Personality as a Condition for Copyright Protection

By Nina Srejovic

Through both legislation and court decisions, the articulation of the aspects of a work entitled to copyright protection has evolved from an enumeration of categories of subject matter to a broad formulation limited only by the Constitution plus a list of what is excluded. Once copyrightable subject matter was released from the bounds of certain proscribed categories of subject matter, courts devised various tests for excluding an aspect of a work from copyright protection: no protection for ideas, no protection for expression that has merged with the idea, no protection for expression when the expression is limited by external circumstances, no protection for functional aspects, no protection for facts simply presented. However, underlying all of these exclusionary formulations is a fundamental feeling that the work lacks something. Despite the attempts at doctrinal consistency in such decisions, it would be more accurate to say that they have served to expose the lack of guidance in the law. Whether the work is not entitled to copyright protection because choices were limited or because it was not original enough, what the work lacks is a sense of the personality of the author, of human subjectivity. A positively formulated test of “personality” is constitutionally justified and practically necessary to put any effective limit on what copyright protects and insure that copyright protection for functional aspects of functional works, particularly in areas of new technology such as computer software and biotechnology, does not stifle competition.

III. The Evolution of Copyright Eligibility from a Positively Articulated Formulation to “Everything But.”

A. The Legislative Evolution of Copyrightable Subject Matter.

The early United States federal copyright statutes granted protection to limited categories of works defined by the physical form of the work. The first copyright statute adopted by Congress in 1790 was an act “for the encouragement of learning” and granted protection only to books, maps, and charts. Each extension of copyright required explicit statutory enactment. “Historical or other prints” were granted protection in 1802. This protection for prints was enlarged in an 1831 revision, which granted copyright protection to “any print, cut, or engraving,” as well as musical compositions. In 1856, dramatic compositions were granted protection. In 1865, an act extended copyright protection to photographs and photographic negatives. In 1870, the subject matter of copyright was expanded to include “any book, map, chart, dramatic or musical composition, engraving, cut, print, or photograph or negative thereof, or . . . painting, drawing, chromo, statue, statuary, and . . . models or designs intended to be perfected as

1 Copyright Act of May 31, 1790, ch. 15, § 1, 1 Stat 124, 124 (repealed 1831).
3 Copyright Act of Feb. 8, 1831, ch. 16, § 1, 4 Stat. 436, 436 (repealed 1870).
4 11 Stat. 139.
works of the fine arts.” An 1874 amendment stated that the words “engraving, cut and print shall be applied only to pictorial illustrations or works connected with the fine arts, and no prints or labels designed to be used for any other articles of manufacture shall be entered under the copyright law.” However, this amendment involved the location for deposit of copyrighted works and has been interpreted to mean that “no prints or labels . . . shall be entered as provided in the copyright law [i. e., at Copyright Office in the Library of Congress] . . .” Throughout this period the copyright statutes expanded the subject matter of copyright by adding, amendment by amendment, to the items that would be granted copyright protection.

The Copyright Act of 1909 represented a major shift in the way copyrightable subject matter was described in the United States copyright statutes. Passage of the act followed a report by the Register of the Copyright Office stating that the “copyright legislation now in force is not flexible enough to meet the needs of the present age of great material development” and therefore “should be replaced by one consistent statute, of simple and direct phraseology, of broad and liberal principles. . . .” It repealed all prior statutes in conflict with the provisions of the new law and established a much simpler and broader definition for subject matter entitled to copyright protection. Copyright protection was no longer limited by the physical form in which the work existed. Copyright protection was now extended to “all the writings of an author.” According to Weil in his treatise, Law of Copyrights, Congress “by using the very words which are used in the section of the Constitution from which it drew the power to pass” the 1909 statute made “everything copyrightable which can constitutionally be made copyrightable.” The breadth of this formulation of copyrightable subject matter is made clear from a later study of copyright law commissioned by Congress as part of a program for the general revision of copyright law. The study concluded, “[f]rom a review of the actions of the colonial legislatures, the Constitutional Convention, Congress, and the courts, it seems clear that the words ‘writings’ and “authors’ will no longer limit the

6 18 Stat. 78, ch. 301
7 Herbert A. Howell, The Print and Label Law, 70 U. Penn. L. R. 95 (1922)
8 Solberg, Thorvald, Copyright Law Reform, 35 Yale L. J. 48, 61 (1925)
9 Act of March 4, 1909, ch. 320, § 63
10 Act of March 4, 1909, ch. 320, § 4. Section 5 of the Act did list 11 classes of works entitled to copyright protection and required that an application for registration specify the class to which a work belongs. However, the provision explicitly states “[t]hat the above specifications shall not be held to limit the subject-matter of copyright as defined in section four of this Act . . . .”
11 Weil, Law of Copyright at 181. But see Mazer v. Stein, 347 U. S. 201, 210 (1954) (“Some writers interpret this section as being coextensive with the constitutional grant, but the House Report, while inconclusive, indicates that it was ‘declaratory of existing law’ only.”).
subject matter which can be copyrighted, at least in so far as the ‘form’ of the object is concerned.”

In 1964, then Register of Copyrights, Abraham Kaminstein proposed a new description of the subject matter entitled to copyright protection which he thought would be even more flexible and adaptable than previous subject matter descriptions. The bill stated that “[c]opyright subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or a device.” This formulation was adopted in the Copyright Act of 1976. While the Act includes a list of categories of works of authorship, it is not all-inclusive and does not put any limitation on what is copyrightable.

The “but” component of the “everything but” formulation of copyrightable subject matter was completed by the addition of § 102(b) in the Copyright Act of 1976. In response to concerns that the broad statement of works entitled to copyright protection would include the ideas and processes underlying computer programs, Congress included § 102(b) to specifically exclude such aspects of a work from protection. Section 102(b) excludes copyright protection for “any idea, procedure, process, system, method of operation, concept, principle or discovery.” This section of the act was not intended to constitute a change in the substance copyright subject matter, but simply a codification of current law.

18 “The legislative history does not reveal why these specific words of exclusion were chosen for § 102(b) . . . .” Pamela Samuelson, Why Copyright Law Excludes Systems and Processes, 85 Texas L. R. 1921, 1951 (2007).
B. Copyright Jurisprudence Underlying the “Everything But” Formulation of Copyrightable Subject Matter.

