiff's and defendant's works can be copyrighted even though they depict jellyfish as long as the defendant did not copy the plaintiff's work.¹⁴⁸

B. Works Based on Random Numbers and Algorithms

Another area of extraordinary difficulty for the courts results from works created using computer technology, particularly when the computer software is responsible for making choices as to the final expressive elements which will appear in the work. Two cases merit consideration:

1. The *Stuart Entertainment* Decision

In *Stuart Entertainment, Inc. v. American Games, Inc.*,¹⁴⁹ the plaintiff sought to prevent the defendant from copying a series of bingo cards it had developed.¹⁵⁰ To generate the series, a computer program was used

141. *Satava*, 323 F.3d at 807, 809 (photoreproduction of plaintiff's work and defendant's work).

142. *Cf. Satava*, 323 F.3d at 807, 809, with *Wildlife Express Corp. v. Carol Wright Sales, Inc.*, 18 F.3d 502, 507-08 (7th Cir. 1994) (discussing impact of life-like elements on the evaluation of whether there is infringement, but not questioning the creativity of the plaintiff's work).

143. *See Satava*, 323 F.3d at 810.

144. *See Boisson*, 273 F.3d at 268 (originality includes that it is "not copied from pre-existing works") (emphasis added); *Assessment Techs. of WI, LLC v. Wiredata, Inc.*, 350 F.3d 640, 643 (7th Cir. 2003) ("[Copyright] requires only enough originality to enable a work to be distinguished from similar works that are in the public domain, since without some discernible distinction it would be impossible to determine whether a subsequent work was copying a copyrighted work or a public-domain work.") (citations omitted, emphasis added). *Cf. Bridgeman Art Library*, 36 F. Supp. 2d at 195-97 (holding that exact copies of preexisting works of art have no subsisting copyright).

145. *See Satava*, 323 F.3d at 807.

146. *See* 17 U.S.C. § 410(c) (2000).

147. *See Boisson*, 273 F.3d at 269.

148. *See id.* at 270 ("Absent evidence of copying, an author is entitled to copyright protection for an independently produced original work despite its identical nature to a prior work, because it is independent creation, and not novelty that is required.").

149. No. 1-96-CV-90036, slip op. (S.D. Iowa Mar. 19, 1998), *aff'd*, 205 F.3d 1347 (8th Cir. 1999) (table, opinion at 1999 WL 1144831).

150. *Stuart*, No. 1-96-CV-90036, slip op. at 1-2.

that combined a random number generator with selection algorithms to insure that each bingo card and the series as a whole would be optimally playable.¹⁵¹ The series of cards that was generated represented a mere 9,000 cards¹⁵² out of a universe of more than 111 quadrillion possible cards.¹⁵³ The defendant's series of bingo cards was "an exact, verbatim copy of the number sequences found in [the plaintiff's] series."¹⁵⁴ Despite this apparent highly selective choice of bingo cards that made up the series, however, the court determined that no copyright subsisted as no "intellectual labor" was put forth in the creation . . . of [the] bingo cards."¹⁵⁵ The court held that because the author of the bingo cards had chosen to "mechanical[ly] generat[e]" them, there was no creativity used.¹⁵⁶

The court's rejection of the mechanical generation of a copyrightable work is inconsistent with *Feist*.¹⁵⁷ Assume that the bingo card had been generated by hand. As the *Feist* decision indicated, one indicator of sufficient intellectual creativity for a compilation is whether the author selected items to be included within the compilation from a larger universe of choices.¹⁵⁸ Stuart satisfied this selection as a minuscule percent-

151. *See id.*, slip op. at 2-3. Among the selection algorithms used were that each card generated had to be unique within the series, that each of the numbers on a bingo card (from 1 to 75) would occur approximately an equal number of times within the series, and that each row and column within the series would be unique. *See Appellant's Opening Brief at 9-13, Stuart Entertainment, Inc. v. American Games, Inc.*, 205 F.3d 1347 (8th Cir. 1999) (No. 99-1336).

152. *See Stuart*, No. 1-96-CV-90036, slip op. at 4.

153. *See Appellant's Opening Brief at 6, Stuart Entm't, Inc. v. Am. Games, Inc.*, 205 F.3d 1347 (8th Cir. 1999) (No. 99-1336).

154. *Stuart*, No. 1-96-CV-90036, slip op. at 4.

155. *Id.*, slip op. at 15.

156. *Id.*, slip op. at 16.

157. Indeed, the district court seemed to have much difficulty with many basic copyright concepts, not just the creativity requirement. In its penultimate paragraph, for example, the court expressed concern that if one of the plaintiff's series of bingo cards was considered copyrightable, this would allow the plaintiff to preemptively protect all other series of bingo cards. *See Stuart*, No. 1-96-CV-90036, slip op. at 18 ("If the Court, today, were to grant protection to Champion C, Stuart would be in this or some other federal court next week . . . to protect its many other Champion series.").

While it is true that Stuart may have sought to protect its other series of bingo cards, it could only protect them against the statutorily designated types of infringing conduct such as copying. *See, e.g.*, 17 U.S.C. § 106 (2000). American Games, or anyone else, would, of course, be free to independently generate its own sequence of bingo cards, even if this newly created sequence was identical to the original Stuart sequence. *See Arnstein v. Edward B. Marks Music Corp.*, 82 F.2d 275, 275 (2d Cir. 1936) ("independent reproduction of a copyrighted . . . work is not infringement"). All that would be prohibited by Stuart's copyright would be copying its sequence of cards. *See Bleistein*, 188 U.S. at 249 ("Others are free to copy the original. They are not free to copy the copy."). Indeed, American Games would have been free to attempt to reverse engineer the cards to derive the algorithms that Stuart had established for a playable series of cards and used them to build its own series, as the ideas expressed within the algorithms are not within the scope of copyright protections. *See* 17 U.S.C. § 102(b) (2000). *Cf. Sega Enterprises Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1522-23 (9th Cir. 1993) (reverse engineering copyrighted software to develop competing software is fair use). Had American Games done this, they would have a resulting set of bingo cards that are just as playable as Stuart's, but would not have been a copy.

158. *See Feist*, 499 U.S. at 349.

Where the compilation author adds no written expression but rather lets the facts speak for themselves, the expressive element is more elusive. The only conceivable expression

age of the possible bingo cards were chosen,¹⁵⁹ and, significantly, the selection was based on the author's opinion of what defined a highly playable series of bingo cards.¹⁶⁰ Rather than being a random sequence of bingo cards as the court seemed to conclude,¹⁶¹ they were a carefully crafted set of cards to maximize bingo players' enjoyment of the game. Thus, as was the case with the baseball cards in *Eckes v. Card Prices Update*,¹⁶² the bingo card series represented an expression of Stuart's opinion of what constituted a highly playable group of cards, clearly meeting *Feist's* intellectual creativity requirement.

