United States Copyright Office
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March 16, 2017

William F. Lang IV
Lang Patent Law LLC
309 College Ave., Suite B
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Re: Second Request for Reconsideration for Refusal to Register Sunset LumenScript and LumenScript for Replicating the Sun as Seen from Mount Fuji; Correspondence IDs: 1-P5Z12V and 1-S6TF1H; SR# 1-1056012464 and SR# 1-804560886

Dear Mr. Lang:

The Review Board of the United States Copyright Office ("Board") has considered Telelumen LLC's ("Telelumen's") second requests for reconsideration of the Registration Program's refusal to register computer program claims in the works titled "Sunset LumenScript" and "LumenScript for Replicating the Sun as seen from Mount Fuji" ("Mount Fuji LumenScript") (collectively, "Works"). After reviewing the applications, deposit copies, and relevant correspondence, along with the arguments in the second requests for reconsideration, the Board affirms the Registration Program's denial of registration.

I. DESCRIPTION OF THE WORKS

The Works are electronic data files. These data files—called "LumenScripts" by the applicant—serve as inputs to a computer program-controlled microcontroller, which in turn runs a light replicating luminaire. Specifically, the microcontroller controls an array of light-emitting diodes (LEDs) that produce light of given wavelengths.

Both the Sunset LumenScript and the Mount Fuji LumenScript consist of columns and rows of numbers. The columns represent the wavelength channels, which correspond to the various LEDs controlled by the microcontroller running the luminaire, and the rows represent time increments. An intensity value is given for each time increment-wavelength channel combination. As described by the applicant, the data represented by the Works were gathered with the aid of a spectrometer measuring actual illumination conditions of a sunset (Sunset LumenScript) and light conditions on Mt. Fuji (Mount Fuji LumenScript).

A portion of the Sunset LumenScript data file is reproduced in the Appendix.

II. ADMINISTRATIVE RECORD

A. Sunset LumenScript

On October 19, 2011, Telelumen filed an application to register a copyright claim in the work titled "Sunset LumenScript." In a September 4, 2013 letter, a Copyright Office registration specialist refused to register the claim, finding that it "is not source code but rather numbers that . . . merely reproduce a particular pattern or event given off by the sunset," and that the "work . . . does not represent the minimum amount of authorship required for registration." Letter from Donna Clark, Registration Specialist, to William Lang, Lang Patent Law LLC, at 1-2 (Sept. 4, 2013).

In a letter dated December 3, 2013, Telelumen requested that the Office reconsider its initial refusal to register "Sunset LumenScript." Letter from William F. Lang IV, Lang Patent Law LLC, to U.S. Copyright Office (Dec. 3, 2013) ("First Request—Sunset LumenScript"). After reviewing the work in light of the points raised in the First Request, the Office re-evaluated the claims and again concluded that "Sunset LumenScript" "is neither a computer program, as defined by the Copyright Act, nor source code," and as such "registration of the Work again must be refused." Letter from Gina Giuffreda, Attorney-Advisor, to William Lang IV, Lang Patent Law LLC, at 1 (June 18, 2014).

In a letter dated September 17, 2014, Telelumen requested that, pursuant to 37 C.F.R. § 202.5(c), the Office reconsider for a second time its refusal to register Sunset LumenScript. Letter from William F. Lang IV, Lang Patent Law LLC, to U.S. Copyright Office (Sept. 17, 2014) ("Second Request—Sunset LumenScript"). In that letter, Telelumen asserted that "a LumenScript is sufficiently analogous to expressly protected categories of copyrightable material for copyright protection," and that "[a]lthough [Telelumen] believes that a LumenScript is best categorized as software, a LumenScript is certainly at least a literary work." *Id.* at 10.