The exclusionary clause of § 102(b) has been characterized as a codification of the judicial idea/expression dichotomy,20 which prohibits copying of expressive aspects of a work but not of the ideas the work contains, or a codification of the Supreme Court’s decision in Baker v. Selden, which held that a the description of a bookkeeping system could be protected by copyright, the underlying bookkeeping system could not.21 Although Baker v. Selden has been cited as establishing the idea/expression dichotomy, more convincing arguments establish that it “contributed the system and other useful art exclusions to § 102(b).”22

While Baker v. Selden may have established the “but” portion of the “everything but” formulation. Justice Oliver Wendell Holmes’s decision in Bleistein v. Donald Lithographing,23 or at least later interpretations of his opinion, supports the great weight of the “everything” principle.24 Bleistein is often cited for the proposition that courts should not sit in judgment of the aesthetic value of a work, and therefore copyright should not be limited to aesthetic works.25 Although Justice Holmes language in Bleistein has been often quoted, commentators have pointed out the resulting difficulty of putting any limit on the subject matter eligible for copyright, if the language in Bleistein is taken to heart. Weil in his early text on the law of copyright, after describing the lower court cases after Bleistein, states that “obviously there is a point where judicial expansion of the conception of what is copyrightable must cease.”26 Bleistein has been interpreted for the proposition that “[t]he rule seems to be that if the article has enough merit and value to be the object of infringement, it is rightly to be deemed of sufficient importance to be

20 It is unclear how much guidance this dichotomy gives in determining what is included or excluded from copyright protection. For example, consider the circular reasoning in Pamela Samuelson’s description of Paul Goldstein’s suggestion that “both ‘idea’ and ‘expression’ should be understood as metaphors for aspects of protected works that either are, or are not, within the scope of copyright protection.” Pamela Samuelson, Why Copyright Law Excludes Systems and Processes, 85 Texas L. R. 1921, 1922 (2007); 1 Paul Goldstein, Goldstein on Copyright § 2.3.1 (2006).
23 188 U.S. 239 (1903).
24 Bleistein also supports an exclusion of functional works from copyright protection in its less often quoted statement that, “[t]he antithesis to ‘illustrations or works connected with the fine arts’ [which are protected by copyright] is not works of little merit or of humble degree, or illustrations addressed to the less educated classes; it is ‘prints or labels designed to be used for any other articles of manufacture.’” Bleistein, 188 U.S. 239, 251 (1903).
25 citations
26 Weil, Law of Copyright at 42.
II. The “everything but” formulation of copyrightable subject matter logically leads to the protection of aspects of new technologies outside the generally understood scope of copyright law.

Since passage of the Copyright Act of 1976, courts and commentators have had mixed success grappling with what is excluded from copyright protection. As statutes and court decisions, such as Bleistein, broadened the subject matter entitled to copyright protection, courts were left with the job of reignining in authors who sought protection for works outside of the understood, but not statutorily articulated, realm of copyright. The discussion sometimes centers around the idea/expression dichotomy, the exclusion of functional aspects, the merger doctrine, the doctrine of scenes a faire, and occasionally around the words in § 102(b) of the statute itself. Despite much discussion, the bounds of what is excluded from copyright protection remain unclear.

A. Computer Software is Copyrightable.

The difficulty of the current “everything but” formulation of copyrightable subject matter is demonstrated in its application to computer software. When Congress enacted the 1976 Copyright Act, Congress assumed that computer programs were covered.28 The Copyright Office had been registering computer programs since 1964, albeit under its “rule of doubt.”29 As outlined above, the Act states that copyrightable subject matter consisted of all original works of authorship and included a nonexclusive list of categories of copyrightable expression, one of which is literary works. In the House Report accompanying the bill, “literary works” included computer programs.30 “[T]here is no explanation in the statute or its legislative history of the basis for the assumption that programs were covered, nor is there any indication of the scope of coverage.”31

In 1974, prior to passage of the Act, Congress had appointed the National Commission on New Technological Uses of Copyrighted Works to study ways in which the copyright law should apply to new technological means of handling information.32 One recommendation of the Commission was that the Copyright Act be amended to explicitly state the Commission’s conclusions that computer programs are copyrightable.33 Congress followed the recommendation by providing a definition of

27 Howell, supra note 7, at 97
28
31 Weinreb at 1164.
“computer program” as “a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.” Since no change was made to the nature and extent of copyright protection, presumably such determinations would be made by reference to general copyright principles.

The CONTU Report clearly considered the actual written code to be the computer program. The Report refers to computer programs as “a form of writing . . . . They are prepared by the careful fixation of words, phrases, numbers and other symbols in various media. The instructions that make up a program can be read, understood, and followed by a human being.” The Report goes further in its analogy of computer programs to literary works. “[A] program is created, as are most copyrighted works, by placing symbols in a medium. In this respect it is the same as a novel, poem, play, musical score, blueprint, advertisement or telephone directory.” The writers of the Report seemed to assume that a computer program is the source code written on paper for humans to read. Comparing computer source code to novels, poems, and plays belies the great differences in the substance between such aesthetic literary works and computer programs.

Since passage of the 1976 Copyright Act and the amendments following CONTU, courts have not limited the protection of computer programs to the source code “that can be read, understood, and followed by a human being.” Courts have repeatedly stated that object code, or the series of 0s and 1s into which the source code is compiled to be readable by a computer is copyrightable. Nor have they limited the protection of computer programs to works that are “created . . . by placing symbols in a medium.” Courts have held that the copyright of computer programs extends to overall structures and systems of operation. In addition, the Copyright Office has allowed deposit of computer programs on CD-ROMs and in the form of object code. Ironically, the least expressive aspect of computer software, the program code, seems to garner the greatest

35 CONTU Report at 23.
36 CONTU Report at 36. The Report seems to confuse a similarity in how works are fixed in tangible media with a similarity in the nature of the works themselves.
37 Of course, this embodiment of computer programs is not at all what gives them value or at all what authors of programs seek to protect.
39 Whelan, 797 F.2d at 1242–43; Ovacle America, Inc. V. Google, Inc. 750 F.3d 1339 (2014).
40 Copyright Office Circular 61.
consensus regarding its copyrightability.  

B. If Computer Software Code is Copyrightable, It is Difficult to Argue that DNA Sequences Are Not.

In enacting the 1976 Copyright Act, it was Congress’s intention to grant protection to “new forms of creative expression.” 42 Perhaps because computers and software were invented by biological machines (humans), the computer software that defines how computers operate is remarkably analogous to the DNA that defines how we operate. 43 If “the question whether computer programs are or ought to be within the subject matter of copyright invites attention to the arguments justifying copyright generally,” 44 the question whether DNA is or ought to be with the subject matter compels it. 45 Recent biotechnological advances make the analogy between computer software and chemical sequences, such as DNA, more compelling. As physical space for the vast amounts of digital information currently being stored becomes limited, people are looking for alternative data storage mechanisms. One company estimated in 2015 that all of the world’s digital information could be stored in 2.5 gallons of DNA solution. In 2013, the European Bioinformatics Institute used DNA to encode all of Shakespeare’s sonnets. A research group at Harvard used DNA to encode the content of a book written by the head researcher plus the code for a Javascript app. They have used CRISPR technology to encode the Edward Muybridge film of a galloping mare in the DNA of e coli bacteria. DNA logic gates are being developed to control chemical reactions in cells. These examples lead to the same questions for both DNA and computer software. A written DNA sequence is a human readable representation of chemical compound. A software program written in JAVA is a human readable representation of a series of electrical impulses causing transistors to be turned on and off.