Therefore, the district court's rejection of the cards must have been based on the use of technology to generate the cards.¹⁶³ Where there would be intellectual creativity if the work was generated by manual labor, however, the use of technology to achieve the more mechanical aspects of a work should not lead to a deprivation of copyright protection.¹⁶⁴ The modest amount of intellectual creativity demonstrated by Stuart when it defined the algorithms to be used to choose a limited subset of bingo cards for its compilation satisfies the *Feist* test, and the use of a random number generator as part of the technology to express Stu-

is the manner in which the compiler has selected and arranged the facts. Thus, if the selection and arrangement are original, these elements of the work are eligible for copyright protection.

Id.

159. *Stuart*, No. 1-96-CV-90036, slip op. at 4. (Stuart's 9,000 cards represented approximately 0.0000000000008% of the possible bingo cards).

160. See Appellant's Opening Brief at 9, *Stuart Entm't, Inc. v. Am. Games, Inc.*, 205 F.3d 1347 (8th Cir. 1999) (No. 99-1336) ("a number of optional criteria [were] chosen to increase the market appeal of the [cards]"); *Id.* at 17 ("Stuart Entertainment . . . remove[d] this feature . . . to meet perceived consumer demand.").

161. See *Stuart*, No. 1-96-CV-90036, slip op. at 16. (the bingo cards are chosen by a "randomizer").

162. *Eckes*, 736 F.2d at 861 (database resulting from the selection of the "best" baseball cards was copyrightable). See *supra* note 125 (discussing *Eckes* and the copyrightability of collections of facts and opinions).

163. See *Stuart*, No. 1-96-CV-90036, slip op. at 16 ("In this *mechanical* generation of the bingo cards, the Court finds that there is no originality or creativity expounded by [Stuart].") (emphasis added).

164. See H. REP. NO. 94-1476, at 51 (1976).

Authors are continually finding new ways of expressing themselves, but it is impossible to foresee the forms that these new expressive methods will take. The bill does not intend either to freeze the scope of copyrightable technology or to allow unlimited expansion into areas completely outside the present congressional intent.

Id.

Again, it is important to distinguish between the kind of technology Stuart used and artificially intelligent software. The software used by Stuart did not exercise any creativity; instead, following the instructions specified by the programmer, it randomly generated possibilities and then mechanically culled them based on the creative choices previously made by Stuart. With artificially intelligent software, on the other hand, the human using the software does not exercise any creativity as the choices of what should be included in the expressive work is "delegated" strictly to the computer. See generally, Clifford, *Creative Computer Program*, *supra* note 5 (discussing intellectual property issues associated with works generated by artificial intelligence). Confusing artificial intelligence with a random number generator will result in a fallacious conclusion about the copyrightability of a work. See David Nimmer & Eaton S. Drone, *Copyright in the Dead Sea Scrolls: Authorship and Originality*, 38 HOUS. L. REV. 1, 31, n.119 (2001).

art's compilation is, simply, irrelevant to the copyrightability of the collection of cards.

2. The *Torah Soft* Decision

*Torah Soft Ltd. v. Drosnin*¹⁶⁵ involved the copyrightability of Bible code matrixes that were generated by a computer program developed by the plaintiff.¹⁶⁶ These matrixes are derived from the Hebrew Bible by selecting letters that are equally spaced throughout the text; for example, each sixtieth letter, as some believe that the resulting words and phrases predict the future.¹⁶⁷ The defendant had reproduced about one hundred of the matrixes, which were generated by the defendant's computer program, in his book on the Bible code.¹⁶⁸ The district court, in a decision that relied on several grounds,¹⁶⁹ determined that the matrixes were not copyrightable.¹⁷⁰ While the ultimate decision that there was not an infringement of copyright seems correct,¹⁷¹ the parts of the opinion that rely on a lack of intellectual creativity in the work to justify a lack of copyrightability do not have much strength.

165. 136 F. Supp. 2d 276 (S.D.N.Y. 2001).

166. *Torah Soft*, 136 F. Supp. 2d at 281.

167. See *id.* at 280. In fact, the Bible code has no ability to predict the future. See Michael Shermer, *Codified Claptrap*, SCI. AM., June 2003, at 35 ("Just like the prophecies of soothsayers past and present, all such predictions are actually postdictions To be tested scientifically, Bible codes would need to predict events *before* they happen. They won't, because they can't . . .") (emphasis added). Indeed, in 1997, Drosnin indicated that the Bible code foretold that the world would end in the year 2000, which obviously did not occur. See *id.* See generally, David E. Thomas, *Hidden Messages and The Bible Code*, SKEPTICAL INQUIRER, Nov./Dec. 1997, available at <http://www.csicop.org/si/9711/bible-code.html> (last visited Feb. 5, 2005).

168. See *Torah Soft*, 136 F. Supp. 2d at 281.

169. See *id.* at 284–86 (originality, functional elements, merger doctrine, *scènes à faire*, and public domain).

170. See *id.* at 292.

171. Two, alternate theories justify the court's ultimate conclusion. The defendant only reproduced 100 of the possible matrixes that could be generated by the plaintiff's database and program. See *Torah Soft*, 136 F. Supp. 2d at 281. As such, any copying would have been *de minimus* as no argument was made that the particular codes reproduced in the defendant's book extracted the essence of the plaintiff's database. See *Warner Bros. Inc. v. Am. Broad. Co.*, 720 F.2d 231, 242 (2d Cir. 1983); *Educ. Testing Serv. v. Katzman*, 793 F.2d 533, 542 (3d Cir. 1986). Consequently, although copying occurred, it was not actionable.

Alternately, the defendant had a fairly strong argument that the use of the work was fair under 17 U.S.C. § 107 (2000). Three of the fair use factors strongly favor the defendant: the nature of the copyrighted work, the amount copied, and the effect on the author's marketplace. See *id.* § 107(2)-(4). The copyrighted work was, effectively, a work of nonfiction (and one that contained a significant quantity of public domain material), which suggests a narrower copyright and greater fair use rights. See *Eng'g Dynamics, Inc., v. Structural Software, Inc.*, 26 F.3d 1335, 1348 (5th Cir. 1994). Only a small portion of the copyrighted work was used. See *Torah Soft*, 136 F. Supp. 2d at 281. The effect on the defendant's market is likely to be accretive as a book about the Bible code would more likely cause individuals to acquire computer software to be able to do their own analysis and could not reasonably be expected to decrease the plaintiff's market.

Only the purpose of the defendant's work—a commercial book—factors against a fair use finding. See 17 U.S.C. § 107(1) (2000). However, commercial uses do not mandate a finding of a lack of fair use, see *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 583–85 (1994), particularly when the scope of the transformation of the two works is considered, see *id.* at 578–79. There is very little similarity between a computer program and database that can generate Bible codes and a book written to explain the Bible code.

