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TYING UP *FEIST*'S LOOSE ENDS: A PROBABILITY THEORY
OF COPYRIGHTABLE CREATIVITY

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In the 1991 decision of *Feist Publications, Inc. v. Rural Telephone Service Co.*¹ ("*Feist*"), the Supreme Court held that a work must exhibit a "modicum of creativity"² to obtain copyright protection. However, the Court did not define "creativity" in its opinion, creating at least two distinct problems – one concrete and one abstract – in the

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¹ 499 U.S. 340 (1991).

² *Id.* at 346.

application and conceptualization of the term “creativity.” On the concrete side, without a clear understanding of what “creativity” entails, courts have very little guidance in cases where a work’s creativity is at issue.³ To substitute for this lack of guidance, courts instead either parrot the word “creativity” as a sort of shibboleth worthy of any desired result, or center their analysis on how a modicum of creativity requires very little, if anything, of a work. Neither approach, however, yields consistency or comprehensibility.

On the abstract side, the addition of a creativity requirement has introduced a new analytical problem to copyright law. Essentially, inherent in “creativity” is a certain degree of unexpectedness or randomness in the artistic or literary work;⁴ yet, one might think that the purely rational would merit the rewards of copyright protection.⁵ In reality, copyrights ought to protect some balance of the two concepts. The problem is best understood with a view to the degree of both rationality and randomness exhibited in a work. Two simple examples paint the picture more clearly. The most rational work, the alphabetized phonebook at issue in *Feist*, for instance, does not exhibit any randomness, and, therefore, does not exhibit creativity. On the other hand, a purely random work such as the stream of numbers produced by a random number generator will likely express nothing more than chaos and will accordingly lack the rationality to convey an idea.⁶ Such works equally fail to exhibit comprehensible creativity. Between these poles, an infinite number of works depict varying levels of rationality and randomness. Therefore, the challenge in defining creativity, and the challenge left unanswered by the Supreme Court in *Feist*, is to walk “the fine line between chaos and creation”⁷ successfully.

This Comment addresses the absence of a definition of the term “creativity” by proposing a principled threshold that balances

³ See *infra* Section II.

⁴⁴ See, e.g., Ralph D. Clifford, *Random Numbers, Chaos Theory, and Cogitation: A Search for the Minimal Creativity Standard in Copyright Law*, 82 DENV. U.L. REV. 259, 274 (2004) (citing WILLIAM H. CALVIN, *THE CEREBRAL CODE* 21 (1996) (“[C]reative thoughts can be generated in a process that starts with *chance*, noise, or an error within the brain.”)) (emphasis added).

⁵ This appears to be an implicit point of Judge Roth’s dissenting opinion in *Southco Inc. v. Kanebridge Corp.*, 390 F.3d 276, 296-97 (3d Cir. 2004).

⁶ See, e.g., *Toro Co. v. R & R Prod. Co.*, 787 F.2d 1208, 1216 (8th Cir. 1986) (holding that purely “arbitrary” number assignments do not merit copyright protection).

⁷ PAUL MCCARTNEY, *CHAOS AND CREATION IN THE BACKYARD* (Capitol Records 2005).

creativity's elements of rationality and randomness. At the root of this approach is the understanding that creativity is essentially just a manifestation of probability, the mathematical field that looks to the likelihood of a certain result. With this framework in mind, this piece suggests that, as a baseline, only the work that is unlikely to be created merits copyright protection. The purely rational alphabetization of a phone book, for instance, does not merit protection because it is a highly likely result given the practical needs of the phonebook's users.

To measure the probability that a work will be created, we must understand what constrains or acts as a condition on a work's creation. The phonebook again provides a useful example. As noted above, the practical function of a phonebook requires that numbers are retrievable with minimal effort. Alphabetization, therefore, is one of only a few arrangements suitable to this purpose. In this way, the practical requirements of a phonebook highly constrain the resulting work; the typical white pages are an almost certain, and, accordingly, non-copyrighable result.

Section I of this Comment looks carefully at the fundamental requirements for copyright protection that preceded *Feist*, including the idea/expression dichotomy, the merger doctrine and its corollary *scènes à faire*, and the lower pre-*Feist* standard for copyrightability. Section II describes *Feist* before assessing the disparate academic and legal interpretations that have followed the decision. The Section concludes that *Feist's* confusing language and ambiguous holding left copyright law without clear bearing. Section III outlines the basic contours of probability before detailing the probability theory this Comment proposes as a test for determining legal "creativity." In fact, the Section contends that current legal applications of *Feist* are nothing more than a confused form of the probability theory. Sections IV-VI work through the analysis of probability over three distinct regions in a spectrum of constraint: the highly constrained work, the work of medium constraint, and the unconstrained work.

I. THE TRADITIONAL REQUIREMENTS FOR COPYRIGHT PROTECTION

Congress' power to pass laws pertaining to copyrights derives from Article I, Section 8, Clause 8 of the Constitution, the so-called "copyright-patent clause." It gives Congress the power "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective

Writings and Discoveries.”⁸ Over the course of the history of copyright law, both the terms “writings” and “limited Times” have expanded dramatically.⁹ In its current form, the Copyright Act grants protection to a wide range of works, from books and songs to pantomimes, computer programs, and architectural works,¹⁰ for a period of the life of the author plus seventy years.¹¹ More specifically, these rights vest in “original works of authorship fixed in a tangible medium of expression.”¹²

As a backstop to the statutory requirements of originality and fixation, the copyright-patent clause explicitly incorporates a utilitarian theory that grounds copyright protection in a balance between private motivation and public availability. On one hand, the theory posits that without incentive to create, authors will not bother to better society with their contributions.¹³ Alternatively, if copyright law grants authors too great a monopoly over their works, they will not disseminate their works as efficiently or widely to the public.¹⁴ As the Supreme Court explained in *Twentieth Century Music Corp. v. Aiken*, “[c]reative work is to be encouraged and rewarded, but private motivation must ultimately serve the cause of promoting broad public availability of literature, music, and the other arts.”¹⁵ To the end of maximizing public benefit, copyright under the utilitarian theory attempts to limit the bundle of rights available to authors to a variety of rights more closely linked to the author’s economic interests – the copying and dissemination of works.¹⁶ Where the public interest runs counter to the author’s right to integrity in a work,¹⁷ that is, the right

⁸ U.S. CONST., art. I, § 8, cl. 8.

⁹ See Ralph S. Brown, *Eligibility for Copyright Protection: A Search for Principled Standards*, 70 MINN. L. REV. 579, 581 (1986).

¹⁰ 17 U.S.C. § 106 (2002) (listing the six classes of works worthy of copyright protection).

¹¹ 17 U.S.C. § 302(a) (1998).

¹² 17 U.S.C. § 102(a) (1990).

¹³ See, e.g., *Computer Assocs. Int’l v. Altai*, 982 F.2d 693, 696 (2d Cir. 1992).

¹⁴ *Id.*

¹⁵ *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975).

¹⁶ Brown, *supra* note 9. See also 17 U.S.C. § 106 (2000) (outlining the six different rights that U.S. copyright law protects, including rights to distribution and reproduction).

¹⁷ 17 U.S.C. § 106A (2000) embodies a somewhat underwhelming form of moral rights protection in the American utilitarian system. It reads in part:

(a) Rights of attribution and integrity. Subject to section 107 and independent of the exclusive rights provided in section 106, the author of a work of visual art--

(1) shall have the right--

(A) to claim authorship of that work, and

not to have one's work mutilated or altered, utilitarian copyright systems typically defer to the public.¹⁸

In accordance with the utilitarian theory's fear of an unduly broad monopoly, American copyright jurisprudence has long subscribed to the idea/expression dichotomy,¹⁹ which holds that ideas, unlike the expression of ideas, are not the proper subject of copyright.²⁰ In 1879, the Supreme Court in *Baker v. Selden*²¹ denied copyright protection for a set of accounting tables, the Selden System, where Selden sought protection against Baker's allegedly infringing accounting tables.²² The Court held that protection in the book did not extend to an "exclusive property in the art described therein,"²³ and that all were thus free to make use of Selden's accounting system.²⁴ Consistent with the utilitarian purpose of copyright, the Court sought to serve the public interest in dissemination of the accounting system and tables without unduly limiting Selden's (and other authors') interests in their creative output.²⁵

While *Baker v. Selden* arguably set forth "a universal point of demarcation for separating unprotectable ideas and protectable expression,"²⁶ Judge Learned Hand later added to the discussion by

(B) to prevent the use of his or her name as the author of any work of visual art which he or she did not create;

(2) shall have the right to prevent the use of his or her name as the author of the work of visual art in the event of a distortion, mutilation, or other modification of the work which would be prejudicial to his or her honor or reputation; and

(3) subject to the limitations set forth in section 113(d), shall have the right--

(A) to prevent any intentional distortion, mutilation, or other modification of that work which would be prejudicial to his or her honor or reputation, and any intentional distortion, mutilation, or modification of that work is a violation of that right, and

(B) to prevent any destruction of a work of recognized stature, and any intentional or grossly negligent destruction of that work is a violation of that right.

¹⁸ See e.g., *Computer Assocs. Int'l., Inc.*, 982 F.2d at 693. The language cited gives explicit priority to the public's interest.

¹⁹ See, e.g., *Baker v. Selden*, 101 U.S. 99 (1879).

²⁰ *Id.* If too broad an idea were granted protection, others would not be free to use that idea. For instance, if someone could copyright the idea of a comedy, the first comedy would prevent all subsequent comedic attempts.

²¹ *Id.*

²² *Id.* at 100.

²³ *Id.* at 102.

²⁴ *Id.*

²⁵ *Id.* The Court relevantly stated that protection of the Selden System outside the world of patent law "would be a surprise and fraud on the public." *Id.*

²⁶ Dale P. Olson, *The Uneasy Legacy of Baker v. Selden*, 43 S.D. L. REV. 604, 607 (1998).

describing the difficulty of precisely identifying the line between an idea and an expression. Hand's statement, set forth in *Nichols v. Universal Pictures, Corp.*²⁷ and commonly referred to as the "abstractions test,"²⁸ came in response to a dispute over the infringement of a play. While the two plays at issue shared little in the way of dialogue, characterization, or ultimate outcome, each generally involved feuding Jewish and Irish families whose children ultimately fall in love.²⁹ The determinative issue in the case was whether protection in the allegedly infringed play extended, in the absence of literal infringement, to the points of commonality between the two works. To guide this determination, Hand famously posited:

[U]pon 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 play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright would prevent use of his 'ideas' to which, apart from their expression, his property is never extended.³⁰

While Hand's statement provides no clear answers as to what constitutes an unprotectable idea as opposed to protectable expression,³¹ the statement does sketch out a way of assessing the protectability of works across a spectrum of breadth – from the most specific expression chosen by the author, which merits greater protection, to the broadest idea encompassing little more than a vague movement of characters and plot elements, which merits no protection at all. In *Nichols*, Hand applied his formula to find that the elements common to the two plays at issue, fertile lovers with the same conflict of ethnicity, for instance, fell on the broad end of the spectrum, and

²⁷ 45 F.2d 119 (2d Cir. 1930).

²⁸ See, e.g., Edward Samuels, *The Idea-Expression Dichotomy in Copyright Law*, 56 TENN. L. REV. 321, 339 (1989).

²⁹ *Nichols*, 45 F.2d at 120-21.

³⁰ *Id.* at 121. According to this view, the idea/expression dichotomy is not so much a dichotomy as it is a spectrum of characterizations.

³¹ *Id.* Hand admits that fact in the opinion. "Nobody has ever been able to fix that boundary, and nobody ever can." *Id.*

accordingly did not merit copyright protection.³²

In cases where the spectrum does not offer the range that Hand described, and a work is deemed capable of few possible expressions of the work's underlying ideas, the merger doctrine precludes the work from being copyrighted. Under this doctrine, the work's idea is held to "merge" with the work's expression. For example, in *Kern River Gas Transmission Co. v. Coastal Corp.*,³³ the Fifth Circuit considered the copyrightability of a map containing the proposed path for a pipeline.³⁴ The court found that the map was not protectable because the pipeline's trajectory was already determined.³⁵ The idea of mapping the pipe, therefore, merged with the map itself through the extremely limited number of variations that the cartographer could select when depicting the soon-existent pipe.³⁶ Put in terms of Learned Hand's test, the broadest and least protectable description of the work, drafting a map, collapsed into the most specific description of the work, the actual rendering on the map itself.

The merger doctrine assumes a corollary form under the *scènes à faire*³⁷ doctrine. Like merger, *scènes à faire* is predicated on the limited number of permutations that a work may assume within its general genre. For example, in *Alexander v. Haley*,³⁸ the plaintiff brought suit against the author of the book *Roots* for the infringement of an earlier novel, *Jubilee*, which, like *Roots*, was set in the antebellum South.³⁹ The District Court for the Southern District of New York granted summary judgment for the defendant on the grounds that the elements shared between the two books were not protectable under copyright.⁴⁰ The court justified this finding by resorting to, *inter alia*, the *scènes à faire* doctrine because works

³² *Id.* at 122.

³³ 899 F.2d 1458 (5th Cir. 1990). Perhaps the most often cited merger case is *Morrisey v. Procter & Gamble*, 379 F.2d 675 (1st Cir. 1967) (denying an infringement claim in what appeared to be clear plagiarism and finding that the idea of writing a box top contest instruction merged with the actual form that the writing assumed).

³⁴ *Kern River Gas Transmission Co. v. Coastal Corp.*, 899 F.2d 1458, 1459 (5th Cir. 1990).

³⁵ *Id.* at 1463-64.

³⁶ *Id.* at 1464.

³⁷ This French phrase translates literally to "scenes to do" but could be read more imposingly as "scenes to be done."

³⁸ 460 F. Supp. 40 (S.D.N.Y. 1978). For a broader application of *scènes à faire* to a more technological domain, see the discussion of *Mitel*, *infra* Section VI.

³⁹ *Alexander*, 460 F. Supp. at 42.

⁴⁰ *Id.* at 45.

treating the topic of slavery required certain literary “incidents, characters, or settings.”⁴¹ On this count, the court noted that “[a]ttempted escapes, flights through the woods pursued by baying dogs, the sorrowful or happy singing of slaves, the atrocity of the buying and selling of human beings, and other miseries”⁴² were examples of how the idea of writing a novel about slavery merged into the actual novel itself, and as such, copyright could not extend to those elements.