In addition, two trends in intellectual property law lead to the likelihood that owners of intellectual property previously protected by patent may increasingly seek copyright protection for their works. First, copyright terms have lengthened greatly since the first federal copyright statute. “Congress has extended the ‘limited Times’ of protection, U. S. Const., Art. I, § 8, cl. 8., form the ’14 years’ of Jefferson’s day to potentially more than a century today. 46 Second, patent protection for both computer software and DNA has been recently curtailed which may lead to a push for greater

41 See Note 109, below.
43 The proof of this assertion is far beyond the scope of this article.
45 To some extent, the question of software copyrightability is determined by language in the copyright statute specific to that technology. However, the question of whether DNA is or should be protected by copyright has no such statutory language to hide behind.
copyright protection in both of these industries.\textsuperscript{47}

1. \textit{The (very elementary) basics of DNA technology.}

Deoxyribonucleic acid, or DNA, is a chemical compound, structured as a two helical strands. Each strand is a string of nucleotides, simply a smaller chemical compound subunit of the larger molecule. There are four different nucleotides in DNA, represented by the letters A, G, C or T. When communicating with someone, a DNA strand is usually represented by a written sequence of these letters, such as AAATTTCGGGGCAAGGCCTTTAAA. The order, or sequence of these nucleotides in DNA “determines what biological instructions are contained in a strand of DNA. For example, the sequence ATCGTT might instruct for blue eyes, while ATCGCT might instruct for brown.\textsuperscript{48} DNA performs this role by instructing a cell what proteins to produce. “First, enzymes [in a cell] read the information in a DNA molecule, the sequence of As, Ts, Cs and Gs. In a two step process, the sequence of DNA is translated to the sequence of amino acids in a protein. DNA is also used a crucial way for cells to store and transfer information. If a cell divides, the DNA is copied and divided between both new cells.

2. \textit{Copyright protection for functional expression in DNA.}

Initially, chemical compounds may appear to be far outside the bounds of copyrightable subject matter, but when compared with computer software, particularly in the form of object code, it is hard make a logical distinction between the two. Irving Kayton in a 1982 law review article first analyzed the idea of copyrighting DNA sequences.\textsuperscript{49} He argued that “[l]ibraries of spliced DNA fragments and cultures of engineered cells with a foreign DNA sequence introduced therein are certainly ‘fixed in tangible . . . medi[a] of expression’” as required by the Copyright Act of 1976. Prof. Kayton analogized to computer programs in finding that genetically engineered works are literary works under § 101 of the Copyright statute. The nucleotides that make up DNA are the indicia in which these literary works are expressed. The processes used in all cells correspond directly to those of digital computers. As the operations in a computer are carried out in a binary system, the instructions dictated by DNA are carried out through a quaternary system.

\textsuperscript{47} The Supreme Court’s decision in \textit{Alice} led the Patent Office to institute a specific procedure to challenge the validity of patents granted to computer software under the previously more lenient patent eligibility rules. Similarly, the \textit{Myriad} decision which limited the patentability of isolated DNA sequences has led to unpatentability decisions with regard to DNA related medical technology, particularly diagnostics.
\textsuperscript{48} https://www.genome.gov/about-genomics/fact-sheets/Deoxyribonucleic-Acid-Fact-Sheet
DNA sequences\textsuperscript{50} easily meet the minimal requirements of § 102(a) of the Copyright Act of 1976. A DNA sequence can be an “original work of authorship.” Scientists can now imagine a completely novel sequence of As, Ts, Cs and Gs, type the sequence into an online form, and receive the DNA of that sequence in the mail within a matter of days. “With simple chemistry, strings of A, T, C and G nucleotides can be created in any desired order, one [nucleotide] after another, snapping together in a similar fashion to Lego pieces.”\textsuperscript{51} DNA sequences are “fixed in a tangible medium of expression. The As, Ts, Cs, and Gs of a DNA sequence may be typed out on a piece of paper in the same way that computer source code may be. The DNA sequence in a chemical compound is fixed for thousands of years. To further the analogy to computer software, synthesized DNA sequences are now fixed on silicon plates to manufacture microscopic reaction clusters in a similar way that microchip engineers manufacture microscopic circuits into a microchip by controlling the silicon lattice’s chemical properties.”\textsuperscript{52}

A DNA sequence is a literary work in the same way that computer software object code is a literary work. A DNA sequence can be expressed in As, Ts, Cs and Gs, which are “verbal or numerical symbols or indicia” as required by the Copyright Act’s definition of literary work.”\textsuperscript{53} Similarly, computer software object code can be expressed in 0s and 1s, which are “verbal or numerical symbols or indicia” as required by the Copyright Act’s definition of literary work.”\textsuperscript{54} However, as with software, the DNA sequence on a piece of paper represented by such symbols is not the valuable copy of the work that a potential copyright owner seeks to protect. A DNA sequence copyright holder would like to prevent copying of the actual chemical compound. A computer software copyright holder would like to prevent copying of the computer program expressed in transistors on a silicon (or whatever composes the next generation semiconductor) chip.

An interesting comparison between the instructions in a DNA sequence and the instructions in object code is presented in a Nature Biotechnology article from 1984. “[I]t appears that while [DNA strands] are not ‘verbal or numerical indicia,’ neither are the electronic band levels of silicon. The genetic instruction coding for the amino acid leucine [a component of proteins], for example is TTG, which in a [] DNA molecule occupies about 0.7 nm in length. The electronic program instruction ADD BOTH NUMBERS AND SAVE THE RESULT is expressed in binary code as 01101001 in an Apple computer, and occupies about the same amount of space on a silicon chip. If a court is willing to accept electronic levels as suitable media of expression [in an Apple operating system], it should not have too much difficulty with molecular media [in

\textsuperscript{50} Note that “DNA sequences” presents the same issue as “computer software” with regard to definition. Are DNA sequences the letters as written in a manner immediately comprehensible by humans, analogous to source code? Or are DNA sequences the chemical compound composed of a strand of nucleotides represented by the letters, analogous to the actual set of instructions run by a computer?

\textsuperscript{51} https://twistbioscience.com/company/blog/oligos-changed-world

\textsuperscript{52} https://twistbioscience.com/company/blog/oligos-changed-world

\textsuperscript{53} 17 U.S.C. § 101.