The matrixes are comprised of predominately public domain materials found in the Hebrew Bible.¹⁷² There was a minimum of selection and arrangement performed on the material from the Bible as the plaintiff created his work, however, in the transformation of Hebrew letters from their final forms into their non-final forms,¹⁷³ the selection of a version of the Prophets and the Writings to include,¹⁷⁴ and the changes made to the database to comply with שמלות (*sheimot*) requirements.¹⁷⁵

The court's conclusion that the substitution of non-final form letters was insufficiently creative for inclusion within a copyright is clearly correct.¹⁷⁶ As no intellectual effort was needed to make the substitution, the simplistic, mechanical alteration is appropriately excluded from the ambit of copyright.¹⁷⁷

172. *Torah Soft*, 136 F. Supp. 2d at 286 ("Plaintiff wisely admits that the Hebrew Bible, which is the backbone of the Database, is in the public domain . . .").

173. *Id.* Five Hebrew letters, כ (*chaph*), מ (*mem*), נ (*nun*), פ (*pe*), and צ (*tzadhe*) have a different form when they appear at the end of a word, ך, ם, ן, ף, and ץ, respectively. See POCKET HEBREW-ENGLISH DICTIONARY iii (Ehud Ben-Yehuda, ed. 1961). These letters in their final form are called סופיות (*sophit*) as in נון סופית (*nun sophit*). See *id.*

174. *Torah Soft*, 136 F. Supp. 2d at 286. Cf. THE JEWISH PUBLICATION SOCIETY OF AMERICA, THE HOLY SCRIPTURES vi-ix (1955) (describing the difficulties of translation caused by multiple versions and versions with marginal corrections and indicating which versions of Prophets and Writings were chosen for this translation); Interviews with Rabbi Howard L. Jaffe, Temple Isaiah, Lexington, Massachusetts (May-July, 2003).

175. *Torah Soft*, 136 F. Supp. 2d at 286. שמלות, transliterated as *sheimot*, means a tattered piece of paper upon which one of the seven Hebrew names of God is written. Joseph Lowin, *Naming the Name*, available at http://www.ivrit.org/html/words_roots/pdf/wr_6-7-97.pdf (last visited Dec. 7, 2003). שמלות refers to the tradition among observant Jews to treat any document that has one of the names of God in Hebrew on it as an object deserving special respect, see *id.*, in recognition of the command in the Torah "not take the name of Adonai your God in vain," *Exodus* 20:7, and "you shall not do so to the Lord, your God," *Deuteronomy* 12:4. As a consequence, the documents cannot simply be discarded; instead, they must be disposed of in a way that shows respect. See Rabbi Joshua Heller, *Ekev* 5760, available at <http://learn.jtsa.edu/topics/parashah/5760/ekav.shtml> (last visited Feb. 5, 2005). Further, a name of God should not be written on something where there is an expectation that the name will be subsequently erased. See Central Conference of American Rabbis, *The Name of God*, CCAR RESPONSA § 145, available at <http://www.ccarnet.org/cgi-bin/respdisp.pl?file=145&year=narr> (last visited Dec. 1990). This would include the output from the plaintiff's computer program. See Complaint ¶ 16, *Torah Soft Ltd. v. Drosnin*, 136 F. Supp. 2d 276 (S.D.N.Y. 2001) (No. 00-Civ-5650(SAS)), available at <http://www.thedavidandgoliathshow.com/Complaint2.html> (last visited Feb. 5, 2005).

For an excellent description of the Sheimot rules and their modern consequences, see Jacob Schneider, "Sheimot" and Their Disposal, J. OF HALACHA & CONTEMP. SOC'Y, Fall 1991, at 31.

176. *Torah Soft*, 136 F. Supp. 2d at 288-89. At the same time, the Court's reliance on *Grove Press, Inc. v. Collectors Publ'n, Inc.*, 264 F. Supp. 603 (C.D. Cal. 1967), was hardly appropriate at least as far as *Grove Press* suggests that work that can be done by a high school student lacks creativity. See *Torah Soft*, 136 F. Supp. 2d at 289 (quoting *Grove Press v. Collectors Publ'n, Inc.*, 264 F. Supp. 603, 605 (C.D. Cal. 1967)). Nothing in the *Feist* test, or in reality, suggests that creativity is necessarily something that is limited to adults. See, e.g., DONALD JAY GROUT, A HISTORY OF WESTERN MUSIC 499-500 (rev. ed. 1973) (Mozart's "masterwork" Symphony in G minor, K. 183, was written in 1773 when he was seventeen). Mozart's opera buffa, *La Finta Semplice*, was written in 1768 when he was twelve. *Id.* at 498.

177. See *Feist*, 499 U.S. at 362 ("It is equally true, however, that the selection and arrangement of facts cannot be so mechanical or routine as to require no creativity whatsoever.")

The selection of which version of the Prophets and the Writings to include is more complicated than the court seemed to acknowledge.¹⁷⁸ While the order of the books within the Torah, the Prophets and the Writings is established,¹⁷⁹ the actual text that makes up these versions does not appear to be as firmly settled.¹⁸⁰ If there are as few as a handful of choices, it might be necessary to acknowledge the creativity used in selecting among them.¹⁸¹ Such selection could only represent the author's opinion about which version is "authentic" and, as an opinion, would apparently represent intellectual creativity.¹⁸² Further, the court's dismissal of the quantity of work done by the plaintiff to choose which version of the books to use is disingenuous.¹⁸³ While the plaintiff's "sweat of the brow" alone cannot sustain a copyright, just because sweat was needed to produce the work does not negate the presence of intellectual creativity. That the plaintiff extensively studied Jewish law and consulted with scholars of Jewish law shows the intellectual endeavor in which he was involved to choose the most authentic version of each book. Consequently, if these choices were established by the author at trial,¹⁸⁴ sufficient intellectual creativity should have been found by the court.

The alterations made by the plaintiff that most clearly demonstrate creativity are in the *sheimot* changes.¹⁸⁵ Rather than using the typical system used to comply with the *sheimot* rules, inserting hyphens between

¹⁷⁸ See *Torah Soft*, 136 F. Supp. 2d at 288. Cf. THE JEWISH PUBLICATION SOCIETY OF AMERICA, THE HOLY SCRIPTURES vi-ix (1955) (describing the process of translation including the difficulties caused by such things as marginal corrections to the original text) [hereinafter HOLY SCRIPTURES].

¹⁷⁹ See HOLY SCRIPTURES, *supra* note 178, at viii.

¹⁸⁰ See *id.* at viii-ix; David E. Thomas, *Follow-up: Bible-Code Developments*, SKEPTICAL INQUIRER, Mar./Apr. 1998, available at <http://www.csicop.org/si/9803/bible-code.html>.

[A]ny serious student of the Talmud knows that there are many citations of the Hebrew Bible which indicate a differing text from the one we have One of the oldest complete texts of the Bible, the Leningrad codex (from 1009) (also available electronically) differs from the Koren version . . . in forty-one places in Deuteronomy alone. In fact, the spelling in the Hebrew Bible did not become uniformized until the sixteenth century with the advent of a printed version that could provide an identical standard text available at diverse geographical locations.

Id. (quoting Harvard mathematics professor (and Orthodox rabbi) Shlomo Sternberg).