Through the better part of the twentieth century, a work that successfully cleared the idea/expression and merger hurdles had only to clear the minimal additional hurdle of originality to obtain protection.⁴³ In *Bleistein v. Donaldson Lithographing Co.*,⁴⁴ Justice Holmes delivered the majority opinion upholding copyright in chromolithographic advertisements for the circus.⁴⁵ While Holmes premised this reversal of the Sixth Circuit on the general notion that judges should not deny copyright in works for lack of perceived aesthetic merit or cultural erudition,⁴⁶ he further set forth a standard for copyrightable originality: “[t]he copy is the personal reaction of an individual upon nature. Personality always contains something unique.”⁴⁷ This standard came to require that an author be the origin of a work, although anything more than plagiarism satisfied this bar.⁴⁸ Holmes’ originality standard from *Bleistein* continued in application

⁴¹ *Id.*

⁴² *Id.*

⁴³ *But see* Diane Leenheer Zimmerman, *It’s an Original! (?): In Pursuit of Copyright’s Elusive Essence*, 28 COLUM. J.L. & ARTS 187 (2005). Professor Zimmerman states that the earliest decisions of the Supreme Court leave the impression that a true “creativity” standard was in play; “copyright was intended to promote socially valuable kinds of work that also exhibited some fairly high level of human imagination or intellectual input.” *Id.* at 201. She goes on to note, however, (as this paragraph will, too) that Justice Holmes dispelled this possibility in a later opinion. *Id.* at 201-02.

⁴⁴ 188 U.S. 239 (1903).

⁴⁵ *Id.* at 248. The holding reversed both the district court, *Bleistein v. Donaldson Lithographing Co.*, 98 F. 608 (C.C.D. Ky. 1899), *aff’d*, *Courier Lithographing Co. v. Donaldson Lithographing Co.*, 104 F. 993 (6th Cir. 1900), *rev’d*, 188 U.S. 239 (1903), and the Sixth Circuit Court of Appeals, *Courier Lithographing Co. v. Donaldson Lithographing Co.*, 104 F. 993 (6th Cir. 1900), *rev’d*, *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239 (1903).

⁴⁶ *Bleistein*, 188 U.S. at 251.

⁴⁷ *Id.* at 250.

⁴⁸ Howard B. Abrams, *Originality and Creativity in Copyright Law*, 55 LAW & CONTEMP. PROBS. 3, 7 (1992).

until and beyond the Copyright Act of 1976,⁴⁹ which specifically incorporated the common law definition of originality.⁵⁰

II. *FEIST*'S NEW "CREATIVITY" STANDARD AND ITS REPERCUSSIONS

Despite variation in the test's application, the abstractions test for copyrightability under the idea/expression dichotomy and merger doctrine has remained a fixture of copyright law. In its 1991 *Feist* decision, however, the Supreme Court dramatically retooled the *Bleistein* originality standard.⁵¹ Where Holmes' standard required merely that a work's author not have slavishly copied an earlier work,⁵² Justice O'Connor, writing for the majority in *Feist*, increased this bar by adding a constitutional dimension of "creativity" to the quantum of copyrightable protectability.⁵³ As this Section notes, both scholarly and judicial commentators have struggled over the last fifteen years to pin down the exact dimensions of the creativity requirement.

Feist involved the alleged infringement of the white pages of a telephone book.⁵⁴ Rural Telephone Service Company compiled the addresses and phone numbers of residents of Northwest Kansas and published them in a phonebook.⁵⁵ Feist Publications, Inc. produced a similar phonebook that covered a larger geographical area.⁵⁶ To limit the costs of publication of its phonebook, Feist obtained licenses from other phonebook companies to use their data in the compilation.⁵⁷ Rural, however, refused this licensing.⁵⁸ In response, Feist verified many of the addresses and phone numbers in Rural's white pages, but ultimately copied some 1,309 of Rural's nearly 47,000 listings.⁵⁹ Among these listings were four fictitious names and numbers that

⁴⁹ See, e.g., *L. Batlin & Son v. Snyder*, 536 F.2d 486 (2d Cir. 1976). See also *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99 (2d Cir. 1951).

⁵⁰ See *Abrams*, *supra* note 48, at 7 (citing to the legislative history of the 1976 Act to this effect).

⁵¹ 499 U.S. 340.

⁵² See *Abrams* *supra* note 48. See also *Alfred Bell & Co.*, 191 F.2d at 99 (holding mezzotint copies of works of art met the copyrightable standard because the copying could only be imperfect at best).

⁵³ *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co., Inc.*, 499 U.S. 340, 345 (1991).

⁵⁴ *Id.* at 342.

⁵⁵ *Id.*

⁵⁶ *Id.* at 343.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 343-44.

Rural planted to trap would-be infringing parties.⁶⁰

Justice O'Connor's opinion held that Rural's phonebooks were not worthy of copyright protection. En route to this decision, however, she imposed originality as a constitutional⁶¹ requirement for copyright protection. This conclusion came as the result of Justice Miller's two seemingly inconsistent legal statements in *The Trade-Mark Cases*.⁶² These statements were 1) facts are not worthy of copyright protection, and 2) compilations of facts are.⁶³ This distinction in copyrightability, O'Connor reasoned, owed to the originality in arrangement of the uncopyrightable facts.⁶⁴ "Originality remains the *sine qua non* of copyright."⁶⁵ To qualify for copyright protection, however, that originality also required the new element of "a minimal degree of creativity"⁶⁶ that came as a result of the author or compiler's selection.

In resetting the bar for copyright protection by including creativity, Justice O'Connor explicitly rejected any relation between the labor expended on a work and its eligibility for copyright. Copyright, she stated, "is not to reward the labor of authors, but 'to promote the Progress of Science and useful Arts.'"⁶⁷ As such, the author's expenditures in creating a compilation or other work cannot be the work's sole basis for protection.⁶⁸ This rejection explicitly overruled a line of cases invoking as justification for copyright the "sweat of the brow" doctrine, which stated that the investment of labor in collecting facts (like names, addresses, and phone numbers for a telephone book) was an adequate contribution to merit copyright protection.⁶⁹ These cases "had numerous flaws,"⁷⁰ the most glaring of which was that the doctrine extended protection to facts and ideas.

To flesh out the contours of the new standard more clearly, Justice O'Connor went on to review the requirement in compilation cases in light of the statutory definition of compilation.⁷¹ While she

⁶⁰ *Id.* at 344.

⁶¹ Congress' power to pass copyright is mentioned in Brown, *supra* note 9.

⁶² *Feist*, 499 U.S. at 344-45. See also *The Trade-Mark Cases*, 100 U.S. 82 (1879).

⁶³ *Feist*, 499 U.S. at 344-45.

⁶⁴ *Id.* at 345.

⁶⁵ *Id.*

⁶⁶ *Id.* at 348.

⁶⁷ *Id.* at 349 (quoting U.S. CONST. art I, § 8, cl. 8).

⁶⁸ *Id.*

⁶⁹ *Id.* at 352-53.

⁷⁰ *Id.* at 353.

⁷¹ The statutory definition of "compilation" reads: "a work formed by the collection and assembly of preexisting materials or of data that are selected,

recognized that this definition contained three distinct parts,⁷² O'Connor focused on the requirement that the compilation exhibit some selection, coordination, or arrangement.⁷³ This statutory language reinforced her finding in favor of creativity, and she noted that the "originality requirement is not particularly stringent."⁷⁴ She added, by way of a proof by negative, that "there remains a narrow category of works in which the creative spark is so utterly lacking or so trivial as to be virtually nonexistent."⁷⁵ By implication of the term "narrow," O'Connor seemed determined to emphasize the minimal effect that the *Feist* opinion would theoretically have on copyright law.

The specific holding that Rural's phonebook was not copyrightable added a few final touches to the new originality standard. The Rural white pages (like the white pages in every phonebook) were arranged alphabetically and contained entries for names, addresses, and phone numbers.⁷⁶ O'Connor found this arrangement did require a huge investment in gathering facts, but those facts did not "owe their origin"⁷⁷ to Rural. The compilation of these facts in alphabetical order, O'Connor added, "could not be more obvious."⁷⁸ She proceeded to designate the work "garden-variety"⁷⁹ and "devoid of even the slightest trace of creativity."⁸⁰ As a final note, she pointed out that the alphabetization of lists was an "age-old practice"⁸¹ that was "practically inevitable."⁸² Although this holding left the *Feist* originality standard largely undefined, O'Connor's language more aptly details that which is obviously *not* worthy of protection.

coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship." 17 U.S.C. § 101 (1994).

⁷² *Feist*, 499 U.S. at 357. O'Connor gave the following parsing: "The statute identifies three distinct elements and requires each to be met for a work to qualify as a copyrightable compilation: (1) the collection and assembly of pre-existing material, facts, or data; (2) the selection, coordination, or arrangement of those materials; and (3) the creation, by virtue of the particular selection, coordination, or arrangement, of an "original" work of authorship." *Id.*

⁷³ *Id.*

⁷⁴ *Id.* at 358.

⁷⁵ *Id.* at 359.

⁷⁶ *Id.* at 361-62.

⁷⁷ *Id.*

⁷⁸ *Id.* at 362.

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.* at 363.

⁸² *Id.*

Feist's ambiguous holding has resulted in widely varying interpretations. Professor Russ VerSteeg found the addition of a "modicum of creativity" anathema to the purpose and legislative history of the 1976 Copyright Act⁸³ because the term "creativity" eluded any legal definition⁸⁴ and would accordingly be simply too subjective to apply. VerSteeg feared judges would be "free to demand what may amount to novelty, ingenuity, imagination, or a high degree of aesthetic merit, all in the name of 'creativity.'"⁸⁵ Other commentators have keyed in on O'Connor's limited language in *Feist* in construing "creativity" as a minimal threshold.⁸⁶ Regardless of the "correct" interpretation of *Feist*, fifteen years of commentary following the case has opened a viable range of interpretation from "ingenuity or imagination" to "anything more than just the sweat of the brow."

Perhaps more importantly, *Feist*'s actual judicial application has been little more than tepid. Because most courts tend to subscribe to the lower end interpretation of *Feist*, they are left with nothing to apply. Their opinions include phrases such as "[t]he amount of creativity required for copyright protection...is decidedly small,"⁸⁷ and "the threshold of creativity is...very slight,"⁸⁸ and sweep any substantive application of *Feist* under the rug. *Feist*, therefore, has become nothing more than an oft-cited truism with little substantive force.⁸⁹ When substance is required, many courts simply proceed to

⁸³ Russ VerSteeg, *Sparks in the Tinderbox: Feist, "Creativity," and the Legislative History of the 1976 Copyright Act*, 56 U. PITT. L. REV. 549, 550-55 (1995).

⁸⁴ *Id.* at 566.

⁸⁵ *Id.* at 586. The Canadian Supreme Court recently echoed VerSteeg's concern when it rejected *Feist*'s standard in *CCH Canadian Ltd. v. Law Society of Upper Canada*, [2004] 1 S.C.R. 339 (Can.). There, the Court held that a work "need not be creative, in the sense of being novel or unique." *Id.* at 20. Professor Daniel Gervais has strongly disputed the Court's interpretation of *Feist*. With the help of a side-by-side linguistic comparison of *CCH* and *Feist*, Gervais sought to prove the similarities between the two cases' holdings. Gervais argues, therefore, that the Canadian Court actually accepted *Feist* but misinterpreted its language. See Daniel Gervais, *Copyright in Canada: An Update after CCH*, 203 R.I.D.A. 2 (2005).

⁸⁶ Abrams, *supra* note 48, at 43 (finding *Feist*'s mandate to be largely in accord with the earlier *Bleistein* standard and further noting that *Feist* was "anything but a wholesale attack on compilations as copyrightable works").

⁸⁷ *Lipton v. Nature Co.*, 71 F.3d 464, 470 (2d. Cir. 1995).

⁸⁸ *CMM Cable Rep. Inc. v. Ocean Coast Props., Inc.*, 97 F.3d 1504, 1516 (1st Cir. 1996).

⁸⁹ It is precisely this lack of anchoring that caused Professor VerSteeg to wonder if *Feist* would just become an excuse for judges to apply their own subjective

the more traditional merger doctrine and idea/expression dichotomy.⁹⁰ In fact, one wonders whether *Feist's* leap to creativity was even necessary. The Court could have denied copyright in the phonebook as a typical merger case,⁹¹ and the judicial community would be none the worse for the wear.

The varying interpretations and the uncertain parroting of *Feist's* language are the logical result of the case's fundamentally ambiguous holding. Since the case found the phonebook insufficiently creative, the Court's language "garden variety," "obvious," and "trivial" provide guidance to what is *not* creative. This proof by negation results in no coherent line of separation, unless the standard for what *is* creative sits flush against the Court's limits as to what *is not* creative. Instead, there will necessarily remain a class of works with greater creativity than the phonebook in *Feist* which still fail to meet the *Feist* creativity requirement.

The chaotic state of the law in copyright bears out concern about the potential breadth of application of *Feist's* holding. Various classes of work garner copyright (and are deemed creative, by extension) through widely disparate filters. If a company specializes in producing fill-in insurance forms, copyright follows from the "blank forms" doctrine if the insurance form "conveys information."⁹² If a movie producer wishes to sue for protection of a short phrase in a movie, that phrase will be protected only if it is "readily recognizable"⁹³ in some courts, and "an appreciable amount of text"⁹⁴

aesthetic opinions in finding creativity. *See supra* note 84. In other words, *Feist* would be nothing more than a *post hoc* justification for potentially biased decisions.

⁹⁰ *See, e.g., CMM Cable Rep. Inc.*, 97 F.3d at 1504 (holding that the idea or method of a radio giveaway was not protectable and that promotional materials associated with that contest employed phrases whose expression effectively merged with their idea). If *Feist* is cited, it is often for the proposition that facts are not copyrightable. Yet, *Feist* did not establish this principle. *See, e.g., Harper & Row Publishers, Inc. v. Nation Enter.*, 471 U.S. 539 (1985), *Miller v. Universal City Studios, Inc.*, 650 F.2d 1365 (5th Cir. 1981) (finding the use of plaintiff's research and facts not to infringe the plaintiff's copyrightable work as such because research and facts were not copyrightable in and of themselves), and *Hoehling v. Universal City Studios, Inc.*, 618 F.2d 972 (2d Cir. 1980).

⁹¹ As far as the author is aware, such a view has not been suggested elsewhere. However, use of the merger doctrine makes sense because one phonebook is like another phonebook. A phonebook is thus composed of mere stock elements like an alphabetized list and white pages. *Cf. Alexander v. Haley*, 460 F. Supp. 40 (S.D.N.Y. 1978).

⁹² *See, e.g., Bibbero Sys., Inc. v. Colwell Sys., Inc.*, 893 F.2d 1104, 1106 (9th Cir. 1990).