\textsuperscript{54} 17 U.S.C. § 101.
More recently, Professors Christopher Holman and Andrew Torrance along with Claes Gustafsson, co-founder of DNA 2.0, attempted unsuccessfully to register with the Copyright Office a DNA sequence entitled the Prancer DNA Sequence. When the Copyright Office refused registration, they requested reconsideration of the Copyright Office’s refusal to register the DNA sequence. On February 11, 2014, Robert J. Kasunic, the Associate Register of Copyrights and the Director of Copyright Policy and Practices wrote back affirming the office’s conclusion that the Prancer DNA Sequence does not support a claim for copyright registration. Mr. Kasunic’s letter states that the Copyright Office “finds that synthetic DNA sequences do not fit within any of the existing categories of copyrightable authorship listed in section 102(a) and are not an extension of copyrightable subject matter that Congress already intended to be protected by copyright. . . . The Office finds a claim in synthetic DNA sequences to be a claim in a new category of copyrightable subject matter that is presently precluded from copyright protection until such time as Congress decides it should become copyrightable subject matter.”

The Copyright Office rejected the analogy to computer programs, stating that DNA sequences are not literary works. Mr. Kasunic’s letter stated that “DNA sequences are fundamentally different from computer programs” because they “are the result of biology or biological techniques. . . .” The letter pointed to the Supreme Court’s decision in Assoc. of Molecular Pathology, as providing “reason to question whether synthetic or cDNA sequences are proper subject matter for copyright, since they are eligible for patent protection.” This argument does not seem to be well-founded since computer programs are currently entitled to both copyright and patent protection.

The argument that the Prancer DNA Sequence was analogous to a computer program because it is comprised of a set of instructions was not convincing to the Copyright Office. Mr. Kasunic’s letter makes the conclusory statement that the “231 codons that make up the Prancer DNA Sequence are not statements or instructions that are ‘used directly or indirectly in a computer in order to bring about a certain result.’” While an organism may be analogized to a machine, it clearly is not one, and as a result falls outside of the category enumerated in the statute.”

Finally, Mr. Kasunic’s letter states that a DNA sequences are “not made for the purpose of artistic expression” and to the extent DNA sequences are a form of expression, it is dictated solely by functional considerations. The fact that the creator of a DNA sequence can choose from among a set of codons to encode an amino acid does not make a DNA sequence specifying a certain protein an artistic expression. Similarly, the fact that a DNA sequence is represented by a string of letters does not transform the biological process to a literary work.

In response to Mr. Kasunic’s letter, Profs. Holman and Torrance and Mr.

Gustafsson wrote an article rebutting the arguments of the Copyright Office.\textsuperscript{56} The article again analogizes to computer programs, stating that the copyright statute does not specifically list computer programs as works entitled to copyright and yet they have been afforded such protection. Among the arguments made in the article, the authors also point out that there are examples of non-functional synthetic DNA sequences that would satisfy the artistic threshold proposed by the Copyright Office. Literary quotations were introduced into a synthetic genome and a version of a book was encoded in DNA. In addition, DNA has been used to create a biological device that behaves like a transistor.

The Copyright Office’s rejection of the registration of the Prancer DNA Sequence prompted another professor to write an article mostly concerning the proper standard of review for a hypothetical court reviewing the office’s decision.\textsuperscript{57} In addition to discussing the standard of review, Prof. Burk states his opinion that copyright has been a poor fit for computer software. He notes that “[e]ven were copyright to be applied to synthetic nucleotide sequences, it would exclude any functional characteristics and protect only non-functional, expressive characteristics. Thus, the sequences would garner little if any actual copyright protection.” Prof. Burk acknowledges that two-dimensional drawings of semiconductor chips were registered, but the Copyright Office advised registrants that the registration did not extend to the three-dimensional construction of the circuit.

As DNA technology advances, it becomes harder and harder to argue under general copyright principles that software should be copyrightable yet DNA should not. Construction of a DNA molecule previously required splicing a promoter to a structural gene and inserting them in to a plasmid cell to create a hybrid plasmid cell. Currently, DNA Scientists are exploring the use of DNA for dense and durable information storage, both within and outside of living cells.\textsuperscript{58}

\section*{III. Determining Copyrightability by Separating Function from Expression to Determine Copyrightable Aspects of Functional Works is Unworkable.}

While functional aspects of creations are excluded from protection under § 102(c), some aspects of functional works are eligible for copyright.\textsuperscript{59} “[A] copyrighted work of art does not lose its protected status merely because it subsequently is put to a functional use. The Supreme Court so held in \textit{Mazer v. Stein}\textsuperscript{60}, and Congress specifically intended to accept and codify \textit{Mazer} in section 101 of the Copyright Act of 1976.”\textsuperscript{61} However, the capacity of copyright law to encompass functional works has been challenged from the beginning. The exclusionary articulation of copyrightable subject

\begin{thebibliography}{99}
\bibitem{56} Gustafsson, `Computer Programs', 35 Biotechnology Law Report 103 (2016).
\bibitem{57} Burk, `DNA Copyright in the Administrative State', 51 UC Davis Law Review 51 (2018).
\bibitem{59} Mazer v. Stein, 347 U. S. 201, 98 L. Ed. 630, 74 S. Ct. 460 (1954).
\bibitem{60} Brandir at 1147.
\end{thebibliography}
matter requires in order to determine the protectable elements of a work, two steps be
undertaken. First, the idea or process must be separated from the expression. As clearly
stated in §102(b), this idea or process is not entitled to copyright protection. Second, all
expression that must necessarily be used as incident to the work’s underlying concept
must be filtered away. What remains is protectable expression.

One of the causes of confusion in how to treat functional works is the inclusion
§102(b) of the Copyright Act of three different concepts of exclusion: 1) ideas and
categories, 2) procedures, processes, systems, and methods of operation, 3) principles and
discoveries. The underlying copyright principle for exclusion of aspects listed in
§102(b) differs among groups 1), 2), and 3). Excluding ideas and concepts from
copyright protection requires a different calculus than excluding procedures, processes,
systems, and methods of operation or principles and discoveries. It is well established
that an idea or concept is not entitled to copyright protection, while the expression of that
idea or concept is. Therefore the analysis of a work that contains an idea and an
expression (which all works do) involves distinguishing the idea from the expression and
granting copyright protection to the expression. A similar analysis can be made
distinguishing the process and the expression when the expression is an explanation of
the process, such as in the case of Baker v. Selden. However, the analysis breaks down in
the case of computer software or DNA sequences when the expression itself embodies the
process.

Despite the inadequacy of such an analysis in determining which aspects of
computer software are copyrightable, courts and commentators have repeatedly extended
the idea/expression analysis to establish a process/expression analysis in the context of
computer software. Indeed, CONTU “concluded that the idea-expression distinction
should be used to determine which aspects of computer programs are copyrightable.”
The conflation of function with idea in the context of the idea/expression distinction was
articulated by Judge Keeton in the case of Lotus Dev. Corp. v. Paperback Software. He
declared that, “If . . . the expression of an idea has elements that go beyond all functional
elements of the idea itself, and beyond the obvious, and if there are numerous other ways
of expressing the non-copyrightable idea, then those elements of expression, if original
and substantial, are copyrightable.”