For a list of the principal ancient Hebrew texts of Prophets and Writings, see *Ancient Hebrew Manuscripts of the Hebrew Bible*, available at http://www.ancient-hebrew.org/17_manuscripts.html (2002) (last visited Feb. 5, 2005).

¹⁸¹ Cf. *Boisson*, 273 F.3d at 262 (recognizing creativity in placement of the alphabet on a quilt).

¹⁸² See *Eckes*, 736 F.2d at 859 (database resulting from the selection of the "best" baseball cards was copyrightable); *Superchips, Inc. v. Street & Performance Elecs., Inc.*, No. 6:00CV896ORL31KRS, 2001 WL 697948, at *6 (M.D. Fla. Apr. 24, 2001) ("Superchips' act of changing numerical values in Ford's data table to achieve optimum engine performance is [creative]").

¹⁸³ See *Torah Soft*, 136 F. Supp. 2d at 288 ("[I]t is clearly established that such 'sweat of the brow' does not confer copyright protection.").

¹⁸⁴ The plaintiff may have failed to prove the existence of multiple choices. See *Torah Soft*, 136 F. Supp. 2d at 288 ("[P]laintiff [has] failed to identify precisely how Spielberg altered the text . . .").

¹⁸⁵ See *id.* at 280-81.

some or all of the letters comprising a name of God, the plaintiff changed the letters into other typographic symbols such as asterisks and pound signs.¹⁸⁶ In this way, the Hebrew names of God would not be included within the database but, at the same time, the number of characters within the Bible would not change, making the extraction of the proper characters of Bible code number possible. Although the court announced two reasons why the *sheimot* changes were not creative, that they were "functional"¹⁸⁷ and that they were "required by the end-users,"¹⁸⁸ both reasons are nonsensical.

Without a doubt, the *sheimot* changes implemented by the plaintiff were incorporated into a functional database and computer program.¹⁸⁹ But to discount all functional alterations as lacking creativity¹⁹⁰ seriously misstates the intellectual creativity requirement. It confuses what are unprotectable functional elements with protectable expressions.¹⁹¹ While a method of operation is appropriately excluded from copyright,¹⁹² the *sheimot* changes are not used to operate the Bible code program; instead, the changes serve as the plaintiff's means to *express* the idea underlying the *sheimot* rules.¹⁹³ As a consequence, the *sheimot* changes are not functional; indeed, the Bible code program would operate just as well, though offending much of its customer base, without the *sheimot* changes being made.

Further, the changes made by the plaintiff were not *specifically* required by the end-users of the program. Clearly, to appeal to the market, the plaintiff had to comply with the *sheimot* rules, but that market would not care how these rules were implemented. Thus, by selecting one option out of many choices for expressing the *sheimot* rules, particularly

186. *See id.*

187. *Id.* at 287.

188. *Id.*

189. *See id.* at 278.

190. *See id.* at 287 ("As a functional, as opposed to a creative, alteration, the *sheimot* changes are not protectable.").

191. Indeed, if being functional negates creativity, it is hard to see how any computer program would qualify for copyright protection despite the clear congressional intent that such protection be available. *See* 17 U.S.C. § 101 (2000) (definition of computer program); H. R. REP. NO. 94-1476, at 116 (1976) ("With respect to the copyrightability of computer programs, . . . the [1976 Copyright Act] would apply."); *see generally* BRIAN W. KERNIGHAN & P.J. PLAUGER, *THE ELEMENTS OF PROGRAMMING STYLE* (2d ed. 1978) (discussing how to craft well written programs).

192. 17 U.S.C. § 102(b) (2000).

193. *See Lotus Dev. Corp. v. Borland Int'l, Inc.*, 49 F.3d 807, 815 (1st Cir. 1995).

We hold that the Lotus menu command hierarchy is an uncopyrightable 'method of operation.' The Lotus menu command hierarchy provides the means by which users control and operate Lotus 1-2-3 Users must use the command terms to tell the computer what to do. Without the menu command hierarchy, users would not be able to access and control, or indeed make use of, Lotus 1-2-3's functional capabilities. The Lotus menu command hierarchy does not merely explain and present Lotus 1-2-3's functional capabilities to the user; it also serves as the method by which the program is operated and controlled.

Id., *aff'd by equally divided court*, 516 U.S. 233 (1996).

where that choice was novel in itself, sufficiently intellectual creativity was demonstrated.¹⁹⁴

C. *Trouble, Trouble, Trouble*

As these example cases indicate, works that should qualify for copyright protection are being denied as the courts misconstrue the *Feist* decision. Rather than expecting a work to contain a "minimal degree of creativity,"¹⁹⁵ a significantly higher quantum of intellectual creativity is expected. What could be lost by this unrealistic expectation is that many of the average, mundane works that constitute a significant percentage of the expressive works developed and marketed will no longer be protected, making them economically unviable. Whether it is a typical computer program, a statue to be sold to a tourist, a dime-store novel, or a series of bingo cards, the way that the intellectual creativity requirement is being formulated in the lower courts is problematic for insuring that sufficient incentives are available for the authors of these types of works.¹⁹⁶

The source of the problem may be some unfortunate language in *Feist* that requires a work to "possess some *creative spark*" to be copyrightable.¹⁹⁷ Many courts have seized upon this language¹⁹⁸ and are expecting a level of creativity worthy of Beethoven before the work will pass intellectual creativity muster instead of recognizing that the empha-

194. Even the court acknowledges a degree of novelty in the plaintiff's expression of the *sheimot* rules. See *Torah Soft*, 136 F.Supp. 2d at 281 (the plaintiff "departed from the traditional method of complying with the *sheimot* rules . . ."). This creativity is further reinforced as the plaintiff's choice of characters to use in substituting the letters in a Hebrew name of God are arbitrary and were not required; indeed, any non-Hebrew character would have worked. Cf. *id.* at 280-81.

195. *Feist*, 499 U.S. at 345.

196. As an example, in part because of the loss of its intellectual property protection for its bingo cards, Stuart Entertainment was forced into bankruptcy under Chapter 11. In re Stuart Entm't, Inc., No. 99-02847-MFW (Bankr. D. Del. filed Aug. 13, 1999).

197. *Feist*, 499 U.S. at 345 (citation & quotation marks omitted) (emphasis added).

198. See *Matthew Bender & Co.*, 158 F.3d at 682 (recognizing Nat'l Reporter page numbers, etc. lack creative spark); *Southco, Inc. v. Kanebridge Corp.*, 258 F.3d 148, 151 (3d Cir. 2001) (finding part numbers lack creative spark); *J. Thomas Distribs., Inc. v. Greenline Distribs., Inc.*, 100 F.3d 956 at *1 (6th Cir. 1996) (table, opinion at 1996 WL 636138) (reasoning drawing of part lacks creative spark); *Mid Am. Title Co. v. Kirk*, 59 F.3d 719, 721 (7th Cir. 1995) (holding title commitment lacks creative spark), *cert. denied*, 516 U.S. 990 (1995); *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1373 (10th Cir. 1997) (noting command codes lack creative spark); *Bridgeman Art Library*, 36 F. Supp. 2d at 196-97 (finding photographs reproducing public domain art lack creative spark).