⁹³ *See Murray Hill Publ'ns v. ABC Commc'ns*, 264 F.3d 622, 633 (6th Cir. 2001)

in others. If a used car company wishes to protect its pricing estimates, the company must prove that the estimates are “soft facts.”⁹⁵ If a parts company wishes to protect the serial numbering system for its product line, the company must show that the numbering was not “arbitrary,”⁹⁶ and the list goes on.⁹⁷

While each of these tests claims to determine what is creative, they are not consistent with one another. For instance, the information conveyed on a blank insurance form and the used car dealer’s “soft fact” price might not be “readily recognizable” or an “appreciable amount of text” and nevertheless, may receive copyright protection. A non-arbitrary parts numbering system might be protected even if it does not convey information or involve the creativity of a “soft fact.” The “readily recognizable” movie line might not convey anything creative and might go so far as to convey no information whatsoever. Therefore, different forms of expression receive the same copyright protection differently and have accordingly proven difficult to analyze with macroscopic consistency.⁹⁸

Because of the difficulty in analogizing cases, the holding as to the specific facts of *Feist* has proven less than helpful as well. *Feist* held, on the most basic factual level, that the simple alphabetization of a list is not copyrightable. However, very few cases will claim copyright in such a straightforward manner. The farthest reaches of *Feist*’s factual holding extend to other sequential ordering. In *Lipton v.*

(holding that use of the phrase “J.P. on J.R. in the A.M.” in a movie was not such a “readily recognizable” line). See also *Universal City Studios, Inc. v. Kamar Indus., Inc.*, 217 U.S.P.Q. 1162 (S.D.Tex. 1982) (finding protection in “E.T. phone home!” and “I love you E.T”).

⁹⁴ *Alberto-Culver Co. v. Andrea Dumon, Inc.* 466 F.2d 705, 711 (7th Cir. 1972) (finding a “most personal sort of deodorant” was uncopyrightable). The vitality of this case may be somewhat in question after *Feist*.

⁹⁵ See *CCC Info. Serv., Inc. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61 (2d Cir. 1994).

⁹⁶ See, e.g., *Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208 (8th Cir. 1986).

⁹⁷ See generally *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823 (10th Cir. 1993) (explaining computer software is frequently held to the “abstraction-filtration-comparison test”). See also *Computer Assocs. Int’l., Inc. v. Altai*, 982 F.2d 693 (2d Cir. 1992); *L. Batlin & Son v. Snyder*, 536 F.2d 486 (2d Cir. 1976) (finding derivative works are copyrightable if they display a “substantial variation” over the earlier work); and *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99 (2d Cir. 1951). As this Section notes, these tests seem to track different things. The short phrase test for recognizability, for instance, seems to depend on public interest in a phrase. No other test depends on this.

⁹⁸ Additionally, several of these tests do not measure creativity with any precision.

Nature Co.,⁹⁹ for instance, the Second Circuit noted that “mechanical arrangements,” like chronological ordering of list elements, would not receive copyright protection.¹⁰⁰ Furthermore, *Feist*’s overruling of the “sweat of the brow” no longer sees much serious argument. *Feist*’s effect on copyright law thus falls squarely in line with Professor Zimmerman’s comment: “[*Feist*] neither gives us an originality standard with real teeth nor an explication of the core nub of copyright into which those teeth (were they to erupt) would be intended to bite.”¹⁰¹ The probability theory outlined in this Comment proposes a solution to *Feist*’s range of interpretations, the divergent set of tests for copyrightability, and the difficulties in analogizing copyright cases.

III. AN OUTLINE OF THE PROBABILITY THEORY OF COPYRIGHTABLE CREATIVITY

Probability is the study of the likelihood, or chance, of the occurrence of an event. Examples of probability are everywhere: the purchase of a lottery ticket comes with a small chance (or low probability)¹⁰² of hitting it big, and the trifecta¹⁰³ bet on a horse race carries a different (but also relatively small) chance of winning; in contrast, a starting hand of two aces in Texas Hold ‘Em¹⁰⁴ will generally win at least four out of five random hands. As these examples might suggest, the study of probability was born from the study of possibilities in common games.¹⁰⁵ However, probability’s modern applications extend equally to practical fields like “engineering, business, and computer science,”¹⁰⁶ and, as this

⁹⁹ 71 F.3d 464 (2d Cir. 1995).

¹⁰⁰ *Id.* at 470. See also *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366 (10th Cir. 1997) (holding that serial number digits set out in ascending or descending order did not demonstrate adequately creative arrangement).

¹⁰¹ Zimmerman, *supra* note 43, at 209.

¹⁰² For instance, if the lottery game involves the independent selection of three balls numbered from zero to nine which must be exactly guessed, the player has a one in ten chance of picking any single ball. But taken as a whole, the player only has a $(1/10) \times (1/10) \times (1/10)$, or one in one thousand, chance of guessing all three correctly in the correct order. Typically, lottery games involve more balls with wider number ranges, so the odds of winning become much smaller.

¹⁰³ A trifecta is where the person betting attempts to pick the top three horses finishing the race in the exact order that they will finish. It will typically come with long odds, but a big payout if the bet is correct.

¹⁰⁴ Two aces as a starting hand is colloquially called “pocket aces” or “bullets.”

¹⁰⁵ RICHARD L. SCHEAFFER, INTRODUCTION TO PROBABILITY AND ITS APPLICATIONS, 3, 5 (Duxbury Press 1995).

¹⁰⁶ *Id.* at 1.

Comment posits, to the field of copyright law.

While a full discussion of the field of probability is not necessary to understand the probability theory set forth here, a few basic points about the study of probability are in order. First, probability tracks the likelihood of events on a scale from zero to one, where zero denotes an outcome that cannot occur and one denotes an outcome that is certain to occur.¹⁰⁷ The closer that the probability of an event is to one, the more likely it is that that event will occur. Second, a given probabilistic event has a range of possible outcomes, called a sample space.¹⁰⁸ When a coin is flipped, for example, two outcomes are possible: one of two faces of the coin will show when the coin settles. The sum of the probabilities of all possible outcomes must equal one,¹⁰⁹ meaning that it is certain that one of the outcomes will occur.¹¹⁰ Finally and importantly, the probability of an outcome is not necessarily equal to $1/(\text{the total number of outcomes})$.¹¹¹ In other words, if a bag of marbles contains three red marbles and one blue marble, the chance of drawing a blue marble is not $1/2$, even though the marble drawn has to be either blue or red; instead, the chance of drawing the blue marble will be $1/4$.

One can calculate the probability of the occurrence of multiple events, and that probability approaches zero as more events are added. If a coin is flipped two times, for example, and the heads and tails are equally likely, the chance that a heads will result on the first flip alone is one-half, and the chance that a heads will result on the second flip alone is one-half. To calculate the probability that both flips will yield heads, one multiplies the individual probabilities that a heads will occur for each individual flip, that is, $.5$ by $.5$, or $.25$; because the result of the first coin flip has no effect on the second coin flip, the coin flips are independent events.¹¹²

Not all sequential probabilistic events are independent of one another, however.¹¹³ If, for example, a bag of marbles contains two blue marbles and three red marbles, the odds of drawing a blue are $2/5$ or $.4$, and the odds of drawing a red are $3/5$ or $.6$. If a blue marble is initially drawn, one blue marble and three red marbles remain;

¹⁰⁷ *Id.* at 15.

¹⁰⁸ *Id.* at 13-14.

¹⁰⁹ *Id.*

¹¹⁰ *Id.* at 13-15.

¹¹¹ See SCHEAFFER, *supra* note 105 at 14-15. Scheaffer walks through a similar example involving a toss of two dice.

¹¹² *Id.* at 38-40.

¹¹³ *Id.* at 32-35.

accordingly, the probability of drawing a blue marble changes to 1/4 or .25, and the probability of drawing a red changes to 3/4 or .75. The new probability of drawing each marble after the blue marble is initially drawn is called a conditional probability. As its name suggests, conditional probability measures the probability of an outcome based on knowledge of another fact on which the outcome depends.¹¹⁴

In its gaming form, probability is a forward-looking mathematical field incapable of certain prediction.¹¹⁵ But because the precision of a probabilistic analysis has little to do with the actual outcome of an “event,”¹¹⁶ probability can work equally well in a rear-looking direction.¹¹⁷ In that case, a result has been observed, and the sequence of events leading to this result may be analyzed to determine whether the empirical result was a likely or unlikely outcome. For instance, if a flip of a standard coin yields a heads, both empirical and common sense-based analysis suggests that prior to this result, a coin flip would result in heads one-half of the time.¹¹⁸ The fact that a heads actually resulted does not alter the precision of the prior probability of one-half (or .5).

This rear-looking analysis is precisely what the probability theory of copyright law proposes. There must be a single, defined work at issue in any given copyright case disputing the qualification of a work for copyright.¹¹⁹ In theory, the probability of a work’s creation

¹¹⁴ *Id.*

¹¹⁵ *Id.* at 3. Scheaffer contrasts situations governed by deterministic equations. In these cases, application of equations may predict a system’s future behavior – gravity, for instance, will work at a certain rate; current will sink at a certain level given a voltage and resistance level. *See id.* at 2-3.

¹¹⁶ *See* SCHEAFFER, *supra* note 105 at 14. “Event” is the generic term of art for an occurrence measured probabilistically.

¹¹⁷ Scholars have debated the value of this type of rear-looking probabilistic analysis in the courtroom setting. *See, e.g.,* Finkelstein and Fairley, *A Bayesian Approach to Identification Evidence*, 83 HARV. L.REV. 489 (1970).

¹¹⁸ The discrepancy between a single result and the probability associated with that event is reflected in the difference between a single probabilistic event, which may only have a single outcome, and a “long-run, or limiting relative frequency,” which by its larger sample size of probabilistic events, begins to more accurately reflect the real probability of an event. *Id.* at 6-8.

¹¹⁹ The work may be viewed as an integrated whole or as individual parts, but there must be something concrete at stake. *See, e.g.,* *Acuff-Rose Music v. Jostens Inc.*, 988 F. Supp 289 (S.D.N.Y. 1997) (where the claim included only partial infringement of the refrain of a country song), *aff’d*, 155 F.3d 140 (2d Cir. 1998). A single work can exist on multiple levels, however, as the idea/expression dichotomy would hold. Each of these levels, as we shall see, is susceptible of analysis.

can be roughly valued. *In vacuo*, without regard to the work's topic or influences, however, the probability that an author would have created a given work is either incalculable or infinitesimal. This would be like guessing the outcome of the lottery without knowing what ranges of numbers are in play or guessing the roll of the dice without knowing how many sides the dice has.

Generally speaking, the precision of probability, by this token, is dependent on knowledge of the circumstances surrounding the event, and these circumstances are the very conditions that determine conditional probabilities. Critical, therefore, to a probability theory of copyright law, is an understanding of these conditions or "constraints" as they operate through a work's genesis. A copyrightable work's probability of result is only as good as knowledge of constraint on the creative process leading up to that work. Unfortunately, an easy, all-encompassing list of "constraints" defies enumeration. There are simply too wide a variety of works that potentially merit copyright protection, from plays,¹²⁰ contest instructions,¹²¹ and tourist t-shirts,¹²² to used car price estimates,¹²³ blank medical insurance forms,¹²⁴ and cable television directories.¹²⁵ As the goals and concerns of the process that goes into creating these wide-ranging works vary, it follows that there is no easy list of that which constrains the creative process in all cases.

A. What is a "Constraint?"

A well-placed case law example serves as a good starting point in forming, if not a comprehensive list of constraints, then at least a working definition of constraint as a general concept. In *Computer Associates International v. Altai, Inc.*,¹²⁶ the Second Circuit set out to create a test that defined protectable elements, even in non-literal form, through expansion of Learned Hand's abstractions test. The Second Circuit entitled the three-part test abstraction-filtration-comparison,¹²⁷ the first two parts of which are relevant here.¹²⁸ The

¹²⁰ *Nichols v. Universal Pictures, Corp.*, 45 F.2d 119 (2d Cir. 1930).

¹²¹ *Morrissey v. Procter & Gamble*, 379 F.2d 675 (1st Cir. 1967).

¹²² *Matthews v. Freedman*, 157 F.3d 25 (1st Cir. 1998).

¹²³ *CCC Info. Servs. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61 (2d Cir. 1994).

¹²⁴ *Bibbero Sys., Inc. v. Colwell Sys., Inc.*, 893 F.2d 1104 (9th Cir. 1990).

¹²⁵ *Warren Publ'g, Inc. v. Microdos Data Corp.*, 115 F.3d 1509 (11th Cir. 1997).

¹²⁶ 982 F.2d 693, 706 (2d Cir. 1992).

¹²⁷ *Id.*

first step, abstraction, merely incorporated Hand's test, which would view a work like the computer program at issue from the narrowest expression embodied in the specific code to the broadest idea that would briefly summarize the program's purpose.¹²⁹ The second step, filtration, sifted protectable from non-protectable elements of the work by evaluating, at each abstraction level, whether the work was merely an "idea," whether efficiency dictated the work, whether it constituted material taken from the public domain, or whether the work was "required by factors external to the program."¹³⁰ If the work fell into one of these categories, it would not receive protection.¹³¹ In describing the "idea" limit, the court reviewed the merger doctrine and noted how efficiency concerns could, like normal merger cases, limit coding to a few expressions.¹³² Addressing the external factors point, the court described restrictions in programming expression imposed, for example, by common usage programming techniques, industry specifications, and compatibility issues.¹³³ Finally, the court would eliminate from protection software elements which by virtue of free sharing had become part of the public domain.¹³⁴

Through the first two steps of the abstraction-filtration-comparison test, *Altai* provides an exhaustive list of constraints on the software creation process at issue. In probabilistic terms, all four of the categories mentioned serve to limit the range of possible expression for a programmer, and thereby raise the probability of the remaining

¹²⁸ The third step, comparison, is only relevant for determining whether infringement has in fact occurred. It basically compares the leftovers of the first two steps with the infringing work to see if anything protectable was appropriated. It does not, therefore, determine if and to what extent a work is protectable. *Id.* at 710. Since infringement is not part of this article's analysis, the step merits no further mention.

¹²⁹ *Id.* at 706.

¹³⁰ *Id.* at 707.

¹³¹ *Id.*

¹³² *Id.* at 707-08. The court thus seems to have collapsed the first two filtration parts listed above into a single efficiency step. The court described its efficiency-merger theory: "[E]fficiency concerns may so narrow the practical range of choice as to make only one or two forms of expression workable options." *Id.* at 708.