The idea/expression dichotomy was used as a process/expression dichotomy in
Comput. Assoc. v. Altai. In describing the first step in the court’s proposed abstraction-
filtration-comparison test, the court discussed in detail Judge Learned Hand’s enunciation

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62 Comp. Assoc. v. Altai, 982 F. 2d at 705.
64 65 However, Judge Learned Hand has noted that “nobody has ever been able to fix that
boundary [between idea and expression], and nobody ever can.”
of the abstractions test for separating idea from expression in literary works. The court’s analysis continues that in a literary work, such as a novel, at some level of abstraction, the pattern becomes an idea rather than an expression, and therefore is not entitled to copyright protection. Contrary to the court’s opinion in Comput. Assoc. v. Altai, the same analysis cannot logically be applied to a functional work, such as computer software, or for that matter DNA sequences, to separate the process from the expression. In computer software, the expression is the process. At each level of abstraction, it remains a process.

The use of the process/expression dichotomy in the case of functional works leads to a fundamental difficulty: the answer to whether an aspect of a useful work is functional, and therefore outside the scope of copyright, depends entirely on how the function is defined. This fact is true whether the case is decided by the abstraction-filtration-comparison test, the merger doctrine, the scenes a faire doctrine or any other test.

Two examples of cases that attempted to filter out uncopyrightable matter using the abstraction-filtration-comparison test are Oracle America, Inc. v. Google, Inc. and Computer Associates International v. Altai. In Oracle, the district court held that method specifications expressed as the declarations in Java were necessary to the function of the both the copied and the copying program. This determination depended on the district court’s definition of the function of the program being a program that users trained in JAVA can use. The Federal Circuit reversed the decision based on its determination that the function of the program did not include being immediately useable by a JAVA trained programmer. Similarly, the Computer Associates decision depends on whether the function of the programs in question is to be a “common system interface component” or an efficient common system interface component that complies with “the

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68 At 706-7.
69 At 706.
70 At 706.
71 The court’s fundamental misunderstanding of computer programs is exemplified in its citation with approval of the following: After all of the steps of imagining the component functions necessary for a program to work, setting parameters, enlisting the help of macros, and assembling different modules, the step of computer programming called “coding” is “comparable to the novelist fleshing out the broad outline of his plot by crafting from words and sentences the paragraphs that convey the ideas. Mark T. Kretschmer, Note, Copyright Protection For Software Architecture: Just Say No!, 1988 Colum. Bus. L. Rev. 823, 826 ((1988). Computer programmers may contend that the relative creativity involved in the coding step of computer programming is closer to typesetting a book than writing a novel.
72 750 F.3d 1339 (Fed. Cir. 2014).
73 982 F.2d 693 (2nd Cir. 1992).
75 Oracle America, Inc. v. Google, Inc. 750 F.3d 1339, 1370 (Fed. Cir. 2014)
demands of [a specific] operating system and of the [specific] applications program to which it was to be linked."\(^{76}\)

The court in *Apple Computer, Inc. v. Franklin Computer Corp.* rejected a defense based on the merger doctrine to find that the copyright on the Apple II operating system was infringed. The decision was dependent on the court’s statement that the function of the operating system was not “achieving total compatibility with independently developed application programs written for the Apple II,” but rather simply “translating source code to object code.”\(^{77}\) The court in *Mitel, Inc. v. Iqtel, Inc.*, found command codes uncopyrightable under the scenes a faire doctrine, but its decision depended entirely on the definition of the function of the command codes. The court decided that included in the function was “ensuring compatibility with equipment already installed in the central offices of Mitel’s customers as well as with old versions of equipment.”\(^{78}\)

In *Lotus Development Corp. v. Borland, International, Inc.*, the court’s denial of copyrightability depended on the function being a computer spreadsheet that users of Lotus 1-2-3 can use without additional training, rather than simply a computer spreadsheet.\(^{79}\) In *Star Athletica L.L.C. v. Varsity Brands, Inc.*, the majority and the dissent grappled with whether the function of the garment was 1) to clothe the wearer or 2) identify the wearer as a cheerleader.\(^{80}\) The majority decision in *Star Athletica* and the dissent in that case show how the current tests for what is excluded from copyright do not correlate with what seems to be legitimate copyrightable subject matter. Justice Thomas wrote for the majority that the combinations and arrangement of chevrons, lines, curves stripes, and other shapes if perceived as a separate work of art would qualify as a protectable work if imagined separately from the useful article of a cheerleading uniform.\(^{81}\) The District Court in the case and the dissent in the Court of Appeals held that because the designs served the useful or “utilitarian” function of identifying the wearer as a cheerleader.\(^{82}\) The dilemma is that both of these determinations are clearly correct. However, one led to a finding that the design is protectable by copyright, and the other led to the finding that the design was inseparable from the function of the article and therefore uncopyrightable. The problem is with the test. Anything, depending on the context, can be aesthetic.\(^{83}\) It is equally true that anything, depending on the definition of the function, can be functional.\(^{84}\)


\(^{77}\) *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1253 (3rd Cir. 1983).

\(^{78}\) *Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1375 (10th Cir. 1997).


\(^{81}\) *Star Athletica*, 137 S. Ct. at 1007.

\(^{82}\) *Star Athletica*, 137 S. Ct. at 1007-8.


\(^{84}\) See paragraph xx, infra.
IV. A Positively Articulated Test of Personality Should be Applied When Assessing Which Aspects of a Work Are Entitled to Copyright Protection.

The notion that everything fixed in a tangible means of expression is entitled to copyright protection unless it falls into one of the categories of authorship that is excluded from protection seems to be a perversion of the goals of intellectual property law. Copyright protection is a government granted monopoly and long ago recognized as a “tax on readers for the purpose of giving a bounty to writers.” While copyright protection can serve to “provide an incentive to produce copyrightable works and thereby promote the Progress of Science and useful Arts,” copyright protection imposes costs. Given these costs, it seems more than slightly overbroad to grant such monopolistic protection to anything fixed in a tangible medium other than aspects of works specifically excluded. A positive formulation of copyrightable subject matter which grants protection only to aspects of works that promote the goals of copyright to “promote the Progress of Science and the useful Arts” takes into account the activity sought to be encouraged and the costs incurred would help to guard against overbroad grants of copyright protection. In determining the copyrightability of a work, courts should consider what benefit protecting the work brings to society, not just grant copyright protection to what’s left after certain types of works are excluded.

A. What is a Test of Personality?

In Justice Holmes’s opinion in *Bleistein*, he notes that a copyrightable work “is the personal reaction of an individual upon nature. Personality always contains something unique. It expresses its singularity even in handwriting, and a very modest grade of art has in it something irreducible, which is one man’s alone. That something he may copyright unless there is a restriction in the words of the act.”