But see *Dam Things from Denmark v. Russ Berrie & Co.*, 290 F.3d 548, 564 (3d Cir. 2002) (finding doll contains sufficient creative spark); *O'Well Novelty Co. v. Offenbacher, Inc.*, 225 F.3d 655 at *4 (4th Cir. 2000) (table, opinion at 2000 WL 1055108) (recognizing porcelain houses contain sufficient creative spark); *Ets-Hokin v. Sky Spirits, Inc.*, 225 F.3d 1068, 1076-77 (9th Cir. 2000) (reasoning photograph of vodka bottle contains sufficient creative spark); *Atari Games Corp. v. Oman*, 979 F.2d 242, 247 (D.C. Cir. 1992) (finding video game contains sufficient creative spark). The most interesting transformation of the Supreme Court's language may have occurred in *Spilman v. Mosby-Yearbook, Inc.*, 115 F. Supp. 2d 148 (D. Mass. 2000). The *Spilman* court was not interested in a "creative spark;" rather, it was interested in a "creative twinkle." *Id.* at 155.

sis in the decision is to find a minimal level of intellectual creativity. It is the mundane that is needed, not the profound.¹⁹⁹

However, as the scientific evidence discussed above demonstrates,²⁰⁰ creativity does not usually represent a startling break-through of new thoughts as, more often, it results from the reworking of pre-existing ideas and facts as part of a new strange attractor within the author's brain. Even where a revolutionary conception is made, the brain process behind it lacks any "spark" unless the spark results from a misfiring of the brain. The lower courts' expectations of intellectual brilliance to justify a copyright are consequently unrealistic and damaging and do not implement *Feist's* jurisprudence. To get the courts out of their troubled waters, an analytical approach that restores intellectual creativity to its proper place is needed.

V. PUTTING CREATIVITY IN ITS PLACE—A REALISTIC ANALYTIC TECHNIQUE TO IDENTIFY THE PRESENCE OF INTELLECTUAL CREATIVITY

To determine if the minimal intellectual creativity required is present, an analytical approach is needed that will avoid people's natural inclination to judge the appeal of the creativity rather than its mere presence.²⁰¹ It is much easier, after all, to declare a Monet painting creative than someone else's toddler's scrawl, but, from a copyright perspective, both are creative and both should be eligible for protection.²⁰² To avoid denying an unappealing work its copyright, a more rigorous analysis is needed. Fortunately, one does not need to be invented from whole cloth; instead, *Computer Associates International, Inc. v. Altai, Inc.*²⁰³ provides a good framework for constructing an intellectual creativity analysis.

Computer Associates instructs that a three-part "abstraction-filtration-comparison" test should be used to determine if one computer program infringes another.²⁰⁴ This test was created by the Second Circuit to remove the "metaphysical distinctions" that were distracting courts in

199. See *Feist*, 499 U.S. at 345.

200. See *supra* Part III.

201. Cf. *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 251-52 (1903) (recognizing judges cannot be trusted to be the arbiters of the worth of visual images).

202. See 17 U.S.C. § 102(a) (2000) ("Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression . . ."); Cf. *Alfred Bell & Co. Ltd. v. Catalda Fine Arts, Inc.*, 191 F.2d 99, 102 (2d Cir. 1951) ("[T]he courts have not undertaken to assume the functions of critics, or to measure carefully the degree of originality, or literary skill or training involved." (quotation marks omitted)).

203. See generally 982 F.2d 693 (2d Cir. 1992) (concerning the scope of a copyright in a computer program), *cert. denied*, 523 U.S. 1106 (1998).

204. *Computer Associates*, 982 F.2d at 706. The "abstraction" step in the *Computer Associates* test requires that the court "dissect the allegedly copied program's structure and isolate each level of abstraction contained within it." *Id.* at 707. The "filtration" procedure is used to screen from the abstractions anything that is not protectable by copyright such as ideas, items from the public domain, etc. *Id.* at 707-10. Finally, "comparison" is used to match the surviving items against similar expressions in the original computer program to determine if there was infringement. *Id.* at 710-11.

evaluating whether two computer programs were copies of one another, and focused the analytical attention on the "practical considerations" that should drive the decision making.²⁰⁵ As the same problem of focusing on practical considerations exists in the evaluation of creativity, a new three-part test based on the structure of the one established in *Computer Associates* proves beneficial—the "abstraction-confirmation-examination" test.²⁰⁶ Although derived from the *Computer Associates* test, each of the elements in this new test differs from the original in order to implement the different purpose of the test.²⁰⁷ The operation of each component part of the test will be discussed in turn.

A. *Abstraction: Finding the "Expressive Constituents" within the Work*

The ultimate test of intellectual creativity for copyright is whether the author has expressed a work with the necessary minimum ingenuity such that it qualifies for a copyright.²⁰⁸ Consequently, the first step in the analysis is determining what the author has expressed. In other words, what are the "expressive constituents" contained within the work. Determining what qualifies as an expressive constituent has never been easy. It requires the court to distinguish between the expression itself and what is being expressed in the work.²⁰⁹ As Judge Learned Hand stated in *Nichols v. Universal Pictures Co.*²¹⁰ when attempting to make this distinction:

Upon any work . . . a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the [work] is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the [author] could prevent the use of his "ideas," to which, apart from their expression, his property is never extended.²¹¹

Of course, when doing the analysis for the determination of creativity, the *Nichols* approach would be used with the opposite purpose. Specifically, it is not important to identify and exclude ideas; instead, the goal is to identify expressions that *do* qualify for copyright. The *Nichols*

205. *Id.* at 706.

206. Although the proposed test is more important in the evaluation of whether there is sufficient intellectual creativity underlying the work in question, the test also is sufficiently powerful to confirm the presence of origin creativity.

207. As will become clear in the subsequent discussion, it is very important that the courts distinguish between establishing if creativity is present from whether infringement occurred. See *infra* Section V.C.

208. *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991).

209. This is commonly known as the "idea-expression dichotomy." See *Sid & Marty Krofft Television Prods., Inc. v. McDonald's Corp.*, 562 F.2d 1157, 1165 (9th Cir. 1977).

210. 45 F.2d 119 (2d Cir. 1930), *cert. denied*, 282 U.S. 902 (1931).

211. *Nichols*, 45 F.2d at 121 (emphasis added).

test is not a one-way street, however. As soon as the series of abstractions under *Nichols* become general enough that they must be considered as ideas, all that was identified earlier will be the expressive constituents being sought. The purpose of *Nichols*, after all, is to find the dividing line between ideas and expressions so, once it is found, the identified material on either side of the line can be used.

As occurs when examining infringement, the quantity of expressive constituents that can be found in different types of works will differ. Generalizations can be made, however, based on the type of work involved.