¹³³ *Id.* at 709-10. The Court wrote: "[A] programmer's freedom of design choice is often circumscribed by extrinsic considerations such as (1) the mechanical specifications of the computer on which a particular program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer manufacturers' design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry." *Id.*

¹³⁴ *Id.* at 710.

choices. Although the list of constraints set forth in *Altai* is particularly well-suited to the analysis of a computer program's creation, the list also provides a good approach to general cases. No matter the case, a work will have an "idea" and might draw on public domain elements to express the idea. Furthermore, on the topic of external factors, *Altai* more expansively notes that the work in a given case should yield some clue as to what constrained the work's creation, beyond industry standards and computer programming techniques. If a literary work is non-fiction, for instance, one key external factor will be the facts underlying the account.¹³⁵ If a work is photographic in nature, the realism of the medium itself may work as an external factor in limiting expression.¹³⁶ Extrapolating *Altai*'s external factors provides the working definition of "constraint" – any factor which limits the creative process. Factors include, for example, any external limitations imposed by the work's medium, widely-practiced techniques, efficiency concerns, common scene choices, public domain elements, and the work's idea. Analysis of a work in the context of these constraints enables a rough calculation of a probability that the given work would have been created. While the calculation may not be precise on a quantitative level, it will at the very least operate within a range of likelihood, which likelihood in turn permits a judgment about the work's fitness for copyright protection.

B. The Academic and Legal Foundations of Probability Theory

As examination of *Altai* suggests, the probability theory does not grow out of a vacuum. Instead, the theory builds upon both an academic foundation – Professor Daniel Gervais' proposed test for copyrightability – and a legal foundation – the idea/expression dichotomy and the related merger doctrine. Indeed, these foundations take the first steps toward a principled analysis of copyrightable

¹³⁵ See, e.g., *Miller v. Universal City Studios, Inc.*, 650 F.2d 1365, 1368-72 (5th Cir. 1981) (finding that defendant's television miniseries did not infringe plaintiff's literary retelling of a kidnapping since the shared elements were the result of factual research).

¹³⁶ See, e.g., *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 58 (1884), discussed briefly *infra* Section VI. That case held definitively that photographs were worthy of copyright protection; earlier speculation had suggested that the realism of the medium might foreclose protection altogether. *Id.* at 58-60. See also the discussion of *Bridgeman Art Library, Ltd. v. Corel Corp.*, 36 F. Supp. 2d 191, 196 (S.D.N.Y. 1999), *infra* Section IV.

creativity; the probability theory fills in the remainder.

By way of an anchoring point, the probability theory links closely to Gervais' proposed standard for copyrightable creativity. His standard "provides a way to measure creativity by measuring the quality and quantity of creative choices."¹³⁷ A "creative choice" in turn is "one made by the author that is not dictated by the function of the work, the method or technique used, or by applicable standards, or relevant 'good practice.'"¹³⁸ Gervais further notes that purely arbitrary or insignificant choice would not be creative.¹³⁹ Given the presence of creative choices, the author of the work has made something copyrightable, and the protection of the copyright will extend to these choices.

The probability theory embellishes this assessment somewhat, but remains true to Gervais' core statements. Essentially, where the author makes a creative choice within Gervais' meaning, the resulting work becomes less likely. As the author stacks creative choices serially¹⁴⁰ throughout the work, each successive choice lowers the work's overall probability by multiplication of the current probability with the probability of the given creative choice. As a work becomes less likely, with a resulting probability approaching zero, the work merits copyright protection. On the other hand, where the probability of a work's result is anywhere in the range from recognizable to exceptionally high, the work will not qualify for copyright protection. The theory transforms Gervais' test by making two additional points. First, not all variations resulting from creative choice are equally likely. Cases might exist where few variations are possible but one of the few variations is of such low probability as to merit copyright protection. Second, not all variations preserve the underlying meaning that a work seeks to convey.¹⁴¹

In the meantime, the examples that Gervais furnishes above provide a good set of empirical tests for the accuracy¹⁴² of the probability theory. His discussion of works dictated by function, technique, or any other relevant consideration illustrates means of

¹³⁷ Daniel Gervais, *Feist Goes Global: A Comparative Analysis of the Notion of Originality in Copyright Law*, 49 J. CORP. SOC'Y 949, 974 (2002).

¹³⁸ *Id.* at 976-77.

¹³⁹ *Id.* at 977.

¹⁴⁰ *See supra* note 112.

¹⁴¹ The later application of the theory to works of mid-level constraint will explain in detail the concept of meaning, defined by a form of synonymy.

¹⁴² This Comment presumes that Gervais' standard conveys an accurate view of copyrightable creativity.

refining the estimation of a work's probability. Where a functional or utilitarian constraint dictates the work, the likelihood that the work will result becomes that much higher due to the fact that any choice that the author may have confronted was one of a smaller set of choices. For instance, if the author of a digital code chooses the number "1" to designate an "on" position, that author is acting on a scientific convention wherein "1" means "on" and "0" means "off."¹⁴³ In this case, the author had few choices, if any, that would viably express the statement that a circuit was set to "on;" or under the probability theory, it was almost certain that the author would choose "1" to designate "on." Similarly, if a work grows out of a need to reproduce accurately the work of artistic masters, the truly accurate reproduction will reflect no choice.¹⁴⁴ This case, too, offers a highly likely finished product, and accordingly no basis for copyright. In each of these cases, therefore, the probability theory's finding is the same as the prospective finding under Gervais' standard.

In addition to reflections in Gervais' creativity standard, the probability theory represents an offshoot of two common copyright concepts already discussed in this Comment: the idea/expression dichotomy and the merger doctrine. As Learned Hand explained, the idea/expression dichotomy represents not a hard and fast rule of copyrightability, but a threshold that may be set at a variety of locations between pure "idea" and pure "expression."¹⁴⁵ Although this mobility does not furnish a concrete rule, it does cast copyright protection in a more meaningful light. Copyright protection, taken from the view of the telescoping idea/expression dichotomy, is not a simple binary proposition; rather, works must be viewed with an eye toward *how* copyrightable they are. It appears from Hand's test, therefore, that different works should receive different amounts of protection – from the thinnest protection in databases just clearing *Feist's* bar¹⁴⁶ to the strongest protection in a novel or play.

¹⁴³ Any textbook in digital logic will validate this convention. This example is borrowed from *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366 (10th Cir. 1997), where the Tenth Circuit held that the convention nullified the copyrightability of a certain portion of the code at issue. *See infra* Section VI.

¹⁴⁴ *But see* *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*, 191 F.2d 99 (2d Cir. 1951). The probability theory agrees with the outcome, if not the exact reasoning, of this case.

¹⁴⁵ *See supra* note 30.

¹⁴⁶ *Feist* specifically refers to protection in databases as "thin." This paragraph, therefore, builds in large part off the spectrum implied by this one notion. *See generally* *Feist Publ'n, Inc. v. Tel. Serv. Co.*, 499 U.S. 340 (1991).

The merger doctrine supplements the more nuanced idea/expression dichotomy with a readily applicable test that comes into play in a relatively small number of copyright cases, those where the work's idea all but determines its expression. There is no reason, however, why the application of the merger doctrine's logic cannot be extrapolated across the spectrum of copyrightability. While there are cases where merger applies because only few variations are possible, there should equally be cases beyond the merger doctrine's scope where the greater number of potential variations on a work justifies copyright in that work.¹⁴⁷ Therein sits the heart of the probability theory - as the number of possible works increases, the probability of the original will very likely decrease, and the work will become all the more copyrightable via this expanded view of the merger doctrine.

As a starting point for application, the probability theory proposes an almost truistic statement: that across the range of copyrightable subject matter, different types of work will present different degrees of constraint. Where some works, like the example of "1" as equivalent to "on" set forth above, or the efficiently coded program in *Altai*, are the strict result of a constraint;¹⁴⁸ others will reflect a lesser degree of constraint, like a portrait artist's choices in depicting a subject;¹⁴⁹ others still will demonstrate little to no constraint, like serial numbering systems and artistic choices in the field of modern art.¹⁵⁰ In the pages that follow, this Comment will break down the spectrum of constraint into these three discrete classes and apply the theory alongside the actual holdings in cases as a measure of the theory's fit to current copyright jurisprudence.

The theory's conclusions are strikingly precise as compared to the legal outcomes, both along the margins and in the central case. Furthermore, an interesting overall image evolves. Works of mid-level constraint merit the broadest protection, but that protection decreases in both directions from the center. Hence, as the highly constrained work's scope of protection is thin or non-existent, so too is the protection of the minimally constrained work thin or non-existent.

¹⁴⁷ Gervais' theory of creative choice appears to second this notion. *See* Gervais, *supra* note 137.

¹⁴⁸ *See infra* Section IV.

¹⁴⁹ *See infra* Section V.

¹⁵⁰ *See infra* Section VI.

IV. COPYRIGHT IN CONSTRAINED WORKS: MERGER THEORY AND THE IDEA/EXPRESSION DICHOTOMY

The margin of highly constrained works serves as a good launching point for the application of the probability theory because the analysis is the least taxing. In many ways, it involves nothing more than a realistic restatement of the “0” and “1” example outlined in the above Section.

Merger doctrine cases represent perhaps the more prominent instances where constraints suffocate any creativity that a work might otherwise assume. In one such case, *Bridgeman Art Library, Ltd. v. Corel Corp. (Bridgeman)*,¹⁵¹ the plaintiff, a British art library, brought suit for infringement in its color transparencies depicting no more than simple photographic copies of works in the public domain.¹⁵² The case returned to the District Court for the Southern District of New York after a prior entry of judgment in defendant’s favor finding that plaintiff’s transparencies were not the proper subject of copyright.¹⁵³ Plaintiff was able, however, to move successfully for re-argument because of the importance of the copyright issues in the case.¹⁵⁴

After deciding that U.S. copyright law should govern the dispute between the British plaintiff and the American defendant,¹⁵⁵ the district court proceeded to evaluate the copyrightability of the transparencies under that copyright regime.¹⁵⁶ The court first observed that a leading copyright treatise would not extend copyright protection to photographs that were nothing more than “slavish” copies of other photographs.¹⁵⁷ Precedent allowed for copyright in photographs demonstrating a “distinguishable variation”¹⁵⁸ over the earlier work, thereby evincing some degree of creativity. However, the court could not accept that the transparencies at issue, which were nothing more than slavish copies, merited protection under even such a minimal requirement.¹⁵⁹ In fact, the court concluded that such creativity was completely foreclosed by the fact that the plaintiff art library aimed to

¹⁵¹ 36 F. Supp. 2d 191 (S.D.N.Y. 1999).

¹⁵² *Id.* at 192.

¹⁵³ *Id.*

¹⁵⁴ *Id.* at 192-93.

¹⁵⁵ *Id.* at 193-95. The choice of law discussion is not relevant here.

¹⁵⁶ *Id.* at 195.

¹⁵⁷ *Id.* at 196.

¹⁵⁸ The precedent cited for this proposition was *L. Batlin & Son, Inc. v. Snyder*, 536 F.2d 486 (2d Cir. 1976).

¹⁵⁹ *Bridgeman*, 36 F. Supp.2d at 196-97.

create transparencies that were, above all else, accurate reproductions.¹⁶⁰

The probability theory's analysis would comport fully with the district court's decision in *Bridgeman*. The transparencies at issue were the result of a confluence of constraints – first, the constraint inherent to photographic reproduction by the imposition of a realistic image; and second, but not entirely separate, the highly constrained objective in copying existing works of art. The copying of existing art would create a distinguishable variation if, for example, the artist were to create a collage of portions of Monet's works. However, the transparencies in *Bridgeman* admit of no such freedom. The “idea” of creating photographic, and thus true-to-life, reproductions of existing works ensured that the resulting transparencies could legitimately assume one, or at most a small handful, of forms. As such, the probability of result of the transparencies in *Bridgeman* approaches one, far too high a value to warrant copyright protection.

Described in this light, *Bridgeman* sounds much like the typical merger doctrine case. Although the court did not rely on the merger doctrine in reaching its decision, its reasoning fluidly translates to that theory. By viewing the transparencies as slavish copies, the court recognized an idea that was capable of few expressions. The court could have chosen to allow for a broader idea, but it expressly did not. Regardless of the court's final reasoning, then, the conclusion is doctrinally indistinguishable – *Bridgeman* was a merger doctrine case.

As a final note, *Bridgeman* reinforces one of *Altai*'s interesting lessons about constraints, that in nearly all cases the “idea” constraint overlaps the “external factors” constraint. In *Altai*, discussed above, the Second Circuit treated external concerns for efficiency in programming as coterminous with the idea of efficient programming.¹⁶¹ The same seems true of the constraints in *Bridgeman*. That is, the “idea” of creating slavishly copied photographic transparencies includes the notion of photographic reproduction. So where two separate constraints seemed present above, one is in fact a mere subset of the other.

With a firmer concept of what a “constraint” on a work entails, how it interacts with other constraints, and how it yields results under the probability theory, this Comment will move beyond the simplest category of analysis, the highly constrained work, to a category that is

¹⁶⁰ *Id.* at 197.

¹⁶¹ See *supra* note 126 and accompanying text.

at once more and less challenging: works evidencing a mid-level constraint.

V. COPYRIGHT IN SEMI-CONSTRAINED WORKS: UNRAVELING THE PARADOX OF EXPRESSION

Copyright's purpose is to encourage the successive building of creative expression; when spread, this progression enriches society. But this process does not and cannot move fathoms at once, and mankind often only takes small steps beyond the foundation now laid by the legacy of centuries of creativity. Most copyrightable creativity depends on this legacy as a sort of constraint on its genesis. Justice Story once thus declared, "In truth, in literature, in science and in art, there are, and can be, few, if any, things, which, in an abstract sense, are strictly new and original throughout. Every book in literature, science and art, borrows, and must necessarily borrow, and use much which was well known and used before."¹⁶² Yet such historical constraints occasioned by a serially developed legacy impose little on a work. Equally unimposing is constraint from choice of medium, language (as Story suggested) or paint or clay. Copyrightable works with constraints cabined only in influence, medium, and subject, will almost of necessity meet the probability theory's standard. If an artist chooses to paint a train's arrival in the station like Monet, any result is infinitesimal as negotiated between those constraints. Each successive brushstroke will be a separate event of limited likelihood, and the totality of brushstrokes will seem, by probabilistic analysis, a near impossibility in hindsight.