B. Mt. Fuji LumenScript

On August 16, 2012, Telelumen filed an application to register a copyright claim in the Mt. Fuji LumenScript. Subsequently, Telelumen and the Office engaged in correspondence in an effort to produce an acceptable deposit copy of the Work. In an August 29, 2014 letter, the Office concluded that the ultimate deposit of the Work in the form of columns and rows of numbers in a .txt file "does not qualify as source code and, therefore, does not meet the deposit requirement to register a claim to copyright in a computer program." Letter from Gina Giuffreda, Attorney-Advisor, to William Lang IV, Lang Patent Law LLC, at 2 (Aug. 29, 2014). The Office furthermore explained that its reasoning in refusing registration for Sunset LumenScript in its June 18th letter applied to its refusal of Mt. Fuji LumenScript. *Id.* at 1. Because the correspondence regarding the deposit copy of the Work entailed a "high level of review and consideration" by the Office, the Aug. 29th letter served as both an initial refusal and as a refusal of a first request for reconsideration. *Id.* at 3.

In a letter dated November 18, 2014, Telelumen requested that, pursuant to 37 C.F.R. § 202.5(c), the Office reconsider for a second time its refusal to register Mt. Fuji LumenScript.[1] Letter from William F. Lang IV, Lang Patent Law LLC, to U.S. Copyright Office (Nov. 18, 2014) ("Second Request—Mt. Fuji LumenScript"). In that letter, Telelumen repeated its assertion from Second Request—Sunset LumenScript that "a LumenScript is sufficiently analogous to expressly protected categories of copyrightable material for copyright protection," and that "[a]lthough [Telelumen] believes that a LumenScript is best categorized as software, a LumenScript is certainly at least a literary work." *Id.* at 12.

III. DISCUSSION

A. The Legal Framework

i. Computer Programs

The Copyright Act protects "original works of authorship fixed in any tangible medium or 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 device." 17 U.S.C. § 102(a). The Act further explains that the term "works of authorship" includes "literary works," *id.*, which are in turn defined as works "expressed in words, number, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects . . . in which they are embodied." 17 U.S.C. § 101. It is well-settled that computer code can be copyrightable as a literary work. 1 Melville B. Nimmer and David Nimmer, *Nimmer on Copyright* § 2A.10(B) (2016 ed.); *see* H.R. REP. NO. 94-1476, at 54 (1976), *as reprinted in* 1976 U.S.C.C.A.N. 5659, 5667 (expressing congressional intent to classify as literary works "computer data bases, and computer programs to the extent that they incorporate authorship in the programmer's expression of original ideas, as distinguished from the ideas themselves"). Section 101 defines a "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." Various other Copyright Act provisions confirm that a person may own a copyright in a "computer program." *See, e.g.*, 17 U.S.C. § 109(b)(1)(A), 117, 506(a)(3)(A).

Computer programs typically contain both literal and non-literal elements. The literal elements include the source code and object code constituting the program. The non-literal elements may include the architecture of the computer program; the structure, sequence, and organization of the program; the relationships and interconnections between these elements; and any flow charts that illustrate these relationships, as well as the user interface. *See Eng'g Dynamics Inc. v. Structural Software, Inc.*, 26 F.3d 1335, 1341 (5th Cir. 1994); *Gates Rubber Co. v. Bando Chemical Indus.*, 9 F.3d 823, 835 (10th Cir. 1993); *Comput. Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693,702 (2d Cir. 1992). Courts have recognized that both the literal and non-literal elements of a program may be eligible for copyright protection under section 102(a)

[1] By sending a second request for reconsideration, Telelumen impliedly accepted the decision of the Attorney Advisor to address the Mt. Fuji LumenScript claim without the filing of a separate request for reconsideration. Telelumen later explicitly waived its right to file a first request for reconsideration for Mt. Fuji LumenScript. E-mail from William F. Lang IV, Lang Patent Law LLC, to Abi Mosheim, Attorney Advisor, Office of the General Counsel, U.S. Copyright Office (Feb. 14, 2017, 3:43 PM EDT) (on file with Office).

of the Act. *See, e.g.*, *Comput. Assocs.*, 982 F.2d at 702 (source and object code protectable); *Comput. Mgmt. Assistance Co. v. DeCastro*, 220 F.3d 396, 400 (5th Cir. 2000) (literal and non-literal elements protectable).