If one is dealing with a work of literary fiction, a novel, for example, the expressive constituents include the specific language used,²¹² the overall treatment of the subject including the details emphasized,²¹³ the uniquely defined characters,²¹⁴ and at least some level of the details of the plot.²¹⁵ As many of the elements contained within a work of fiction are fanciful, finding numerous expressive constituents normally is not a problem.²¹⁶

For non-fiction works, the expressive constituents are more limited than for a work of fiction as any facts contained within the work are outside the ambit of copyright.²¹⁷ For these works, the expressive constituents will be found in how the facts are described, not in the facts themselves.²¹⁸

Visual works can prove more challenging in attempts to derive the expressive constituents.²¹⁹ Part of the difficulty with visual works is that they, as a class, tend to be more abstract than a written work, putting them closer to the idea end of the idea-expression dichotomy. As impor-

212. See *CRA Mktg., Inc. v. Brandow's Fairway Chrysler-Plymouth-Jeep-Eagle, Inc.*, No. Civ.A.98-CV-6485, 1999 WL 562755, at *1 (E.D. Pa. July 27, 1999) (marketing materials); *Ilog, Inc. v. Bell Logic, LLC*, 181 F. Supp. 2d 3 at *6 (D. Mass. 2002) (computer programs).

213. See *Reyher v. Children's Television Workshop*, 533 F.2d 87, 91 (2d Cir. 1976), cert. denied, 429 U.S. 980 (1976).

214. See *Warner Bros., Inc. v. ABC*, 720 F.2d 231, 243 (2d Cir. 1983) (holding a copyright protects Superman character).

215. See *Nichols*, 45 F.2d at 121. Of course, if the work of fiction makes reference to facts in establishing its setting, the *scene a faire* doctrine prevents treating items that are necessary to create the scene from being considered an expressive element, see *Interactive Network, Inc. v. NTN Communications, Inc.*, 875 F. Supp. 1398, 1403-04 (N.D. Cal. 1995), dismissed by agreement, 57 F.3d 1083 (Fed. Cir. 1995), although how the setting is described may very well be an expressive element even though the scene itself is not.

216. Cf. *Houts v. Universal City Studios, Inc.*, 603 F. Supp. 26, 28 (C.D. Cal. 1984) (recognizing that works of fiction gain a broader copyright protection than non-fiction works). The author has been unable to find any reported cases where the court determines that a work of fiction is insufficiently creative to obtain a copyright. As of today, none of the works that were generated by an autonomously creative computer program have been involved in a litigation so the validity of the claimed copyright has not been tested.

217. *Harper & Row, Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 556 (1985).

218. *Harper & Row*, 471 U.S. at 556-57.

219. See *Sapon v. DC Comics*, No. 00 CIV. 8992(WHP), 2002 WL 485730, at *3 (S.D.N.Y. Mar. 29, 2002).

tantly, lawyers, judges, and the other participants in the judicial system do not tend to be trained in the visual arts,²²⁰ rendering them less able to understand the subtleties of visual languages.²²¹ Despite this, visual works are capable of various levels of abstraction, from examining the work as a whole, by scrutinizing individual picture elements, and even through the expressive contribution made by the selection and use of the media in which the work is done,²²² allowing the courts to derive the various expressive constituents contained within the visual work.

Factual compilations have understandably been the focal point of intellectual creativity litigation. As the facts themselves are not expressive,²²³ the court must determine if the facts are articulated in a way that makes them an expressive constituent,²²⁴ are selected by the author from a larger superset of possibilities,²²⁵ or are arranged by the author in a sufficiently ingenious way.²²⁶ In each of these cases, however, the expressive element is limited to articulation, selection, or arrangement, the facts alone are still not expressive constituents.²²⁷

At the end of the first part of the tripartite test, therefore, the expressive constituents contained within the work will have been identified. Obviously, if no expressive constituents are identified, the work has insufficient intellectual creativity for a copyright to subsist. However, if as

220. The Law School Admission Council maintains statistics of the undergraduate majors of all individuals who use its service as they apply for admission to law school. Over the last five admission cycles (1997-1998 to 2001-2002), a total of 2,069 applicants listed their first majors as being in the visual arts (Art/Design, Art History, Fine Art, or Visual Arts/Graphics). See Letter from Robert Carr, Senior Statistician, Law School Admission Council, to the Author 3 (July 15, 2003) (on file with author). For the same periods, a total of 388,744 applicants participated in the Service. See *id.* at 5. Consequently, for the last five admission cycles, only 0.53% of applicants to law school have undergraduate degrees in the visual arts. Although this number does represent a maximum as some candidates for admission will participate in more than one admission cycle, the numbers on an annual basis are consistent: from 0.50% in 1997-1998; through 0.49%, 0.55%, and 0.52%; to 0.59% in 2001-2002. *Id.* at 3, 5.

221. See H.W. JANSON, HISTORY OF ART 9-10 (2d ed. 1977).

222. See *Sid & Marty Krofft Television Prod., Inc.*, 562 F.2d at 1167-68 (noting that the complexity of artist's expression of nude will affect the scope of the copyright in the resulting statue as the court affirmed that the defendant's *McDonaldland* commercials infringed on plaintiff's *H.R. Pufnstuf* TV show). While the method of expression can constitute an expressive constituent when combined with an analysis of the overall expression contained in the work, the method, standing alone, generally should not be an expressive constituent in its own right. See *Stillman v. Leo Burnett Co.*, 720 F. Supp. 1353, 1359 (N.D. Ill. 1989) ("In the same vein, when the similarity between two works arises exclusively from the use of the same process or technique—for example, the similar 'concept and feel' of two impressionist paintings—it cannot form the basis for a copyright claim.").

223. See 17 U.S.C. § 102(b) (2000).

224. See *Lynx Ventures, LLC v. Miller*, 45 Fed. App. 68, 71, 2002 WL 31007386 at *3 (2d Cir. Sept. 6, 2002) (reasoning written description of tree species may qualify for copyright protection); *Montgomery County Ass'n of Realtors, Inc. v. Realty Photo Master Corp.*, 878 F. Supp. 804, 810 (D. Md. 1995) (finding "marketing puffery" contained in database is copyrightable), *aff'd* 91 F.3d 132 (4th Cir. 1996) (table).

225. See *Eckes v. Card Prices Update*, 736 F.2d 859 (2d Cir. 1984) (holding database resulting from the selection of the "best" baseball cards was copyrightable).

226. See *Boisson v. Banian, Ltd.*, 273 F.3d 262 (2d Cir. 2001) (recognizing creativity in placement of the alphabet on a quilt).

227. See *Feist*, 499 U.S. at 344-45.

little as one expressive element was found, the next step, confirmation, must be performed.