Accordingly, few, if any, copyright cases challenge the copyrightability of a semi-constrained work. While there is a long history of copyright disputes over the extent of protection that copyright might grant against infringement,¹⁶³ there are rarely any

¹⁶² Emerson v. Davies, 8 F.Cas. 615, 619 (C.C. D. Mass. 1845). He went on to say, "No man creates a new language for himself, at least if he be a wise man, in writing a book. He contents himself with the use of language already known and used and understood by others. No man writes exclusively from his own thoughts, unaided and uninstructed by the thoughts of others. The thoughts of every man are, more or less, a combination of what other men have thought and expressed, although they may be modified, exalted, or improved by his own genius or reflection." *Id.*

¹⁶³ See, e.g., Stowe v. Thomas, 23 F. Cas. 201 (C.C.E.D.Pa. 1853) (holding that Harriet Beecher Stowe's copyright in *Uncle Tom's Cabin* did not extend to the right to prepare translations) and Nichols v. Universal Pictures, Corp., 45 F.2d 119 (2d Cir 1930) (holding that one playwright's work about feuding Irish and Jewish families whose children fall in love was not protectable at the general level of shared family

grounds for disputing that an entire novel, play, or painting is entirely devoid of copyrightable expression provided that the work is not the exact copy of a pre-existing work.¹⁶⁴

Yet works of mid-level constraint pose an interesting paradox within the greater structure of copyright law. In many cases, the expression at issue is susceptible of only one recitation. Put another way, most works cannot be expressed in a form different than their actual expression without sacrificing some meaning, be it figurative or literal. This failure strongly evokes the discussion of merger theory above, and indeed in some way these creative forms of expression suffer from a form of merger, where the ideas underlying the work are inseparable from the work itself. This Section will thus have to account for a distinction – between works that are clearly expressive but guilty of merger and those works that are the result of merger but devoid of additional expression. In accounting for the distinction, this section will unravel a paradox of merger theory.

This Section's analysis relies heavily on the work of Professor Leslie Kurtz in her article, *Speaking to the Ghost: Idea and Expression in Copyright*.¹⁶⁵ Her initial observations reinforce the historical trend of the expansion of copyright protection beyond the works' text.¹⁶⁶ This trend has been justified through an equitable argument that a plagiarist should not, as Learned Hand stated, "escape by immaterial variations"¹⁶⁷ on earlier copyrighted works. Such immaterial variations would depend for their effect on a type of synonymy. There, without protection beyond the actual words on the page, the "plagiarist" would substitute the earlier author's words with words that convey essentially the same meaning and circumvent the earlier author's copyright.¹⁶⁸

Although this substitution process might be possible, Professor Kurtz detects an upper limit to its effectiveness. At a certain point, which could take effect with the very first substitution, the surrogate work will no longer mean the same thing as the first work. In Professor Kurtz's words, "[E]ach different way of saying something

feuds and fertile lovers).

¹⁶⁴ See discussion *supra* Section II (summarizing the historical standard in *Bleistein*).

¹⁶⁵ Leslie A. Kurtz, *Speaking to the Ghost: Idea and Expression in Copyright*, 47 U. MIAMI L. REV. 1221 (1992).

¹⁶⁶ *Id.* at 1226-28. Professor Kurtz cites to *Stowe* for more narrow protection and Hand's abstractions test for the expansion of that protection. *Id.*

¹⁶⁷ *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930).

¹⁶⁸ Kurtz, *supra* note 165, at 1226-28.

may amount to the saying of a different thing.”¹⁶⁹ To prove this point, Kurtz cites the Keats couplet:

O, for a draught of vintage! that hath been
Cool’d a long age in the deep delved earth¹⁷⁰

She contrasts this with an attempted paraphrase of the same line:

Oh, for a drink of wine that has been reduced in temperature
over a long period in ground with deep furrows in it.¹⁷¹

While Kurtz recognizes that the superficial meanings of the two lines might be similar, the second fails utterly to convey “the excellence of the wine, the care and time that went into its production, and the delight that drinking it is expected to give[.]”¹⁷² or in short, the same evocative meaning as the first.

In spite of the fact that the couplet cited above may seem viscerally distinct from the transparencies in *Bridgeman*, the two scenarios appear to share the important common point that each is susceptible of only one effective form. Just as the paraphrasing failed to capture the essence of the Keats couplet, so too would an out-of-focus shot of the artwork in *Bridgeman* fail to capture the essence of the originals. This similarity suggests an immediate, but rather incredible conclusion that the Keats couplet does not deserve copyright protection under the merger doctrine.

This conclusion seems wrong, and with a little analysis, proves so. Merger might be the right term to describe the Keats’ couplet, but the type of merger in *Bridgeman* is very different from the type of merger that affects Keats. Kurtz again supplies the important distinction that “Many different ideas inhere in any work, depending on how one thinks about it, and who does the thinking.”¹⁷³ In the Keats couplet those ideas include the superficial anticipation of consumption along with those less literal, evocative ideas that Kurtz noted.¹⁷⁴ For the *Bridgeman* slides, on the other hand, Kurtz’s statement misses the mark. Those transparencies are susceptible of

¹⁶⁹ *Id.* at 1228.

¹⁷⁰ *Id.* at 1229.

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ *Id.* at 1234. She continues, “It is impossible to isolate a single unprotected idea within a work.” *Id.*

¹⁷⁴ *See id.* at 1229.

only one idea – to reproduce existing works of art accurately. No other interpretation is possible.

This distinction gives an idea of what “real” merger entails, and why Keats’ couplet should be worthy of copyright protection. In the *Bridgeman* case, a single, simple idea led to the creation of a single, simple work. Each level of the work, therefore, drew the creator through a certain process. For the Keats couplet, on the other hand, the idea level furnishes much more complexity. Kurtz again asserts relevantly:

The simplest ideas are uncompounded, not distinguishable into different ideas. A combination of several simple ideas can build a more complex idea. Even if individual elements of a plot or fictional character are unprotectable ideas, their combination may be subject to protection.¹⁷⁵

She continues, “A complex idea, which combines a number of simple ideas, takes from the public domain only the small area in which the simple ideas intersect . . .”¹⁷⁶ Kurtz’s latter statement sketches out a form of set theory, common to probabilistic analysis, which aptly describes the Keats couplet. That is, among the universe of ideas, Keats was able to evoke the relatively small union¹⁷⁷ of a number of ideas.

It is in this subset that the probability theory justifies copyright in Keats’ expression. As more ideas are stacked serially in expression, or alternatively, superimposed on a small space, the sequence or overlap of those ideas will successively lower the probability of the final phrase with each new addition. Thus, each of the ideas in the Keats couplet serves to lower the probability of the ultimate phrase. The final application of that subset to a succinct poetic phrase implies an exceptionally low probabilistic outcome. In spite of the high probability outcome from subset to finished expression, the single possible expression of those ideas, the earlier low probability step adequately merits copyright protection. This analysis contrasts with *Bridgeman*. The idea step in *Bridgeman* involved a single, already

¹⁷⁵ *Id.* at 1253.

¹⁷⁶ *Id.* at 1254.

¹⁷⁷ This mathematical term, symbolized U, also comes from set theory. U means the area of overlap between the named elements. ‘A U B’ would symbolize the union of the sets A and B. SCHEAFFER, *supra* note 105, at 10.

known¹⁷⁸ idea. That probabilistic step was a certainty. That certainty led to another certainty, the final transparency. By recognizing the differences in “idea” between the Keats couplet and the *Bridgeman* transparencies, therefore, a probabilistic analysis can justify the presence of copyright in one and the absence in the other.

Where an immediate conclusion suggested similarity between the *Bridgeman* slides and the Keats couplet, the ultimate conclusion could not treat them more differently. On one hand, *Bridgeman*’s almost inevitable creation merits, as the court properly found, no copyright protection of any kind. The Keats couplet, on the other hand, merits protection to the extent of its low probability step – the subset of ideas itself. In this way, works of mid-level constraint, like Keats’ couplet, retain the highest scope of protection possible. Beyond just protecting expression, copyright must, by Professor Kurtz’s reckoning, extend to ideas in their carefully subdivided corner.

VI. COPYRIGHT IN UNCONSTRAINED WORKS: OF SERIAL NUMBERS AND MODERN ART

As the preceding sections demonstrate, through the better part of the spectrum of copyrightable works, from works highly constrained by facts, idea, and medium through works like figurative art and poetry that are less constrained by the image that they illustrate or describe (but still somewhat constrained), the probability theory of copyright law falls in line with, and builds upon, standing copyright cases and academic thought. The theory begins to diverge from doctrine, however, at the outermost reaches of the spectrum. At this point, constraints on the final work are all but non-existent; cases uphold copyright in systems of serial numbers,¹⁷⁹ little more than the principled application of the sporadic output of a random number generator.

The critical distinction between a probabilistic take on serial number systems and the judicial community’s rulings thereon is in an understanding of the generally two-step process that serial number cases inhere: creation of the code and assignment of the numbers. As

¹⁷⁸ This Comment does not speculate as to the probability of expression of a single, theretofore unknown idea.

¹⁷⁹ See *Am. Dental Ass’n v. Delta Dental Plans Ass’n*, 126 F.3d 977, 979 (7th Cir. 1997). This Comment uses the term “serial numbers” generically to include any number coding system, and thus includes the slightly different technological coding performed in *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1368 (10th Cir. 1997).

the four primary cases¹⁸⁰ in this field demonstrate, courts struggle to liken this process to other fields in copyright law¹⁸¹ and their failure convincingly to do so demonstrates the first fundamental difference that courts have been unable to outline: where short phrases,¹⁸² examination sheets,¹⁸³ and automobile price guides¹⁸⁴ are exceptionally constrained, the selection of serial numbers to identify parts is initially a process without any constraint. The selection is a mere scattershot assignment of numbers which bear no inherent relation to the parts (or parts of parts) that they designate.¹⁸⁵ Although the application of the constrained case's result to the unconstrained case seems reasonable – both represent “cases crawling over the standard of copyrightability”¹⁸⁶ – the logic behind the constrained case is simply inapplicable to the unconstrained case.

After a chronological review of the four cases integral to this field of law in current American copyright jurisprudence, this Section analyzes why the first, seemingly adequately low probability step, the creation of the code itself, is the only truly critical anchoring point in this field. The Section will also highlight why the outcome of this low-probability case matches the outcome of the general class of high-probability cases, an equivalence driven by the faulty probability theory that judges in serial number cases frequently apply. As a result of this discussion, the Section therefore makes explicit the implied wrapping-around of the edges of the constraint spectrum of probability theory's copyright analysis. Finally, this Section will note how a probabilistic analysis of this seemingly lonely vista of copyright law, unconstrained expression, actually supplies theories applicable to modern art, a larger and more controversial area of copyright law.

¹⁸⁰ See discussion *infra*.

¹⁸¹ See discussion *infra* of *Am. Dental*, 126 F.3d at 977 and *Southco, Inc. v. Kanebridge Corp.*, 390 F.3d 276 (3d Cir. 2004) (particularly both Judge Alito's majority and Judge Roth's dissent).

¹⁸² See *Southco.*, 390 F.3d at 276.

¹⁸³ See *Educ. Testing Serv. v. Katzman*, 793 F.2d 533 (3d Cir. 1986).

¹⁸⁴ See *CCC Info. Serv. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61 (2d Cir. 1994).

¹⁸⁵ *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1368 (10th Cir. 1997) (“[T]wo digits of each three-digit register *arbitrarily* identify the particular function selected.”) (emphasis added). See also *id.* at 1369 (“Mitel admits that it arbitrarily selected the particular digit that represents each group of functions.”); *Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208 (8th Cir. 1986) (reasoning that even in cases where the numbers follow an organization of parts or dental procedures, it is the organization that merits copyright, not the numbers beside the organization).

¹⁸⁶ Gervais, *supra* note 137.

A. A Brief History of Serial Number Case Law

The growth and state of copyright protection for serial numbering over the past twenty years provide a basis for probabilistic analysis under this Section. The four primary cases in this field demonstrate both inconsistencies and general misunderstandings as to whether copyright protection should extend to serial numbering systems.

In *Toro Co. v. R & R Products Co.*,¹⁸⁷ the Eighth Circuit heard Toro's appeal following the dismissal of Toro's copyright infringement claims in the district court.¹⁸⁸ Toro, a manufacturer of lawn care products and replacement parts, came into competition with R & R, a company devoted exclusively to the manufacture of replacement parts for lawn care equipment.¹⁸⁹ R & R, unlike Toro, was able to manufacture only those parts that most frequently wore out in Toro's machines, thus decreasing its overhead and undercutting Toro's prices.¹⁹⁰ To market its product, R & R distributed a catalog containing the exact serial numbers of Toro's parts preceded by the letter "R."¹⁹¹ Toro brought suit in federal district court alleging infringement in the company's parts drawings and parts numbering system.

The Eighth Circuit upheld the district court's finding that the parts numbering system was not worthy of copyright.¹⁹² The court began its analysis by noting that 17 U.S.C. § 102(b) limited 17 U.S.C. § 102(a)'s grant of protection in "any original work[] of authorship fixed in any tangible medium of expression"¹⁹³ through a statutory embodiment of the idea/expression dichotomy.¹⁹⁴ The court employed this conclusion in rejecting the district court's finding that copyright

¹⁸⁷ *Toro*, 787 F.2d 1208.

¹⁸⁸ *Id.* at 1210. The case also involved unfair competition claims at the district court level – the appeal sought the reversal of the district court's denial of a motion for J.N.O.V. on this subject. While this aspect of the case is not relevant to the discussion here, the Eighth Circuit upheld the district court's denial because "the record amply support[ed] the jury's finding of no unfair competition." *Id.* at 1216.

¹⁸⁹ *Id.* at 1210.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* R & R also used Toro's trademark and attached Toro's own drawings of Toro's parts to R & R catalog entries, but explicitly disclaimed that the parts were in any way acquired from (or related to) Toro. *Id.* at 1210-11.

¹⁹² *Id.* at 1216.

¹⁹³ 17 U.S.C. § 102(a) (2006).

¹⁹⁴ *Toro*, 787 F.2d at 1211.

could not subsist in a system of serial numbers.¹⁹⁵ The Eighth Circuit read the idea/expression dichotomy as only prohibiting copyright in the “idea of using numbers to designate replacement parts.”¹⁹⁶ The court then analyzed whether Toro’s particular iteration of serial numbers constituted copyrightable expression.