ii. Originality

A computer program, or any other work, may be registered if it qualifies as an "original work[] of authorship fixed in any tangible medium of expression." 17 U.S.C. § 102(a). In this context, the term "original" consists of two components: independent creation and sufficient creativity. *See Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991). First, the work must have been independently created by the author, *i.e.*, not copied from another work. *Id.* Second, the work must possess sufficient creativity. *Id.* Only a modicum of creativity is necessary, but the Supreme Court has ruled that some works (such as the alphabetized telephone directory at issue in *Feist*) fail to meet even this low threshold. *Id.* The Court observed that "[a]s a constitutional matter, copyright protects only those constituent elements of a work that possess more than a *de minimis* quantum of creativity." *Id.* at 363. It further found that there can be no copyright in a work in which "the creative spark is utterly lacking or so trivial as to be virtually nonexistent." *Id.* at 359.

The Office's regulations implement the longstanding requirement of originality set forth in the Copyright Act and described in the *Feist* decision. *See, e.g.*, 37 C.F.R. § 202.1(a) (prohibiting registration of "[w]ords and short phrases such as names, titles, slogans; familiar symbols or designs; [and] mere variations of typographic ornamentation, lettering, or coloring"); *id.* § 202.10(a) (stating "to be acceptable as a pictorial, graphic, or sculptural work, the work must embody some creative authorship in its delineation or form"). Some combinations of common or standard design elements may contain sufficient creativity with respect to how they are juxtaposed or arranged to support a copyright. Nevertheless, not every combination or arrangement will be sufficient to meet this test. *See Feist*, 499 U.S. at 358 (finding the Copyright Act "implies that some 'ways' [of selecting, coordinating, or arranging uncopyrightable material] will trigger copyright, but that others will not"). A determination of copyrightability in the combination of standard design elements depends on whether the selection, coordination, or arrangement is done in such a way as to result in copyrightable authorship. *Id.*; *see also Atari Games Corp. v. Oman*, 888 F.2d 878 (D.C. Cir. 1989).

A mere simplistic arrangement of non-protectable elements does not demonstrate the level of creativity necessary to warrant protection. For example, the United States District Court for the Southern District of New York upheld the Copyright Office's refusal to register simple designs consisting of two linked letter "C" shapes "facing each other in a mirrored relationship" and two unlinked letter "C" shapes "in a mirrored relationship and positioned perpendicular to the linked elements." *Coach, Inc. v. Peters*, 386 F. Supp. 2d 495, 496 (S.D.N.Y. 2005). Likewise, the Ninth Circuit has held that a glass sculpture of a jellyfish consisting of clear glass, an oblong shroud, bright colors, vertical orientation, and the stereotypical jellyfish form did not merit copyright protection. *See Satava v. Lowry*, 323 F.3d 805, 811 (9th Cir. 2003). The language in *Satava* is particularly instructive:

> It is true, of course, that a *combination* of unprotectable elements may qualify for copyright protection. But it is not true that *any* combination of unprotectable

> elements automatically qualifies for copyright protection. Our case law suggests, and we hold today, that a combination of unprotectable elements is eligible for copyright protection only if those elements are numerous enough and their selection and arrangement original enough that their combination constitutes an original work of authorship.

Id. (internal citations omitted).

In the case of a data input file or a database, such works may qualify as a compilation. The *Compendium of U.S. Copyright Office Practices* describes four types of authorship in databases: selection (choice of the material or data), coordination (classification, categorization, ordering, or grouping), arrangement (placement or arrangement of the material or data), and authorship in creating the material or data that appears within the database. COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 727.2 (3d ed. 2014) ("COMPENDIUM (THIRD)"); *see also Feist*, 499 U.S. at 348. Where "industry conventions or other external factors so dictate selection that any person composing a compilation of the type at issue would necessarily select the same categories of information," or where "the author made obvious, garden-variety, or routine selections," the necessary creativity for copyrightability is not met. *Matthew Bender & Co., Inc. v. West Pub'g Co.*, 158 F.3d 674, 682 (2d Cir. 1998).

iii. Human Authorship

To be copyrightable, a work must not only be original in both senses of the word, but also be the product of human authorship. *See Kelley v. Chicago Park Dist.*, 635 F.3d 290, 304 (7th Cir. 2011) ("authorship is an entirely human endeavor"). The *Compendium of U.S. Copyright Office Practices* restates this rule in the context of copyright registration. COMPENDIUM (THIRD) § 306 ("The U.S. Copyright Office will register an original work of authorship, provided that the work was created by a human being."). Moreover the *Compendium* specifically bars registration for works "produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author." *Id.* at § 313.2.