B. Confirmation: Insuring that Some of the Expressive Constituents Originated from a Human

Confirmation is the simplest of the three steps as its purpose is primarily to determine if origin creativity is present. Although simple, it is nevertheless critical to exclude a pretender, whether the work was copied from another human's work or from an artificially intelligent computer program's work. If, for example, the author simply copied another's expression, the confirmation fails, and the work is not creative.²²⁸ What is critical for this analysis is that another's work was reproduced,²²⁹ as basing a work on something existing in the world, a mountain, for example, does nothing to diminish contained creativity.²³⁰

Just as copying another human's work prevents creativity, so too does claiming credit for a work generated by an autonomously creative, artificially intelligent computer program.²³¹ If a computer is responsible for the generation of the work, a human cannot claim a copyright in the work as origin creativity is nonexistent.²³² In applying this standard, however, it is important that the nature of the computer program be considered carefully. Many works today are created using computer technology as a tool to assist the author in expressing his or her ideas.²³³ For example, a computer word processor is being used to ease the process of writing this paper. Some of the techniques provided by the program are merely mechanized versions of the scissors and stapler formerly used to cut and paste text. Other techniques are more complex, as when a computerized thesaurus is used, making a choice of words available that might not have otherwise been considered, or the Web is used to perform instantaneous research. These types of computer techniques do not affect the presence of creativity, however, as the technology is being used as an adjunct to a human author.²³⁴ The computer eases the author's job, even

228. See *Folio Impressions, Inc. v. Byer California*, 937 F.2d 759, 764 (2d Cir. 1991) ("In the copyright context, originality means the work was independently created by its author, and not copied from someone else's work."); *NBC v. Sonneborn*, 630 F. Supp. 524, 532 (D. Conn. 1985) ("Independent creation cannot be actual copying.")

229. See *Bridgeman Art Library, Ltd. v. Corel Corp.*, 25 F. Supp. 2d 421, 427 (S.D.N.Y. 1998) (disallowing copyright to photographic reproductions of existing works that "duplicate exactly" the originals).

230. See *supra* Section IV.A.

231. Clifford, *Creative Computer Program*, *supra* note 5, at 1698.

232. *Id.*

233. See, e.g., Jessica K. Hodgins & James F. O'Brien, *Computer Animation*, in *ENCYCLOPEDIA OF COMPUTER SCIENCE* 301 (Anthony Ralston et al eds., 4th ed. 2000); Barry Flachsart, et al, *Computer-Aided Design/Computer-Aided Manufacturing (CAD/CAM)* in *id.* at 268.

234. In many ways, the contribution to the work that is made by the computer can be analogized to the contributions made by a human editor as both are responsible for suggesting words and other changes that can make the resulting work better. Just as an editor's contributions do not change

when it "suggests" expressive elements, but control of the process remains with the author.

In contrast, where the computer effectively has replaced the human author, there is insufficient creativity in a work to substantiate a copyright. In the computer program discussed in the author's *Creative Computer Programs* article, the program, rather than the human operator, was responsible for generating the expressions.²³⁵ As the human no longer controlled the expressive process, the human could not claim the resulting works for copyright.²³⁶ To draw the parallel, the computer was no longer easing the author's job; it was supplanting it.

Once expressive constituents are extracted and their origin has been confirmed, the final step of the analysis is needed. The examination process will address the ultimate question: are the expressive constituents intellectually creative?

C. Examination: Did the Author Deliberately Decide to Do It That Way?

Once the expressive constituents are identified and confirmed, they must be examined to determine if there is the "modicum of creativity"²³⁷ necessary to support copyrightability. Although the *Feist* case described the requisite as the need for a "creative spark,"²³⁸ this portrayal of creativity is inaccurate²³⁹ and, worse, destructive to the process of evaluating actual works. Fortunately, the Court's use of the phrase seems more descriptive than mandatory, allowing a more valid methodology to be used that will achieve the purpose desired by the Court.

In most ways, *Feist*'s creativity requirement is concerned with choice.²⁴⁰ The Court seems to require two things in order for intellectual creativity to be found: (1) multiple ways that an expression can be made, and (2) that the author made a selection from these choices.²⁴¹ Accordingly, from these two requisites, a basic test of creativity can be derived: did the author, having a choice, *decide* to express the work in the way it

the author's right to his or her copyright, see *Childress v. Taylor*, 945 F.2d 500, 507 (2d Cir. 1991), normal uses of computer technology are likewise immaterial.

235. See Clifford, *Creative Computer Program*, *supra* note 5, at 1677, 1703 nn.5, 6. See also John R. Koza, Martin A. Keane & Matthew J. Streeter, *Evolving Inventions*, SCI. AM., Feb. 2003, at 52 (describing a computer program that can invent).

236. See Clifford, *Creative Computer Program*, *supra* note 5, at 1698.

237. *Feist*, 499 U.S. at 362.

238. *Id.* at 345.

239. See *supra* Section III.

240. See *Feist*, 499 U.S. at 348.

The compilation author typically chooses which facts to include, in what order to place them, and how to arrange the collected data so that they may be used effectively by readers. These choices as to selection and arrangement, so long as they are made independently by the compiler and entail a minimal degree of creativity, are sufficiently original that Congress may protect such compilations through the copyright laws.

Id.

241. See *id.*

was done? In other words, did the author "make a judgment, . . . determine a preference; [or] come to a conclusion"²⁴² about the expression used?

Only minimal creativity is needed under this test;²⁴³ indeed, even a single word can demonstrate creativity. When Tennessee Williams named one of his characters in *A Streetcar Named Desire* "Stella,"²⁴⁴ he was making a creative choice²⁴⁵ that, standing alone, should be considered sufficiently creative to justify protecting the play with a copyright. Intellectual creativity is binary – either it is there or it is not. Once it is determined to be there, the work is creative and can be protected by copyright. This does not mean, of course, that only copying the name "Stella" would be sufficient to establish that copyright infringement had occurred, as copying the name alone would most certainly be considered *de minimus* and non-infringing.²⁴⁶ In other words, the presence of intellectual creativity is a threshold that must be crossed for a work to be protectable, but once the copyright doorway is entered, a new analysis is needed concerning the quantity and quality of the infringing conduct to determine if any of the section 106 rights²⁴⁷ were violated.

D. Applying the Abstraction-Confirmation-Examination Test

To be valid, the abstraction-confirmation-examination test must achieve the proper result when applied to known cases. A succinct examination of four cases, all of which were presented above, will establish this: *Satava v. Lowry*,²⁴⁸ *Stuart Entertainment, Inc. v. American Games, Inc.*,²⁴⁹ *Torah Soft, Ltd. v. Drosnin*,²⁵⁰ and, finally, *Feist*.²⁵¹

When the abstraction-confirmation-examination test is applied to the facts in *Satava*,²⁵² the court's conclusion of noncopyrightability is shown to be incorrect. The expressive constituents are numerous, including the orientation of the jellyfish, the specific colors chosen, the positioning of the tendrils, the shape of the body, the overall shape of the sculpture, as well as the interplay among these elements and the glass

242. RANDOM HOUSE UNABRIDGED DICTIONARY 517 (2d ed. 1993).

243. See *Feist*, 499 U.S. at 345 (recognizing work must "possess[] at least some *minimal* degree of creativity . . ." for copyrightability) (emphasis added).