On this ground, the court held that the serial numbering system could not withstand scrutiny. En route to this decision, the court rejected any potential application of the merger doctrine to the case, and noted that a given parts numbering system would theoretically be capable of a relatively large number of permutations.¹⁹⁷ The court grounded its own analysis in a pre-*Feist* creativity standard¹⁹⁸ which Toro’s system failed to meet since the system “arbitrarily assign[ed] to a particular replacement part a random number when appellant create[d] the part.”¹⁹⁹ Such purely random assignment, the court felt, conveyed no information to the reader; furthermore, the system failed to evidence any “effort or judgment” under the court’s pre-*Feist* standard.²⁰⁰ The court noted in dicta, however, that under different circumstances “a system that uses symbols in some sort of meaningful pattern, something by which one could distinguish effort or content, would be an original work.”²⁰¹

Arguably, that use of symbols in a meaningful pattern was put to the test in *American Dental Ass’n v. Delta Dental Plans Ass’n*.²⁰² There, Judge Easterbrook reversed the district court’s finding that a code of serial numbers for dental procedures was not adequately original to support a copyright.²⁰³ The case involved the American Dental Association’s creation of a *Code on Dental Procedures and Nomenclature* (hereinafter “*Code*”), which, in addition to describing current dental procedures, assigned each with a serial number.²⁰⁴ The

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

¹⁹⁷ *Id.* at 1212.

¹⁹⁸ *Id.* at 1213. The court explicitly cited to a telephone compilation case, *Hutchison Tel. Co. v. Fronteer Directory Co.*, 770 F.2d 128 (8th Cir. 1985), as setting out a “sweat of the brow” standard of copyrightable originality. Presumably, as *Feist* spoke directly to this, the cited case is overruled. The result of *Toro*, therefore, is telling since Toro’s parts numbering system was not even capable of copyright under the lower pre-*Feist* standard.

¹⁹⁹ *Toro*, 787 F.2d at 1213.

²⁰⁰ *Id.*

²⁰¹ *Id.* As *Feist* makes clear, effort alone would no longer support copyright.

²⁰² 126 F.3d 977 (7th Cir. 1997).

²⁰³ *Id.* at 979.

²⁰⁴ *Id.* at 977.

procedures were apparently organized in a somewhat logical manner within the *Code*.²⁰⁵ Delta Dental, meanwhile, published its own code of dental procedures, entitled *Universal Coding and Nomenclature* (hereinafter “*Universal Coding*”).²⁰⁶ The *Universal Coding* copied liberally from the American Dental Association’s *Code*, including both the descriptions of procedures and their serial numbers.²⁰⁷ The American Dental Association brought suit for infringement, and Delta Dental Association defended on the grounds that, among other things,²⁰⁸ the *Code* did not constitute copyrightable subject matter.

Judge Easterbrook concluded that the dental taxonomy was entirely copyrightable. He began his analysis with the oft-parroted truism of current American copyright jurisprudence: that “[t]he necessary degree of ‘originality’ [to qualify for copyright protection] is low, and the work need not be aesthetically pleasing to be literary.”²⁰⁹ He went on to give this statement a more tangible test by noting that originality’s locus is found in the number of ways that an author could express a given work without abandoning its underlying meaning. As exemplary of this point, Judge Easterbrook explained that Einstein could have described “relativity in any of a hundred different ways; another physicist could expound the same principles differently.”²¹⁰

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.*

²⁰⁸ In addition to grounds of copyrightable expression, Delta Dental also claimed that it was licensed to use the serial numbers and descriptions since it participated in the original creation of American Dental’s *Code*. *Id.* at 978. Alternatively, Delta Dental claimed that it made fair use of the *Code*, or that the copyright in the *Code* had expired. *Id.* The district court did not reach these issues prior to the appeal to the Seventh Circuit, and their outcome is not relevant to the discussion here. *Id.* The district court ultimately found in favor of Delta Dental solely on the copyrightability grounds. *Id.*

²⁰⁹ *Id.* at 979.

²¹⁰ *Id.* The result of this part of Judge Easterbrook’s holding is both unobjectionable and irrelevant here. His rationale leaves something to be desired. First, he puts in play a perfunctory, albeit somewhat misguided, theory of copyrightability. In this case, though, the sheer number of potential variations of the work nullifies any concern (or imprecise result) that might follow from Judge Easterbrook’s failure to note the likelihood of individual variations – that is, although Judge Easterbrook fails to realize that not all variations have the same probability, each is probably sufficiently unlikely to merit copyright. Second, his analysis of merger is not without glaring fault: his statement that “[t]he *Code*’s descriptions don’t ‘merge with the facts’ any more than a scientific description of butterfly attributes is part of a butterfly,” is misleading at best and completely wrong at worst. *Id.* In his hypothetical situation, the merger doctrine (in its usually accepted

After applying this principle to find that the descriptions of dental procedures were indeed capable of many stylistic and organizational variations,²¹¹ Judge Easterbrook took the bolder step of using the principle to justify copyright in the *Code*'s selection of serial numbers. He detailed at length the range of choice that a code of numbers inheres:

The number assigned to any one of the...descriptions could have had four or six digits rather than five; guided tissue regeneration could have been placed in the 2500 series rather than the 4200 series; again any of these choices is original to the author of a taxonomy, and another author could do things differently. Every number in the ADA's Code begins with zero, assuring a large number of unused numbers for procedures to be devised or reclassified in the future; an author could have elected instead to leave wide gaps in the sequence.²¹²

Judge Easterbrook's application, therefore, was a standard recitation of the nearly infinite variations that the *Code* could have assumed, a simple reapplication of the analysis that he had used to uphold copyright in the procedure's descriptions.²¹³ In this regard, his finding of copyright in the *Code*'s system of serial numbers seems uncontroversial.

Decided contemporaneously to *American Dental*, but on facts much closer to those in *Toro*, was *Mitel, Inc. v. Iqtel, Inc.*²¹⁴ In *Mitel*, the Tenth Circuit upheld the district court's denial of Mitel's motion for preliminary injunction for copyright infringement.²¹⁵ Mitel manufactured and installed call controllers.²¹⁶ As part of the

form) would not apply to the attributes of the butterfly, just as the doctrine would not apply to the performance of dental procedures in the *Code*; merger would instead hold that the fact of scientifically describing a dental procedure (or part of a butterfly in the hypothetical) merged with the resulting scientific description. Again, while Judge Easterbrook's analysis is fundamentally unsound, his result is likely appropriate as to the *Code*'s organization and procedural description.

²¹¹ *Id.*

²¹² *Id.*

²¹³ *Id.*

²¹⁴ 124 F.3d 1366 (10th Cir. 1997).

²¹⁵ *Id.* at 1368.

²¹⁶ A call controller is a system that enables a party, like a small business, to pool its telephone services and create settings that govern, for example, the routing of

installation process, a technician would enter a variety of four-digit command codes that corresponded to a set of functional features that Mitel's client desired.²¹⁷ The call controller, upon receipt of the codes, would set the telephone systems of Mitel's clients according to the value and sequencing of the digits.²¹⁸ Mitel designed sixty-four codes in all, some of which a technician could adapt to select the number of phones to which the code would apply.²¹⁹

Nine years after Mitel's entry into the call controller market, Iqtel decided to market its own iteration of the call controller.²²⁰ In order to adapt the system most effectively to the current market, Iqtel elected to employ Mitel's command codes.²²¹ Iqtel premised this decision on a need for compatibility with Mitel's current system, which commanded a "large share of the ... market."²²² This compatibility would thus enable technicians familiar with Mitel's system to transition more easily to installation of Iqtel's call controllers.²²³ To this end, Iqtel utilized Mitel's command codes in Iqtel's systems and technician's manuals.²²⁴

The Tenth Circuit found the command codes uncopyrightable.²²⁵ The court stated, as a preliminary matter, that Iqtel's admission of actual copying limited the scope of the litigation to the copyrightability of the four-digit codes,²²⁶ since infringement can only result from copyright-protected works.²²⁷ To narrow the

incoming calls or the length of time between the receipt of a call and an automatic message. *Id.*

²¹⁷ *Id.*

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.* at 1369.

²²¹ *Id.*

²²² *Id.*

²²³ *Id.*

²²⁴ *Id.*

²²⁵ *Id.* at 1376.

²²⁶ *Mitel*, 124 F.3d at 1370. The court proceeded to reject the district court's findings based on a literal reading of 17 U.S.C. § 102(b) wherein the command codes constituted an uncopyrightable "method of operation." *Id.* at 1372. The court felt that "although an element of a work may be characterized as a method of operation, that element may nevertheless contain expression that is eligible for copyright protection." *Id.*

²²⁷ To prove infringement, a plaintiff must produce evidence of both actual copying (proven through evidence of direct access to the work at issue, constructive access to the work at issue, or striking similarity between the works) and substantial misappropriation of the work. The latter element requires that the defendant have pirated copyrightable expression. Underlying facts, ideas, or other public domain

codes to their protectable form, the court sifted out any unprotectable elements under a *Feist* originality standard. Under that standard, the court first rejected the copyrightability of the codes insofar as they were random.²²⁸ The court buttressed its finding on one Mitel employee's characterization of the code assignment process as "real [*sic*] close to random."²²⁹ Such "arbitrary selection of three or four numbers required *de minimis* effort."²³⁰ The court further denied protection in elements that embodied an ascending sequential series of numbers, likening that selection to the alphabetical arrangement in *Feist*.²³¹

Following the *Feist* originality step in the sifting process, only two small subsets of the command codes, called descriptions and values, remained eligible for copyright. The court rejected even these, however, on the grounds that they were nothing more than *scènes à faire*.²³² In other words, external factors nullified any possible creative choice in Mitel's descriptions and values. Such external factors included "hardware standards and mechanical specifications, software standards and compatibility requirements, computer manufacturer design standards, industry programming practices, and practices and demands of the industry being serviced."²³³ Given each of these constraints, Mitel's selection of descriptions and values was all but inevitable and not eligible for copyright. Because no element of Mitel's codes was worthy of copyright protection, the court affirmed the district court's denial of preliminary injunction for Mitel.²³⁴

elements – generally unprotected by copyright – may therefore be taken with impunity. *See e.g.*, *Miller v. Universal City Studios, Inc.*, 650 F.2d 1365 (5th Cir. 1981) (finding the use of plaintiff's research and facts not to infringe the plaintiff's copyrightable work as such research and facts were not copyrightable in and of themselves) *and* *Hoehling v. Universal City Studios, Inc.*, 618 F.2d 972 (2d Cir. 1980).

In *Mitel*, since Iqtel stipulated that it had in fact copied the work, Mitel needed to only prove appropriation of copyrightable expression. The copyrightability of the codes, therefore, became the crux of the case.

²²⁸ *Mitel*, 124 F.3d at 1374.

²²⁹ *Id.*

²³⁰ *Id.* at 1373.

²³¹ *Id.* at 1374.

²³² *Id.* at 1375. As noted in Section I *supra*, the *scènes à faire* doctrine is a corollary of the merger doctrine typically applied to literary situations. The court here could have interchangeably employed the merger doctrine as justification for its result.

²³³ *Id.*

²³⁴ *Id.* at 1376. Since the court was able to resolve the case on copyright grounds alone, it declined to address the issues of fair use under 17 U.S.C. § 107.

Taken as a group, the three decisions examined to this point do not seem to read inconsistently. On one hand, if a numbering system can be held to be an “arbitrary” assignment of numbers without conveying any meaning in the assignment, as was the case in *Toro* and *Mitel*, the system will fail copyright.²³⁵ On the other hand, where a system attaches some overlapping organization or structure to the works, as in *American Dental*,²³⁶ the system will be adequately creative to permit a finding of originality, a finding that comports entirely with the dicta in *Toro*.²³⁷ Thus, the *Mitel* court’s use of the *scènes à faire* doctrine was just a means to the opposite outcome: where the *Code* in *American Dental* involved creative, unconstrained organization, the command values and descriptions in *Mitel* were the result of highly constrained organization.

Unfortunately, however, any such cohesive reading of this set of cases belies Judge Easterbrook’s ultimate justification for finding copyright in *American Dental*. Under his standard, where the author of a serial number encoding theoretically could have selected different digits or a different number thereof, the work will bear witness to sufficient originality.²³⁸ Using this quantum, the courts in *Mitel* and *Toro* could have justified copyright in the command controls or the parts numbers, respectively, by the mere possibility that the command controls or parts numbers could have been presented differently, regardless of the inherently arbitrary quality of any of the possible digit sequences. Put in the opposite manner, the *Code* in *American Dental* seems no less arbitrary than the numbering systems in *Mitel* and *Toro*.²³⁹ *Mitel*’s secondary use of the *scènes à faire*, furthermore, does little to overcome this inconsistency given the primary application of *Feist*’s creativity standard. Read in this fashion, these three cases represent a fundamental clash over the validity of copyright in purely arbitrary choice.²⁴⁰ This underlying seed of

²³⁵ See *Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208, 1213 (8th Cir. 1986) and *Mitel*, 124 F.3d at 1373.

²³⁶ See *Am. Dental Assoc. v. Delta Dental Plans Assoc.*, 126 F.3d 977, 979 (7th Cir. 1997).

²³⁷ See *Toro*, 787 F.2d at 1213.

²³⁸ See *Am. Dental*, 126 F.3d at 979.

²³⁹ In fact, the only real distinguishing factor between these cases is the “effort” evident in *American Dental*. That effort alone, *Feist* assures us, is not sufficient to merit copyright protection. Furthermore, the “effort” spoken of by Judge Easterbrook adds no meaning to the *Code* at issue in *Am. Dental*.

²⁴⁰ Granted, Judge Easterbrook read some minimal constraint into the *Code*’s selection of digits – he felt that the expandability of the taxonomy depended on whether digits were non-consecutive, thereby permitting some expansion within the

inconsistency would blossom in the Third Circuit's fractured opinions in *Southco, Inc. v. Kanebridge Corp.*²⁴¹

Southco involved yet another dispute over the validity of copyright in a serial numbering system. Southco, Inc. manufactured a variety of different hardware products, such as “rivets, latches, handles, and ‘captive fasteners.’”²⁴² To permit easy identification of these parts, Southco developed a numbering system in which each digit corresponded to a characteristic of a given piece of hardware. The first two digits, for instance, could define the type of product; the next set of digits, the thread size, and the next set, the product's material composition.²⁴³ Since Southco applied the numbering system consistently, manufacturers and subcontractors were able to identify and order parts solely by number.²⁴⁴

Kanebridge Corporation, a distributor of competing hardware products, decided to make use of Southco's parts numbering system in order to demonstrate that the quality of the parts that Kanebridge distributed was equivalent to higher-priced Southco parts. To this end, in its commercial literature, Kanebridge published comparison tables of its own numbers placed beside Southco's numbers. Kanebridge described its copying as a legitimate means of competition in the market.²⁴⁵ Without this manner of advertisement, Kanebridge asserted “customers would lose the opportunity to obtain *lower*-cost alternative fasteners.”²⁴⁶ Kanebridge's intentions notwithstanding, Southco brought suit for infringement of Southco's copyright in the serial numbering system.²⁴⁷

In an opinion by Judge Alito, the majority of the Third Circuit²⁴⁸ found that the serial numbers were not the appropriate

Code, or whether the *Code* was to build consecutively above the last number in the series. See *supra* note 205. This constraint is absolutely minimal as compared to the vast lack of constraint shared by *Am. Dental*, *Toro*, and *Mitel* – the otherwise arbitrary assignment of numbers to things. The existence of this constraint in *American Dental*, therefore, does not render the *Code* significantly less arbitrary than its *Toro* and *Mitel* counterparts.