Attempts to exclude functional aspects from copyright protection necessarily involve separating functional aspects from something else. But what is this something

85 cite
87 *Star Athletica*, 137 S. Ct. at 1034 (Breyer dissenting).
88 *Id.*
90 One of the reasons Congress sought to formulate a broad formulation of copyrightable subject matter was to be able to accommodate future changes in technology. The positive formulation proposed in this article make copyright protection better able to adapt to new technologies. See paragraph xx, below.
91 See, Comp. Assoc. v. Altai, 982 F. 2d 693, 706 (2d Cir. 1992) (“[S]uch things as incorporated ideas, expression that is necessarily incidental to [] ideas, and elements that are taken from the public domain.” are unprotectable. After removing all of these things, the court is “left with a kernel, or possible kernels, of creative expression” that is protected.)
else? Currently, the unsatisfying answer is that functional aspects are separated from copyrightable expression. As the case law below shows, the copyrightable expression is that which is not dictated by efficiency, restraints imposed by the work itself and other functional considerations. It is the expression that reflects the individuality of the author, the human subjectivity of the choices made by the author, indeed contains his personality. “The prevalent contemporary understanding identifies authorial subjectivity as the hallmark of original works of authorship: original works reflect the personalities of their authors or, at the very least, embody their creators’ subjective choices in the selection or arrangement of material.” One formulation of personality is offered by Professor Jane Ginsburg in her article, Creation and Commercial Value: Copyright Protection of Works of Information. In the context of her argument for a two-tier system of copyright protection, she describes a definition of “high authorship” works as works in which “authorial personality permeates the work; the creation emanates from the subjective choices made by the author in her elaboration of the work.” “A high authorship work represents not only economic interests, but the persona of its creator(s) and exploitation of the copyright in these kinds of works therefore implicates both the spirit and the flesh.”

Bleistein and the notion of personality and human subjectivity are discussed at length by Barton Beebe in Bleistein, The Problem of Aesthetic Progress, and the Making of American Copyright Law. Human subjectivity is reflected in the current leading test of conceptual separability of function from nonfunctional aspects of a work. “The Brandir test asks whether the claimed ‘design elements can be identified as reflecting the designer’s artistic judgment exercised independently of function influences.’ This test intensifies the core concern of Holmes’s analysis of the originality requirement: human subjectivity.”

Any proposal of an aesthetic criteria must reckon the Constitution’s Progress Clause which states the purpose of intellectual property laws. For a discussion of the current view that the clause does not limit the power of Congress to enact intellectual property protection only when doing so will promote progress, see Beebe, Problem of Aesthetic Progress, Colum. L. R. 319 (2017). Similarly, the proposal must acknowledge that the Progress clause states that the laws are to “promote the Progress of Science and

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93 “Copyrightable expression” is often simply referred to as expression, but, particularly in the case of computer software, and arguably DNA sequences as well, the expression itself may be a functional aspect. See paragraph xx, above.
94
useful Arts,” and notable does not mention out progress of the arts. If a literal reading of
the clause means that granting exclusive rights outside of “science” for copyrights and
“useful arts” for patents is unconstitutional, the phrase is better ignored. see Beebe,
Problem of Aesthetic Progress, Colum. L. R. 319, 322-325 (2017) and Goldstein v.
California, 412 U.S. 546, 555 (1973) (explaining that the clause’s “objective is to
promote the progress of science and the arts.” The Supreme Court in Bleistein also
rejected the argument that painting and engraving is not among the useful arts, stating
that the “Constitution does not limit the useful to that which satisfies immediate bodily
needs.”

B. Constitutionality of a Positively Articulated “Personality” Requirement.

1. “Authors” and “writings” include a concept of originality.

Support for such a positive requirement can be found in the Progress Clause of the
Constitution and court decisions interpreting the terms “writings” and “authors.” The
Supreme Court has held that “[o]riginality is a constitutional requirement.” The Court
articulated this originality requirement in two 19th century cases which included a
concept of originality in their definitions of the terms “writings” and “authors.” In the
Trademark Cases, the Court addressed whether the clause in the constitution granting
Congress the right to secure the exclusive right to “authors” in their “writings,” granted
Congress the right pass legislation regarding trademarks. The Court held that trademarks
were not “writings” with the clause because a “writing” as used in the Progress Clause of
the Constitution required “originality.” Little guidance as to what constituted originality
was given other than writings “only such as are original, and are founded in the creative
powers of the mind” are included. The term “authors” has also been found to include a
requirement of originality. In Burrows-Giles Lithographic, the Court addressed the
question of whether the copyright statute granting protection to photographs, and
specifically a photograph of Oscar Wilde, was constitutional. “The Court defined
‘author,’ in a constitutional sense, to mean ‘he to whom anything owes its origin;
originator; maker.’”

2. Personality as a Necessary Component of Originality.

So what is this concept of originality? It is clear that “[n]o one may claim
originality as to facts.’ This is because facts do not owe their origin to an act of

100 Bleistein v. Donaldson Lithographing Co., 188 U.S. 239, 249 (1903)
102 At the time of these Supreme Court decisions, the copyright statute limited protection
to the enumerated categories of “books, maps, charts, dramatic or musical compositions,
engravings, cuts, prints, paintings, drawings, statues, statuary, and models or desings
intended to be perfected as works of the fine arts.” Stat. § 4952.
103 The Trade-Mark Cases, 100 U.S. 82 (1879)
104 Feist, at 346.
105 Feist at 346, quoting Burrows-Giles at 58.
authorship.”106 But in the context of copyright law, “originality” means something more than simply “owing its origin to.” Prior to the passage of the Copyright Act of 1976, Congress asked the Copyright Office to study existing problems. In response, the Copyright Office recommended that Congress “clear up the confusion in the lower courts as to the basic standards of copyrightability.”107 The Register of Copyrights explained in his first report to Congress that ‘originality’ was a ‘basic requisite’ of copyright under the 1909 Act, but that ‘the absence of any reference to [originality] in the statute seems to have led to misconceptions as to what is copyrightable matter.”108 Congress did explicitly incorporate the originality requirement in the 1976 Act and announced that it was merely clarifying existing law. “The two fundamental criteria of copyright protection [are] originality and fixation in tangible form. . . . The phrase ‘original works of authorship,’ which is purposely left undefined, is intended to incorporate without change the standard of originality established by the courts under the present [1909] copyright statute.”109

In *Burrows-Giles*, the Court had “no doubt that the constitution is broad enough to cover an act authorizing copyright of photographs, so far as they are representatives of original intellectual conceptions of the author.”110 Following that general statement, the Court distinguished between two types of photographs. The Court upheld the constitutionality of copyright protection for a photograph in which the photographer had “pos[ed] the said Oscar Wilde in front of the camera, selecting and arranging the costume, draperies, and other various accessories, . . . arranging the subject so as to present graceful outlines, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation, made entirely by plaintiff, he produced the picture in suit.”111 With respect to the question of whether a photograph which simply “transferr[ed] to the plate the visible representation of some existing object, the accuracy of this representation being its highest merit” was the original work of an author and therefore entitled to copyright protection, the Court made clear: “On the question thus stated we decide nothing.”112 The Court recognized that a photograph that clearly owed its origin to the photographer is not necessarily the original work of an author. In the Court’s decision in *Burrows-Giles*, the holding regarding originality is that a photograph which reflects a great degree of human subjectivity or personality of the photographer is original. The Court made no decision on the constitutionality of copyright protection for a photograph whose “highest merit” comes simply from “the accuracy of representation” of its subject.