B. Analysis of the Works

After carefully examining the Works and applying the legal standards discussed above, the Board finds that the Works do not contain the requisite authorship to sustain a claim to copyright registration.

First, the Works are not computer programs and are not registrable as such. A computer program is defined as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101 ("computer program"). The House Report accompanying the 1976 Copyright Act treats computer programs as distinct from computer databases, writing, "[t]he term 'literary works' . . . also includes computer data bases, and computer programs to the extent that they incorporate authorship in the programmer's expression of original ideas . . . ." H.R. REP. NO. 94-1476, at 54 (1976). Telelumen notes that "some LumenScripts (but not the one at issue here) may contain looping, branching, and subroutine commands, making them more than mere data files." Second Request—Sunset

LumenScript, at 9; Second Request—Mt. Fuji LumenScript, at 11-12. Significantly, the Works at issue here do *not* include looping, branching, and subroutine commands. Instead, they merely list the intensities at fixed wavelengths at regular time intervals across a segment of the spectrum of visible light, and are no different from any other table of physical properties. Although a computer could convert these data into a light display when they are fed into a computer program, a computer could not interpret these data as a set of instructions without that program. Accordingly, in the Copyright Office's view, the Works are not themselves computer programs.[2]

Telelumen's argument that "[a]s shown by *Bucklew*, software need not be the software that directly controls a computer, but can be an instruction set that operates within another software package to control the computer" does not convince the Board that the Works qualify as computer programs. Second Request—Mt. Fuji LumenScript, at 6 (citing *Bucklew v. Hawkins, Ash, Baptie & Co., LLP*, 329 F.3d 923 (7th Cir. 2003)). The software at issue in *Bucklew* contained both input and output ranges, and also included commands. *See Bucklew*, 329 F.3d at 926 (7th Cir. 2003) (stating that Bucklew's program "picks out the relevant cells and performs the relevant operation (namely addition) on them and displays the results in tabular form"); *id.* at 926-27 (discussing the "output range" of Bucklew's program); *id.* at 930 (describing "traces of borrowing from Bucklew's form," including "the captions 'input range' and 'criteria range'"). The Works at issue are easily distinguished from the computer program at issue in *Bucklew* in that they do not have input fields. Once the computer begins processing the Works, the user can do nothing to modify the outputs. Of course, some computer programs do exist that do not allow for user input (for example, the classic "Hello World" program studied by beginner-level programmers). However, such programs do include commands (*e.g.*, "printf("hello, world\n");"). *See First C program, Hello World*, CODINGUNIT PROGRAMMING TUTORIALS, https://www.codingunit.com/c-tutorial-first-c-program-hello-world. The Works at issue here contain no commands. Thus, they are more accurately described as formatted data input files, not programs in their own right.

Telelumen's comparison of the Works to sheet music only underscores the Office's conclusion that the Works are not computer programs. Although both types of works represent information using symbols, neither would properly be considered a computer program, and Telelumen specifically seeks to register the Works *as* computer programs. Telelumen's attempt to distinguish the Works from MP3 files—which are also not computer programs—is similarly misplaced: contrary to Telelumen's assertion, MP3 files actually can be represented in alphanumeric form, and can be edited by a human. *See* user3431429, *Opening MP3 files with text editors*, STACKEXCHANGE (Apr. 25, 2014, 4:00 AM), http://stackoverflow.com/questions/23283925/opening-mp3-files-with-text-editors.