²⁴¹ 390 F.3d 276 (3d Cir. 2004).

²⁴² *Id.* at 278.

²⁴³ *Id.*

²⁴⁴ *Id.*

²⁴⁵ *Id.* at 279.

²⁴⁶ *Id.* (emphasis added by the author).

²⁴⁷ *Id.* at 279. Southco also brought a slew of trademark claims, including false advertising, trademark infringement, unfair competition, and common law claims for trademark infringement and trademark dilution. *Id.*

²⁴⁸ Nine judges agreed with the first of Judge Alito's two lines of reasoning; six

subject of copyright.²⁴⁹ In justifying his holding, Judge Alito followed two separate lines of reasoning. First, he reviewed the numbering system in light of the originality requirement. After a *de rigueur* regurgitation of *Feist*, he noted briefly that the creation of the numbering system was nothing more than an unprotectable idea or system and accordingly was uncopyrightable.²⁵⁰ All that remained to analyze, then, was the second step of Southco's encoding procedure: the application of the numbering system to various parts.²⁵¹ As to this decision, Judge Alito emphasized that once the encoding system was in place, "all of the products in the class could be numbered without the slightest element of creativity."²⁵² He further reinforced this fact by noting its necessity given the nature of the system: if Southco were to be creative in its system and vary the number for aluminum screws, "customers who wished to purchase aluminum screws but were unaware of this variation would be befuddled."²⁵³

Before addressing the second reason for denying copyright, Judge Alito felt it necessary to address Southco's argument that creating a parts numbering system was indistinguishable from the act of taking a photograph relevant in *Burrow-Giles Lithographic Co. v. Sarony*.²⁵⁴ The substance of Southco's argument was that, like the positioning of Oscar Wilde in *Burrow-Giles*, the creation of the code represented the adequately original step prior to a more mechanical step: in *Burrow-Giles*, the operation of the camera, and in *Southco*, the application of the numbering system.²⁵⁵ Judge Alito distinguished the two situations in a variety of ways. First, the photograph in *Burrow-Giles* "was indisputably a work of art,"²⁵⁶ while Southco's serial numbers merely "convey[ed] information about a few objective characteristics of mundane products."²⁵⁷ Furthermore, a photograph, unlike a serial numbering system, carries "more complex and indeterminate ideas."²⁵⁸ Finally, the production of a photographic

judges joined his entire opinion. *Id.* at 277.

²⁴⁹ *Id.*

²⁵⁰ *Id.* at 282. To call Judge Alito's analysis on this point brief is something of an understatement. The text relevant to this topic encompasses just seven lines of one column in the reporter. *Id.*

²⁵¹ *Id.*

²⁵² *Id.*

²⁵³ *Id.*

²⁵⁴ 111 U.S. 53 (1884).

²⁵⁵ *Southco*, 390 F.3d at 284.

²⁵⁶ *Id.*

²⁵⁷ *Id.*

²⁵⁸ *Id.*

portrait involves an adequate level of artistic choice, as opposed to a mechanical application of a system composed solely of completely rigid rules.²⁵⁹

The majority's second line of reasoning unfavorably compared Southco's numbering system to short phrases, a subject that is rarely (if ever) worthy of copyright protection.²⁶⁰ In support of its comparison, the court examined the history of continuous and consistent denial of copyright in "short words and phrases" dating from the late fifties to the present.²⁶¹ Such denial had apparently seen extension to cases of serial parts numbers on the grounds that short phrases and parts numbers were analogous.²⁶² Additionally, Judge Alito expressed concern that granting copyright in the number system would give Southco sole control over the numbers that they had chosen.²⁶³ Therefore, he elected to defer to the comparison between serial numbers and short phrases as an additional ground for denying copyright.²⁶⁴

Judge Roth filed a dissenting opinion²⁶⁵ wherein she applied Judge Easterbrook's standard from *American Dental* to the merits of the copyright claim. She began her analysis with a searching inquiry

²⁵⁹ *Id.* As a relevant addendum to the discussion of photographs, the court went on to reject any comparison between the numbering system and aleatoric art. Aleatoric art, unlike the numbering system, "does not result from the rigid application of a system of pre-set rules." *Id.* The court's self-imposed limitation of analysis to the application of the system (thereby ignoring the creation of the system) nullifies the comparative value of aleatoric art as an example. For an alternative discussion that leads to the same result as the court would reach here, see the discussion of modern art *infra*.

²⁶⁰ *Id.* at 285.

²⁶¹ *Id.* at 285-86.

²⁶² *Id.* at 286.

²⁶³ *Id.* The validity of this argument is dubious. For example, use of the word "virtue" in a sentence would not grant the drafter the right to exclude all future writers from use of that common word. See Learned Hand's abstractions test in *Nichols v. Universal Pictures, Corp.*, 45 F.2d 119, 121 (2d Cir. 1930), discussed *supra*, Section I. An invented word, however, might create a more interesting argument. The copyright protection hypothetically granted in a serial numbering system would be very thin, likely limited to exact or near exact copying by a party engaged in the parts vending business. The result of such protection, therefore, begins to overlap significantly with the protection such a system might receive under the trademark equivalent subject to the "likelihood of confusion" test for infringement. See, e.g., 15 U.S.C. § 1125(a)(1)(A) (2006) and *Polaroid Corp. v. Polaroid Elects. Corp.*, 287 F.2d 492, 495 (2d Cir. 1961).

²⁶⁴ *Southco*, 390 F.3d at 287. Judge Becker filed a concurring opinion which is not discussed here.

²⁶⁵ *Id.* at 290. One other judge joined her dissent.

into the idea/expression dichotomy as it applied to the case.²⁶⁶ She framed her discussion in terms of the difficult balance that the dichotomy seeks to strike – between competition on one hand, by not allowing users of “ideas” to exclude future use of the ideas, and protection on the other, by not allowing an infringer’s *de minimis* changes to go unpunished.²⁶⁷ Unfortunately, a given case could present many resolutions of this same tension. She then expounded on her concept of the “idea” in Southco’s numbering system as compared with the majority’s concept. In her opinion, Southco did not attempt to gain control over the idea of creating a code, as the majority suggested, but instead attempted to gain control over a more narrow articulation of such a code – its own individual collocation of numbers.²⁶⁸ Viewed from the majority’s “overbroad definition,” the court had no choice but to deny copyright in the numbering system.²⁶⁹ At her level of breadth, the code was adequately protected without denying others the right to use a code to number products.²⁷⁰

Judge Roth reinforced her view of Southco’s “idea” in the numbering system by means of an exhaustive application of Judge Easterbrook’s holding in *American Dental*. From her vantage point, “there would seem to be no limit to the number of ways [that product] specifications could be encoded.”²⁷¹ She then went on to detail the different points of choice that Southco had available to it in creating the code: “[Southco] could [have] use[d] three digits [instead of two]..., or letters instead of numbers, or a combination of letters and numbers, or even simple abbreviations in lieu of coded letters or numbers.”²⁷² In conjunction with a reminder that originality is a low bar,²⁷³ she proceeded to cite to dicta from *Toro* for the proposition that “a system that uses symbols in some sort of meaningful pattern, something by which one could distinguish effort or content, would be an original work.”²⁷⁴ In Judge Roth’s opinion, the Southco serial

²⁶⁶ *Id.* at 291. The majority, as noted above, spent very little time speaking to this point.

²⁶⁷ *Id.*

²⁶⁸ *Id.*

²⁶⁹ *Id.* at 292.

²⁷⁰ *Id.* at 293.

²⁷¹ *Id.*

²⁷² *Id.* Lest her readers fail to recognize the reflection of Judge Easterbrook’s *Am. Dental* analysis in this statement, Judge Roth includes a citation to this very rationale. *Id.* at 294 n. 13.

²⁷³ *Id.*

²⁷⁴ *Id.* at 295. Not long after, Judge Roth engages in a discussion of why the majority’s ruling would foreclose copyright in a variety of systems the likes of

numbering system was such a work. Given her disapproval of the majority's characterization of the idea/expression dichotomy, she would have upheld copyright in Southco's system.²⁷⁵

B. An Analysis of Serial Number Cases in Light of Probability Theory

At the outset, it bears noting that *Southco's* factual history differs somewhat from those at issue in the three previously discussed cases. This difference lies in the process that confronted the court: instead of mere assignments of numbers with no chance of repetition, and therefore, no pattern, Southco's code involved a true application step. This additional step, however, does not add any complexity in both common sense and probabilistic terms. In common sense terms, the court in *Southco* analyzed the application of a code perfectly: "[O]nce the rules of the system applicable to the particular product class are set, the numbers themselves are generated by a mechanical application of the rules and do not reflect even a spark of creativity."²⁷⁶ Indeed, the output sequence of serial numbers generated by a code's application reveals no deviation.²⁷⁷ In this regard, any creativity in the code – that which gives the code copyrightable value – can only come from the creation of the code, not its application. In basic probabilistic terms, the code's application has a probability equal

which Judge Easterbrook detailed as part of a similar slippery slope argument in *Am. Dental: Weight Watchers* point systems, lists of restaurants organized by "price range, corking fees, handicapped accessibility, or any other rule-driven criteria would be excluded. On the other hand, a list of restaurants based on more 'indeterminate' criteria, such as value or quality, would be protected. [citation omitted.] This discrepancy strikes me as both unprincipled and unprecedented." *Id.* at 297. As this Section will note later, these examples are completely inapposite to the case of serial numbers. Furthermore, while Judge Roth is correct in noting the odd paradox of copyright law that "soft" facts get protection where "hard" facts do not (and a sort of imprecision is thus rewarded), this finding is completely in keeping with precedent like the very case that she cites, *CCC Info. Serv. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61 (2d Cir. 1994).

²⁷⁵ *Southco*, 390 F.3d at 295.

²⁷⁶ *Id.* at 283.

²⁷⁷ One would do well to recall a presumption of functionality here that forces the application of a code to equal one. If the numbering system were applied with variations, it would not serve any purpose, and could not accordingly be called a "numbering system." See *id.* at 282. While such a possibility seems silly, it is also didactic. If constraints existed in neither the creation nor the application of the code, the acts of creating and applying the code would basically become a single unconstrained act.

to one (or certainty).²⁷⁸ The overall probability of the outcome of the two steps, normally computed by multiplying the probability of the first task with that of the second task, becomes merely the probability of the first task, in this case, the creation of the code.²⁷⁹ The creation of the code, therefore, is the only step with which a probabilistic copyright analysis is concerned, and happily for the sake of set size, is that which is common to each of the four serial number cases.

At bottom, analysis of code assignment presents one of the more difficult questions of copyrightable creativity, one which copyright seems singularly incapable of answering. The inconsistencies in the *Southco* opinions (and by extension, in the three opinions that preceded them) support this assertion. Upon closer investigation, the root of the inconsistencies becomes apparent: Judges Easterbrook and Roth applied a faulty theory operating in the guise of principled probabilistic analysis.

When Judge Easterbrook explained the many permutations that a serial number could assume without losing its function as a serial number system (the very point in which Judge Roth concurred in *Southco*), he seemed to apply the very analysis posited in this article. His statements that the serial “descriptions could have had four or six digits rather than five,”²⁸⁰ and that “an author could have elected instead [of starting the number with zero] to leave wide gaps inside the sequence,”²⁸¹ seem to state that the serial numbers were merely one of a nearly infinite number of choices available to the encoders, both in terms of number and arrangement of numbers. As such, any specific variation in the serial numbering code would necessarily reach an exceedingly low probability and thereby merit copyright protection.

However, the result of this rationale is flawed. The analysis presumes that each of the author’s selections in the code is the result of a meaningful choice among different numbers. The case presents,

²⁷⁸ This is merely a different way of saying exactly what Judge Alito pointed out: that application of a pre-existing code results in a certain outcome. *Id.*

²⁷⁹ This calculation is based on one of the most fundamental theorems of probability. See SCHEAFFER, *supra* note 105, at 21 (“If the first task in an experiment can result in n_1 possible outcomes and, for each such outcome, the second task can result in n_2 possible outcomes, then there are n_1n_2 possible outcomes for the two tasks together.” Given this statement, as noted above, if the second task has a probability of one, then the number of outcomes will be equal to n_1 , and the second task will have no effect on the probability of any outcome resulting from the first step.).

²⁸⁰ *Am. Dental Ass’n v. Delta Dental Plans Ass’n*, 126 F.3d 977, 979 (7th Cir. 1997).

²⁸¹ *Id.*

instead, a sort of non-constrained selection attached to no meaning or idea, which would remain completely uncopyrightable in a different field. For example, if a book were to follow this sort of purely random process, words would follow in a nonsensical sequence, without regard for the preceding or following choice, the book would almost certainly fail to qualify for copyright protection.²⁸²

This illustration demonstrates that probability theory requires a certain degree of constraint to reach a meaningfully low probability in a work's creation. In the case of random (serial) numbering processes, the probability of a generally nonsensical result is exceptionally high, perhaps certain. Thus, while many possible permutations exist in each serial number case, each set of numbers is of an equally meaningless form, a sort of merger on the nonsense-expression dichotomy. What Judges Easterbrook and Roth sought to do, therefore, was grant a copyright in chaos.²⁸³ Copyright law, in its normal articulation, is simply unable to cope with unconstrained expression in assessing copyrightable creativity. Therefore, while the probability theory is coterminous with copyright norms, the theory additionally suggests a solution to these controversial cases.²⁸⁴

²⁸² A *post hoc* constraint provides an exception to this example.

²⁸³ As a corollary to this point, even if this view of the probability theory seems contorted or artificial, its failure is edifying as to a different matter. By way of a proof by negation, the fact that the probability theory collapses precisely where traditional copyright law fails circumstantially reinforces the utility of the probability theory as an alternative explanation of copyrightability.

²⁸⁴ The division of opinions in *Southco, Inc. v. Kanebridge Corp.*, 390 F.3d 276 (3d Cir. 2004) sheds some light on this.