Other early reflections on copyright law echo this notion that originality includes more than mere bringing into existence. In his discussion of *Bleistein* in his early

107 Feist at 355.
110 Burrows-Giles Lithographic, 4 S. Ct. 279 (1884).
111 Burrows-Giles Lithographic, 4 S. Ct. 279 (1884).
112 Burrows-Giles Lithographic, 4 S. Ct. 279 (1884).
copyright treatise, Weil quotes with approval Judge Grosscup from *Nat’l Telegraph News Co. v. Western Union Telegraph Co.*, 69 L. R. A. 805, 119 F. 296 (1896). "It would be both inequitable and impracticable to give copyright to every printed article." "Generally speaking . . . authorship implies . . . that the product . . . would not have found existence in the form presented, but for the distinctive individuality of mind from which it sprang." "In authorship, the product has some likeness to the mind underneath it; in a work of mere notion, the mind is guide only to the fingers that make the notation. One is the product of originality; the other the product of opportunity."

Among the first examples of functional works in copyright jurisprudence were prints and labels. In *Higgins v. Keuffel*, the Supreme Court denied copyright protection to a label that consisted of the words “Waterproof Drawing Ink” surrounded by an oblong double line. Even in that early case, The Court held that, “[t]o be entitled to a copyright the article must have by itself some value as a composition . . . .” Hence, from early copyright law, the Supreme Court has recognized a need for an aesthetic value, personality, or human subjectivity.

It is worth noting that the question of originality is separate from the question of functionality at least in the context of pictorial, graphic or sculptural works. As the Supreme Court in *Star Athletica* stated in its decision that graphics on a cheerleading uniform were eligible for copyright because they would be protectable as a pictorial, graphic or sculptural work when imagined separately from the useful cheerleading uniform on which they appeared. “We do not today hold that the surface decorations are copyrightable. We express no opinion on whether these works are sufficiently original to qualify for copyright protection . . . ."

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114 Weil, Law of Copyright at 42.
115 In 1874, the overwhelming volume of the deposits of “advertisements, cartons, labels and similar articles relating to commerce rather than literature” in the Library of Congress in the Capitol Building led to the passage of the Print and Label Law, which provided that such items would be deposited in the Patent Office instead. See Howell, supra note 7, at 95.
117 It is interesting to note that such a label does not easily fit into the enumerated exclusions of § 102(b) of the current Copyright Act, yet it would not be entitled to copyright protection under current law.
118 Where the two issues merge is in applying Justice Thomas’s statement that “Of course, to qualify as a pictorial, graphic, or sculptural work on its own, the feature cannot itself be a useful article or “[a]n article that is normally a part of a useful article” (which is itself considered a useful article.). § 101.” *Star Athletica*, 137 S. Ct. at 1007.
119 *Star Athletica*, 137 S. Ct. at 1007.
120 *Star Athletica*, 137 S. Ct. at 1012 n. 1.
C. Courts and commentators already in effect apply a test of “personality” or “human subjectivity.”

As shown above, it is clear that exclusion of the functional (or factual) aspects of a copyrighted work is not a feasible way to determine what is protected by copyright. Indeed, even as courts have relied on such distinctions in their decisions, another feature of a work, whether it be “taste,” “artistic creativity,” “creative spark,” “human subjectivity,” [others?] is used to justify their divisions of copyrightable from uncopyrightable subject matter. It is just this feature that should be articulated as a positive requirement of copyrightable aspects of works.

Courts already are imposing a positively formulated test similar to the one proposed in this article without explicitly stating as such. Courts repeatedly assess the originality of a work to determine if the work is copyrightable. In many cases, this concept of originality means more than simply “owing its origin to.” [Need more cases.] Justice Breyer in his dissent in Star Athletica objected to the Court’s decision in part because “[a]s the majority sees it, Varsity’s copyright claim would be the same had it submitted a plain rectangular space depicting chevrons and stripes, like swaths from a bolt of fabric. But considered on their own, the simple stripes are plainly unoriginal.”

Even in the seminal case, Baker v. Selden, which has repeatedly been cited as establishing the exclusion of functional aspects from the scope of copyright protection, recognizes the requirement of “personality” for copyright protection. The Court states that, regarding “ornamental designs, or pictorial illustrations addressed to the taste,” the entirety of the work is protectable by copyright. “Of these it may be said, that their form is their essence, and their object, the production of pleasure in their contemplation. This is their final end. They are as much the product of genius and the result of composition, as are the lines of the poet or the historian’s periods.” In contrast, with regard to works of science and the useful arts, their “essence,” the component of the work entitled to copyright protection is only the “methods of statement” the author used to describe them. Such methods are the personal and individual judgments of the author. “This

121 Baker v. Selden at 103.
122 Computer Assoc. v. Altai, 982 F.2d 693, 711.
123 Feist, 499 U.S. at 358.
125 Indeed, it just may be the case that the process/expression or fact/Expression dichotomy has been relied on to justify the denial of copyright protection to aspects of functional works that lack “personality” or “human subjectivity.” [This needs to be developed.]
126 Star Athletica, 137 S. Ct. at 1036 (Breyer dissenting) (emphasis added).
128 Baker v. Selden at 104.
alone is what is secured by the copyright.”

Cases applying the abstraction-filtration-comparison test to non-literal components of computer software are, in effect, applying a test of “human subjectivity” or “personality.” In the filtration step of the test, all elements that are 1) dictated by efficiency, 2) dictated by external factors, or 3) taken from the public domain are nonprotectable expression. External factors may be 1) the mechanical specification 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. One might ask what is left after all of the elements are removed. Is it not the “human subjectivity” or “personality” of the author?

Copyright cases seeking to separate facts from protectable expression often confront similar issues to cases seeking to separate processes and systems from protectable expression. As in the cases addressing filtering out the function in a work, cases filtering out the unprotectable facts often point out the “personality” component of the protectable features albeit without explicitly relying on that factor in their decisions. In Feist v. Rural Telephone Services, the Supreme Court considered the copyrightability of a telephone directory. While recognizing that only a “minimal degree of creativity” is required for a work to be original, works with no “creative spark” are incapable of sustaining a valid copyright.

In rejecting the “sweat of the brow” approach, the Court revealed that the true requisite of copyright protection is the personal, subjective quality of the work. “[T]he ‘sweat of the brow’ test, accepts industry and effort as sufficient to establish originality even when such effort lacks imagination or judgment.”