244. TENNESSEE WILLIAMS, *A STREETCAR NAMED DESIRE* 12 (New Am. Library ed. 1947).

245. He could have chosen any woman's name as the character is fanciful – not based on a real character.

246. See *Domsalla v. Stephens*, No. CIV.A.300CV2763, 2001 WL 493157, at *1 (N.D. Tex. May 4, 2001) ("In general, short phrases . . . do not exhibit the minimal creativity required for copyright protection.") (quotation marks and citation omitted).

247. See 17 U.S.C. § 106 (2000).

248. 323 F.3d 805 (9th Cir. 2003), cert. denied, 540 U.S. 983 (2003).

249. No. 1-96-CV-90036 (S.D., Iowa Mar. 19, 1998), aff'd 205 F.3d 1347 (8th Cir. 1999) (table, opinion at 1999 WL 1144831).

250. 136 F. Supp. 2d 276 (S.D.N.Y. 2001).

251. 499 U.S. 340 (1991).

252. See *Satava*, 323 F.3d at 805.

medium chosen for the artist's expression.²⁵³ The defendant admitted that all of these were created by the plaintiff,²⁵⁴ satisfying confirmation. Finally, the choices made by the artist are clear; for example, he could have moved each tendril into a slightly different position or chosen a different color in which to depict the jellyfish. Consequently, the examination test is satisfied, concluding the three-part analysis. As each part of the test was satisfied, there is sufficient creativity to substantiate the copyright.

The *Stuart Entertainment* case likewise satisfies the test.²⁵⁵ Each bingo card and the sequence of cards found in one of the plaintiff's series were expressive constituents.²⁵⁶ Although Stuart did not create the series of cards itself, it succeeded in interest to the party who did,²⁵⁷ thus satisfying confirmation. Finally, although not as clear as was the case in *Satava*, choices were exercised in the creation of the bingo cards. The plaintiff would not accept all bingo cards, as some were considered to be unplayable, while others were rejected because they did not satisfy the conditions established for the sequence of cards.²⁵⁸ As a consequence, the cards were sufficiently creative and the court's opposite holding was fallacious.

The analysis in *Torah Soft* is a much closer call.²⁵⁹ The three possible expressive constituents are the final letter transformations, the choice of which version of the Prophets and Writings to use, and the *Sheimot* changes.²⁶⁰ All three of these elements pass the confirmation test,²⁶¹ but one fails the examination criterion outright, while the other two do not satisfy it unequivocally.

The final letter transformations clearly fail the final examination requirement as there was, as a practical matter, no choice. If a letter was to be substituted for a final *nun*, for example, no other letter could be used except a regular *nun* without altering the language in the Bible and, thus, defeating the program's ability to generate accurate Bible codes. The version selection for Prophets and Writings only weakly complies with the test because all of the choices that could be made were from among a fairly limited universe of possible choices, potentially insufficient to substantiate that the plaintiff made any type of intellectual decision. The *sheimot* changes also reside on the borderline of acceptable expressive constituents under the examination test. The particular typographical

253. See *id.* at 807-08.

254. See *id.* at 807.

255. *Stuart Entm't*, slip op. at 1.

256. See *id.*, slip op. at 3. See also *Superchips, Inc. v. Street & Performance Elecs., Inc.*, No. 6:00CV896ORL31KRS, 2001 WL 697948, at *6 (M.D. Fla. Apr. 24, 2001) (engine performance numbers placed in a table are copyrightable).

257. See *Stuart Entm't*, slip op. at 3-4.

258. See *id.*, slip op. at 2-3.

259. *Torah Soft*, 136 F. Supp. 2d at 276.

260. See *id.* at 286.

261. See *id.* at 281.

symbols chosen to substitute for the Hebrew characters were arbitrarily selected from a very large universe of possibilities,²⁶² demonstrating at least a minimal amount of decision-making by the author. Strongly mitigating against finding the *sheimot* changes to be creative, however, is the inherent meaninglessness of the choices made. Did the author select specific typographical symbols, or did he substitute them without thought? If the latter is true, the examination test directs that the *sheimot* changes be found lacking.²⁶³

Finally, applying the test to *Feist* confirms the test's compliance with the intellectual creativity rules established by the Supreme Court.²⁶⁴ The abstraction stage leads to the identification of only two possible expressive constituents: the selection of the names to appear²⁶⁵ and the order in which the phone listings were placed in the directory.²⁶⁶ Although these expressive elements survive the confirmation test, the phone company's agents produced the directory,²⁶⁷ they fail the examination test. The selection of names was not the company's subjective choice as the law required the company to include all of its subscribers.²⁶⁸ As a practical matter, the company had no choice about the order in which the listings were given because, to be functional, the listings had to be placed in alphabetical order by subscriber's name.²⁶⁹ Thus, the abstraction-confirmation-examination test fails and the directory is not sufficiently creative to be copyrighted.

CONCLUSION

Evaluating expressive works to insure that there is sufficient incorporated creativity, both origin and intellectual, requires careful consideration of the expressions contained within a work. If the evaluation is too exacting, the incentives to produce ordinary, run-of-the-mill works will disappear. On the other hand, if the evaluation is too lenient, a purported author will be able to monopolize expressions that were not generated by that author, leaving the public domain depleted as a result.

262. Even if the choice was limited to those typographical characters available on a standard computer keyboard, there were twenty-five choices, `~!@#\$%^&*()-_+=+[]]{}|/;< . In a modern word processor, many hundreds of additional choices exist. See, e.g., WordPerfect (9th ed. 2000) (listing 101 "Typographic," 254 "Iconic," and 237 "Math/Science" special characters).

263. See *Matthew Bender & Co. v. West Publ'g Co.*, 158 F.3d 674, 688-89 (2d Cir. 1998), cert. denied, 526 U.S. 1154 (1999).

264. *Feist*, 499 U.S. at 340.

265. See *id.* at 362.

266. See *id.* at 361-62.

267. See *id.* at 342.

268. See *id.* at 363. Compare *id.* with *Eckes*, 736 F.2d at 863 (finding that database resulting from the selection of the "best" baseball cards was copyrightable).

269. See *Feist*, 499 U.S. at 363. Compare *id.* (noting the author had no choice but to alphabetize its directory) with *Boisson*, 273 F.3d at 262 (finding that author had sufficient choices in the layout of the alphabet on a quilt for it to be considered creative).

To avoid misconstruing creativity requirements in either direction, the courts should adopt a method of analysis such as the proposed abstraction-confirmation-examination test that focuses attention on how the work was generated and avoids cloaking creativity with any romantic or mystical aspects, as these are not substantiated by the scientific evidence on the sources of human creativity. Not only will this type of dissection ensure that the courts implement the jurisprudence of *Feist*, but it will also alleviate any concerns, as expressed in *Bleistein*, that evaluations of intellectual creativity will transmogrify into exercises of judicial censorship.²⁷⁰ Without a test that concentrates attention on the essence of *Feist* and the nature of human inventiveness—choice making by a human author—too many works that are incomprehensible or unappreciated by the court will be denied copyright protection.

270. See *Bleistein*, 188 U.S. at 251–52.