Second, the Office would not register the Works even if it were to evaluate them as literary works more generally. The Works represent, at most, uncopyrightable collections of facts. As Telelumen explains, the Works consist of wavelength and intensity data that is recorded by a spectrometer. But data gathered by a scientific instrument is not subject to copyright protection. That is for at least two reasons: (1) that data reflects uncopyrightable facts

[2] The Office expresses no view here as to whether a LumenScript containing looping, branching, and subroutine commands might be considered a "computer program" within the meaning of section 101, or whether it would still be considered a mere data file.

about the world—here, the particular wavelengths and intensity of light at a particular place over a particular period of time, *see Feist Publ'ns*, 499 U.S. at 347-48, and (2) because it is the product of a machine or process rather than human authorship, *see* COMPENDIUM (THIRD) § 313.2. Similarly, the Office does not register HTML code that is generated by website design software: "[i]f the website design software automatically creates the HTML code, the website designer is not considered the author of the resulting markup language." COMPENDIUM (THIRD) § 1006.1(A). Here, the numbers and punctuation that comprise the Works are not the product of direct human authorship, but rather were created by a computer. Any human authorship occurred at the level of choosing the time and location for data collection and pointing the spectrometer, which is comparable to using website design software to create a website. A Lumen display might constitute a copyrightable work of authorship, but the underlying numbers and punctuation—the Works at issue here—do not. Any attempt to analogize the Works to photographs would be similarly flawed; photographs must still meet the foundational requirement of creative authorship.[3]

Finally, while the Works are data sets to be fed into a computer program, they are not copyrightable as compilations. As stated above, to be copyrightable, a compilation must possess sufficient original expression, demonstrated through the selection, coordination, or arrangement of "preexisting materials or of data." COMPENDIUM (THIRD) § 727.2. However, where the selection of material is wholly dictated by industry conventions or other external factors, or where "the author made obvious, garden-variety, or routine selections," a compilation does not possess sufficient original expression, and is not registrable. *Matthew Bender & Co.*, 158 F.3d at 682. The Works at issue here do not possess sufficient original compilation authorship. Telelumen states that "a LumenScript can represent a naturally or artificially occurring illumination event, or can represent the light expression desired by a human author," but notes that "[t]he LumenScript at issue here was created by recording a sunset." Second Request—Sunset LumenScript, at 3; *see also* Second Request—Mt. Fuji LumenScript, at 3 (making similar concession). Thus, the only choices made in creating the Works are the location, time, and positioning of the spectrometer used to gather the intensity and wavelength data. Such choices do not involve any coordination of preexisting material, such as classification, categorization, ordering, or grouping, nor does it involve any placement or arrangement of any data. Telelumen did not select specific data points for inclusion, but rather the selection of intensities and wavelengths was completely dictated by external factors—the sunsets themselves.

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[3] The Supreme Court in *Burrow-Giles Lithographic Co. v. Sarony* found that "arranging the costume, draperies, and other various accessories in [a] photograph, arranging the subject so as to present graceful outlines, [and] arranging and disposing the light and shade" showed a photograph to be "an original work of art" subject to copyright protection. *Burrow-Giles Lithographic Co. v. Sarony*, 111 U.S. 53, 54 (1884). At the same time, the Court acknowledged that "the ordinary production of a photograph" may involve "no protection" in copyright. *Id.* at 59. Thus, medical images produced by x-ray and MRI machines are generally regarded as insufficiently creative to warrant copyright protection, because such images merely capture facts about the human body, and do not involve copyrightable authorship. *See* COMPENDIUM (THIRD) § 313.2; *cf.* Meshwerks, Inc. v. Toyota Motor Sales U.S.A., Inc., 528 F.3d 1258, 1265 (10th Cir. 2008) (Gorsuch, J.) (declining to extend copyright protection to digital wire-frame models that depicted "nothing more than unadorned Toyota vehicles—the car *as* car").

And, as Telelumen concedes, although a human author could theoretically create a LumenScript, there is no human authorship involved in creating the data that comprise these Works. Therefore, the Board finds that the Works are not entitled to copyright registration as compilations.

IV. CONCLUSION

For the reasons stated herein, the Review Board of the United States Copyright Office affirms the refusal to register the copyright claim in the Works. Pursuant to 37 C.F.R. § 202.5(g), this decision constitutes final agency action in this matter.

BY: C WESTON

Chris Weston
Copyright Office Review Board

APPENDIX

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