D. With Ever Evolving Technology, a Subject Matter Test of Copyrightability Has No Meaning.

Some commentators have suggested that the lack of clarity regarding the extent of copyright protection for elements of functional works should be resolved by

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129 Baker v. Selden at 104.
130 Compu. Assoc. at 707.
131 Comput Assoc. at 709-10.
132 The Court in Computer Associates v. Altai rejected policy arguments against the abstraction-filtration-comparison test by stating, “[t]he interest of the copyright law is not in simply conferring a monopoly on industrious persons, but in advancing the public welfare through rewarding artistic creativity . . . .”
134 Feist, at 358
returning to the days of the enumeration of copyrightable subject matter. Of course, if Congress decides that despite their similarities, computer software should be entitled to copyright protection, but DNA sequences should not, it could pass copyright legislation specifically stating that DNA is not a literary work under the copyright statute and not copyrightable. Early copyright statutes took the approach of granting copyright protection to works based on their physical form. This alternative, while probably less satisfying than a general rule applied to determine what copyright protection encompasses, would seem to be a reasonable option.

However, times and technology have changed since the early days of copyright legislation. Convincing arguments can be made that technology can move faster than the laws ability to keep up with it. For example, one scientist has proposed an approach for genomics companies to make DNA sequences available to the public while using copyright law to maintain intellectual property protection for the sequences. Genomics databases could encode their DNA sequences as MP3 music files using an existing program such as Bio2MIDI. These music files would be entitled to copyright protection. A user seeking to access a DNA sequence from the database would copy the copyright protected music file, use a back-translation computer program to re-convert the music file into the DNA sequence.

DNA can also be used to store digital data. “Instead of the binary data (ones and zeros) being stored on tapes, data can be encoded into quaternary data and be stored in DNA as A, T, C and g nucleotides.” DNA takes up much less space than digital data and is stable for thousands of years. These examples make clear that works may be translated from literary to chemical to musical form, the form of a work means nothing.

E. A Test of Personality Must Be Continuing.

Context matters. Whether a work should be entitled to copyright depends on the circumstances of the marketplace, and therefore should change when those circumstances change. In order that copyright not be used to stifle competition in quickly evolving industries, the positively articulated test of personality must be continuing. the copyrightability of a computer program (or any work) should depend on the context and that context can change over time and space. The user interface of a program may be copyrightable when it is initially developed precisely because of its originality. Over time, possibly as a result of market power of the developer, the user interface may become universally accepted as the standard. As a matter of practicality, future innovators, are required to incorporate the same user interface in their products. Like

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136 cite
137 http://algoart.com/bio2midi.htm
139 https://twistbioscience.com/company/blog/oligos-changed-world
140 https://twistbioscience.com/company/blog/oligos-changed-world
trademark protection, which can be removed when becomes a mark becomes generic and would interfere with a competitor’s ability to describe her own product, copyright protection should be removed when previously creative expression becomes a functional element which interferes with a competitor’s ability to develop her own competing product. 141

The court decisions in the recent case of Oracle v. Google, illustrate the point. One of the fundamental disagreements between the district court and the Federal Circuit Court of Appeals concerned the claim of merger of function with expression. Google claimed that because it was necessary to copy the declarations that specified methods with the Java program in order for a Java-trained programmer to be able to easily use Google’s program, the expression of the declarations had merged with the function making them uncopyrightable. The district court agreed with Google finding, “the method specification . . . must be identical under Java rules . . . ." 142 The Federal Circuit reversed, considering the merger doctrine at a completely different time period than the district court. The court stated, “copyrightability is focused on the choices available to the plaintiff at the time the [Java] computer program was created . . . .” 143

In the Oracle v. Google case, as with most cases of interoperability, at the time the first work was created, there may have been some human subjectivity reflected in the choice of declarations made by the programmer. However, at the time that Oracle asserted its copyright, there was no longer any human subjectivity by a programmer choosing declarations. Oracle should, in effect, lose its copyright by making it a standard.

The Fifth Circuit Court of Appeals made just such a finding in Veeck v. Southern Building Code Cong. Int’l, Inc. In that case an author of a model building code asserted its copyright. However, since the time the code had been written, it had been enacted into law. The court found that even though the model building code may have been entitled to copyright protection at the time it was written, when it was enacted into law, it became uncopyrightable. 144

The recent case of Star Athleta demonstrates that the issue is not limited to computer software. Justice Thomas’s opinion states that “the statute’s text makes clear . . . . that our inquiry is limited to how the article and feature are perceived, not how or why they were designed.” 145

141 One commentator writing before the Oracle v. Google cases suggested that court decisions already dynamically apply limiting doctrines as circumstances change the benefit and costs associated with copyright protection of a work. Jamie Lund, Copyright Genericide, 42 Creighton L. R. 131 (2008-2009).
143 Oracle America, Inc. v. Google, Inc., 750 F.3d 1339, 1370 (Fed. Cir. 2014)
144 Veeck v. Southern Building Code Cong. Int’l, Inc. 293 F.3d 791 (5th Cir. 2002).
145 Star Athletica, 137 S. Ct. at 1015. For a discussion of how this conflicts with the decision in Brandir which analyzes “whether the design at issue was in any way
Contexts other than temporal must also be considered when assessing whether a work meets a positive test of personality. Justice Breyer’s dissent in *Athletica* makes the case. “What is there in the world that, viewed through an esthetic lens, cannot be seen as a good, bad, or indifferent work of art? . . .[A]ny industrial design can be thought of separately as a “work of art”: Just imagine a frame surrounding the design, or its being placed in a gallery. Consider Marcel Duchamp’s “readymades” series, the functional mass-produced objects he designated as art.”\(^\text{146}\) Some say that judges should not judge what is aesthetic because “there is a probability that there is nothing outside of the aesthetic,”\(^\text{147}\) but they must. They have no choice.\(^\text{148}\) The Supreme Court’s test in *Star Athletica* intentionally removes the work from its context to determine whether it is copyrightable. The disassociation is precisely what leads to two equally compelling answers to the question of copyrightability. The question of whether the work is functional or aesthetic has no answer unless the context is considered.

\(^\text{146}\) *Star Athletica*, 137 S. Ct. at 1033-4. (Breyer, J., dissenting). Justice Thomas responds in dictum in his majority opinion that a shovel in an art gallery cannot be copyrighted. *Star Athletica*, 137 S. Ct. at 1013 n. 2.

\(^\text{147}\) Beebe, *Star Athletica*, at 287

\(^\text{148}\) See Brian Soucek, *Aesthetic Judgment in Law*, 69 Ala. L. Rev. 381, 450 (2017) (arguing that it is hard to understand why aesthetic judgments are more difficult that those involving complex technology or the economics of a particular industry).