There are additional reasons to question the result that Judge Easterbrook reached in *Am. Dental*. Although his holding seems well-principled, his motivation for reaching his conclusion may not have been so. Underlying his decision are faint echoes of the economic justification for copyright law, a theory that traditionally sets the lowest bar for copyrightability, and one which is more closely related to British cases and pre-*Feist* "sweat of the brow" cases. While he failed to rationalize his decision explicitly in terms of an economic bar, he did not fail to mention the argument that the A.D.A. and other groups "depend on the copyright laws to recover the costs of the endeavor." *Id.* at 978. This very rationale lies at the heart of "sweat of the brow" decisions, where value of labor is made equivalent to creative value. And while it seems inappropriate to ascribe to a judge reasoning that is only mentioned in passing, Judge Easterbrook's strained reading of licensing contracts in *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996), permitted the subsistence of an alternate, contract-driven "sweat of the brow" doctrine. (In this widely criticized reading of the UCC and contract law, Judge Easterbrook really wanted ProCD to recover the costs of its efforts. *See, e.g.* Batya Goodman, Note, *Honey, I Shrink-Wrapped the Consumer: The Shrink-Wrap Agreement as an Adhesion Contract*, 21 CARDOZO L. REV. 319, 326 (1999)). While Judge Easterbrook seems

C. Modern Art, Another Form of the Serial Number Case

Lest the analysis of copyright in unconstrained decision seems an academic exercise confined to a delimited area of this field of law, a comparison between copyrights in serial numbers and those in modern art reveals that unconstrained copyright is perhaps more prevalent than the difficulties involved in the serial numbers cases would suggest. The field of modern art ranges over numerous forms and manifestations. Through “[d]epersonalization, the involvement of random choice, and anti-art,”²⁸⁵ modern art could take shape in a chromatic Rothko tableau²⁸⁶ or in Duchamp’s *LHOOQ*,²⁸⁷ a rendering of the Mona Lisa with a mustache. Yet there are unifying principles underlying this sometimes variegated field, and common clashes when the field runs up against the margins of copyright law.

In her article, *The Concept of Originality and Contemporary Art*, Nadia Walravens outlines some of these unifying principles and common clashes. According to Walravens, “[m]ost works today do not seek to describe a situation or a feeling and have no representational function in themselves.”²⁸⁸ This absence of representational function leaves the viewer of modern art without any easy lens through which to understand a work, or any constraint by which to measure a work’s meaning. The lack of easy bearing is precisely the thrust of the genre of modern art. Where traditional art recognizes that “only the form reveals the personal character of the author,”²⁸⁹ and the works linked to that field generally inhered expressive elements in the resulting artistic product, modern art blends the form, the idea, and the process of creation into one interchangeable mass.

interested in perpetuating this doctrine, as a post-*Feist* case, such a low bar for copyrightability would be flatly inappropriate.

²⁸⁵ Nadia Walravens, *The Concept of Originality and Contemporary Art*, in DEAR IMAGES ART, COPYRIGHT AND CULTURE 171, 173 (Daniel Mclean & Karsten Schubert eds., Ridinghouse 2002).

²⁸⁶ See, e.g., the picture plates in JESSE DUKEMINIER ET AL., WILLS, TRUSTS, AND ESTATES 784 (7th ed. 2005). Rothko once relevantly said, “[A]ll of art is a portrait of an *idea*.” ROTHKO EXHIBITION BROCHURE, NATIONAL GALLERY OF ART, available at <http://www.nga.gov/press/2005/releases/rothko/rothko-brochure.pdf> (last visited Nov. 16, 2006) (emphasis added).

²⁸⁷ Lisa Florman, *LHOOQ Again: Tradition as Revision in the Work of Marcel Duchamp*, available at http://www.humboldt-foundation.de/en/netzwerk/frontiers/archiv/gafoh_2005/abstracts/florman.pdf (last visited Oct. 7, 2006).

²⁸⁸ Walravens, *supra* note 285, at 102.

²⁸⁹ *Id.* at 106.

Superficially, this interchangeable mass seems somewhat distinguishable from the discrete levels of idea/expression dichotomy only present in a serial numbering case. In a serial numbering system, idea and expression can only vest in certain, readily identifiable levels. In *Southco*, Judge Roth designated these levels as part of an insightful commentary – essentially, copyright could theoretically protect a serial numbering system by excluding other parties’ use of the idea of a numbering system, by excluding use of the numbers to create a serial numbering system, or by excluding infringement of the exact form in which the author of the system arranges the numbers.²⁹⁰

Certain forms of modern art seem to share in these discrete levels. For example, Judge Roth’s analysis²⁹¹ is equally applicable to a purely chromatic Rothko piece.²⁹² Copyright could protect the colors depicted from general public use, the idea of depicting the colors in the setting of painting, or the colors’ very specific embodiment on the narrow level of the painting itself. Art, however, comes loaded with, as Judge Alito put it, “indeterminate”²⁹³ ideas at the levels closer to the specific expression which may merit copyright protection. This distinction flows from fundamental differences between art’s more profound “meaning” and the overarching utility of a numbering system. With this additional meaning comes a theoretically greater number, and accordingly lower probability overlap, of ideas²⁹⁴ which might superficially suggest that protection of modern art at its narrowest articulation²⁹⁵ is at the very least more worthwhile than the same protection in serial numbers.

While some distinction seems potentially viable as between the discrete idea/expression levels necessary to a serial numbering system and the more blurry strata of the dichotomy in modern art cases, a side-by-side example matching a “ready-made” piece of art with a serial numbering system more clearly demonstrates the *rapprochement* between the two fields. Ready-mades, “in [the artist’s] quest to extend the frontiers of art,”²⁹⁶ are the result of manufacturing processes, “an ordinary functional object [turned] a work of art.”²⁹⁷ These works

²⁹⁰ *Southco, Inc. v. Kanebridge Corp.*, 390 F.3d 276, 291 (3d Cir. 2004) (Roth, J., dissenting).

²⁹¹ *Id.*

²⁹² See *DUKEMINIER*, *supra* note 286.

²⁹³ *Id.* at 284 (majority opinion).

²⁹⁴ See discussion of the paradox of expression *supra* Section V.

²⁹⁵ See description of Learned Hand’s abstractions test *supra* Section I.

²⁹⁶ Walravens, *supra* note 285, at 112.

²⁹⁷ *Id.* An example of such a work is Marcel Duchamp’s use of a urinal.

derive their artistic value, not from the object itself, “but rather the designation process through which the object is presented as a work of art.”²⁹⁸ A ready-made, therefore, is a work of art by virtue of choice before execution: the idea of the ready-made, “the idea forming the work, ... reveals the stamp [of the artist],”²⁹⁹ not anything the artist does once the work is chosen.

The process and result of assigning serial numbers present little difference as compared to the process and result of designating ready-made art just described. In each, the resulting work is entirely process-driven, and the final embodiment of each work blends casually with the act of creation. For each in their purest form, at the stage of creation, the act imposes little constraint, only a certain degree of selection. Where the author of a serial number sequence need only choose from among a set of symbols and order those symbols arbitrarily,³⁰⁰ the ready-made artist need only select from among a set of manufactured objects.³⁰¹ Each of these selections is the function of processes that derive in large measure from purely random choice and in little measure from a need to convey a specific idea.³⁰² This lack of constraint in creation translates (in most cases) to a result that creates no easily discernible or tangible meaning to the reader of the code or the viewer of the ready-made art.³⁰³

In fact, the most credible distinction between serial numbers and works of modern art is one of degree of possible *post hoc* constraint, that is, constraint evident in the final work that was not present in the creation process. To understand this point, Learned Hand’s famous comment is didactic: “if by some magic a man who had never known it were to compose anew Keats’s Ode on a Grecian Urn, he would be an ‘author,’ and, if he copyrighted it, others might not copy that poem, though they might of course copy Keats’s.”³⁰⁴ While Hand was speaking explicitly to the requirement of independent creation in copyright,³⁰⁵ his point also speaks to the process of a

²⁹⁸ *Id.* at 112-14.

²⁹⁹ *Id.* at 116. Walravens uses the moral rights terminology, “stamp of the artist” because her article is geared primarily towards acceptance of modern art in a French copyright system that requires such a “stamp.”

³⁰⁰ Recall the holdings in *Mitel*, *supra* note 185 and *Toro*, *supra* note 187.

³⁰¹ See Walravens, *supra* note 285, at 116.

³⁰² See *id.* at 102; see also *Toro*, 787 F.2d at 1208.

³⁰³ See Walravens, *supra* note 285, at 102 (stating that the goal of the modern artist is to take the viewer through the process of selecting and contextualizing the *ouvrage*, not to create a meaningful form *in se*).

³⁰⁴ *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 54 (2d Cir. 1936).

³⁰⁵ Copyright requires both a “modicum of creativity” and “independent creation”

randomly or arbitrarily created artwork. Just as Hand's hypothetical poet did not intend to copy Keats but happened upon the same words through some "magic," so too may an aleatoric artist happen upon a form of constrained expression – Michelangelo's *David*, for instance – without intending it. In this way, while the artist's creative process is purely unconstrained, the result will bear witness to some *post hoc* constraint, figurative or otherwise.³⁰⁶ Serial numbers, on the contrary, do not leave any possibility of striking on a constraint. Any constraint in a serial number system will of necessity exist prior to the creation of the system – in *Mitel*, hardware specifications,³⁰⁷ software specifications,³⁰⁸ or industry standards³⁰⁹ constrained the resulting serial numbering system, each in place prior to the initiation of the creative process. In cases where both serial numbering systems and aleatoric artworks are unconstrained in their creation, however, any possibility of difference in the result for analytical purposes – the existence of a *post hoc* constraint in the artwork – is a case of infinitesimal likelihood, the result of, as Hand would put it, "some magic." This unlikely potential difference does not pose a significant analytical stumbling block to the comparison of serial numbers and modern art.

The striking likeness of both process and result in cases of modern art and serial numbering systems suggest that modern art's copyright status should match that of the serial number: modern art, in its least constrained forms, should not be the proper subject of copyright.³¹⁰ Two final conceptual hooks stand in the way of the

in addition to the fixation requirement. Independent creation permits, as Hand's quotation suggests, the identical result from two separate authors provided that one did not copy from the other.

³⁰⁶ It seems exceedingly unlikely that an artist would both happen on constrained work and *accept* it; the *post hoc* constraint difference between modern art and serial numbering is at best an infinitesimal concern. See Russ VerSteeg, *Rethinking Originality*, 34 WM. & MARY L. REV. 801, 824 (1992) (noting that creativity as a process requires an "acceptance" step. One can only presume that the artist seeking to create random art would not accept an accidental *David* or *Death of Marat*).

³⁰⁷ See *supra* note 233.

³⁰⁸ *Id.*

³⁰⁹ *Id.*

³¹⁰ Copyright should not be foreclosed in all forms of modern art, but large segments of the field would merit little more than the thinnest copyright that protects no more than actual copying. A later Piet Mondrian painting serves as a good example. See Piet Mondrian, the Transatlantic Paintings (Harvard University Museum), http://www.erg.be/multimedialab/doc/projections/doc_mondrian.pdf, 19 (last visited Oct. 26, 2006). No one would contend that Mondrian could copyright the drawing of geometric shapes bounded by solid black lines and interstitially

adoption of this conclusion – first, Judge Alito’s misgivings about denying copyright to art, and second, Walravens’ suggestion that modern art, through accepted practice *does* in fact impose constraints on the artist. To allay the former concern, one need only recall Justice Holmes’ oft-cited admonition in *Bleistein v. Donaldson Lithographing Co.*³¹¹ – “It would be a dangerous undertaking for persons trained only in the law to constitute themselves final judges of the worth of pictorial illustrations.”³¹² Just as judges should not concern themselves with what does not constitute “art” under the copyright statute,³¹³ they should equally avoid giving “art” an exalted place in the copyright world. If a form of art strays into unprotected territory, its analysis should be no different than that afforded non-artistic works.³¹⁴

The second concern, on the other hand, presents a greater potential of bringing modern art back into the copyrightable fold. On this count, Walravens explained the viability of importing norms from the field of modern art into the practice of copyright by suggesting that judges ought to apply flexible standards as to the stamp of personality in modern art.³¹⁵ She noted prior judicial reliance “on the criteria of the school of modern art.”³¹⁶ If these criteria provide, as they did in the case that Walravens cites (but does not explain), some constraint on the ultimate expression, works of modern art may escape relegation to the uncopyrightable domain of completely arbitrary expression.³¹⁷ If such constraints are only *de minimis*, taken with the rejection of Judge Alito’s concerns above, modern art, like serial numbering systems, may not be worthy of copyright under the probability theory’s assessment.

decorated with mostly primary colors. Each line and color, however, might be a low probability outcome in its specific embodiment. Again, imposing thin copyright in this field just as constraint becomes apparent comports entirely with the overall structure of the probability theory. *See generally* *Bleistein v. Donaldson Lithographic Co.*, 188 U.S. 239 (1903).

³¹¹ 188 U.S. 239 (1903).

³¹² *Id.* at 251 (holding that lithographs advertising a circus were sufficiently creative to permit copyright protection).

³¹³ This was the issue concerning the lithographic advertisements in *Bleistein*.

³¹⁴ It should be noted that granting copyright in modern art is not an undesirable outcome as far as the utilitarian theory, described *supra* Section I, is concerned.

³¹⁵ *See* Walravens, *supra* note 285, at 146 (primarily concerned with acceptance of modern art under a moral rights regime).

³¹⁶ *Id.* at 150.

³¹⁷ *See* Gervais, *supra* note 137.

VII. CONCLUSION

With an assessment of the three distinct areas of the spectrum of constraint in mind, a macroscopic structure becomes clear. The most creative work, and therefore the work best suited to copyright protection, actually sits in an area of moderate constraint because of the low probability outcome that follows from a low probability idea. As constraint increases from the central case, the low probability idea becomes a high probability idea, and that in turn leads to a high probability expression unworthy of copyright. As constraint decreases from the central case, the low probability idea becomes no idea at all, and potentially copyrightable expression ceases to express anything.

This structure, the direct result of the theory proposed in this Comment, resolves the two main problems that *Feist* left the copyright community. First, where *Feist* failed to define creativity, this Comment couches creativity in terms of constraint and the probability of result – two concepts that run through all possible cases and permit analogies where analogy might be otherwise impossible. Second, this Comment explains a way of balancing the varying degrees of randomness and rationality in potentially copyrightable expression by incorporating concerns for each into a larger normative theory. The overall result is a consistent analytical framework that provides legitimate substance to the word “creativity” over and above many courts’ uncertain parroting of *Feist*’s minimal guidance.