VIA FIRST CLASS MAIL   May 4, 2017

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Re: **Second Request for Reconsideration for Refusal to Register "1994 a-code 53
      syntax.txt Pseudo-code" and "2005 e-code E21 syntax.txt Pseudo-code";
      Correspondence ID: 1-12P4LBH; SR # 1-806830114; 1-807351647**

Dear Ms. Boroumand Smith:

        The Review Board of the United States Copyright Office ("Board") has considered Dolby
Laboratories Licensing Corporation's ("Dolby's") second request for reconsideration of the
Registration Program's refusal to register computer program and text claims in the works titled
"1994 a-code 53 syntax.txt Pseudo-code" and "2005 e-code E21 syntax.txt Pseudo-code"
(collectively, "Works"). After reviewing the application, deposit copies, and relevant
correspondence, along with the arguments in the second request for reconsideration, the Board
finds that the Works exhibit copyrightable authorship and may be registered as text.

I.   **DESCRIPTION OF THE WORKS**

        The Works are textual works, consisting of natural language and programming language.
For example, the work titled "1994 a-code 53 syntax.txt Pseudo-code" includes on page 2 the
natural language text "/* These fields for dynamic range control */" and also includes
programming language, such as "for(ch = 0; ch < nfchans; ch++) {blksw[ch]}." Dolby described
the Works as "computer pseudo-code" when it deposited the Works with the Copyright Office.
In further correspondence, Dolby stated that the Works express the format for the computer
processing of digital audio streams. *See* Letter from John A. Hughes & Rosaleen Chou,
Kilpatrick Townsend & Stockton LLP, to U.S. Copyright Office 4-5 (July 12, 2013) ("First
Request").

        Reproductions of the Works are included in Appendices A and B.

II.   **ADMINISTRATIVE RECORD**

        On August 10, 2012, Dolby filed an application to register a copyright claim in
"computer pseudo-code" for the work titled "1994 a-code 53 syntax.txt Pseudo-code." On
August 13, 2012, Dolby filed an application to register a copyright claim in "computer pseudo-
code" for the work titled "2005 e-code E21 syntax.txt Pseudo-code." On August 21, 2012, a
Copyright Office registration specialist emailed Dolby to inform them that the Office would be

willing the register the Works as text under the rule of doubt. Email from Duke Latkovic, Registration Specialist, to John Hughes, Kilpatrick Townsend & Stockton LLP (Aug. 27, 2012). In response, on September 12, 2012, Dolby stated that the Works are computer programs, not mere text. Letter from John A. Hughes, Kilpatrick Townsend & Stockton LLP, to Duke Latkovic, Registration Specialist 2 (Sept. 12, 2012). In support of its contention, Dolby included an affidavit from Steven Jeffords, the Director of Software Compliance at Dolby ("Jeffords Affidavit"). In the affidavit, Mr. Jeffords wrote that the Works are "at the extreme pole of sophistication," and therefore are *very close* to traditional source code in that they *could be compiled into object code, if such a compiler were to be created*. Jeffords Affidavit at 3 (emphases added).

In a December 21, 2012 email, the Copyright Office registration specialist again indicated that "the pseudocode itself is not executable code which is the deposit requirement for computer programs," and again "suggested that an appropriate basis of claim for these applications would be in 'text' and that the works be registered under [the] 'rule of doubt.'" Email from Duke Latkovic, Registration Specialist, to John Hughes, Kilpatrick Townsend & Stockton LLP (Dec. 21, 2012).   The specialist explained that the rule of doubt should apply because "there is a reasonable doubt about the ultimate action which might be taken under the same circumstances by an appropriate court with respect to whether the material deposited for registration constitutes copyrightable subject matter." *Id.* On January 24, 2013, Dolby stated the Works should be registered as computer programs, and alternatively, if the Office decided to register the works only as text, then text "without the notation of a Rule of Doubt." Email from John A. Hughes, Kilpatrick Townsend & Stockton LLP, to Duke Latkovic, Registration Specialist (Jan. 24, 2013). In an April 17, 2013 letter, a Copyright Office registration specialist stated that if Dolby did "not wish to register the claims under the rule of doubt, [the Office] must refuse registration all [sic] the works." Letter from Duke Latkovic, Registration Specialist, to John Hughes, Kilpatrick Townsend & Stockton LLP (Apr. 17, 2013).

In a letter dated July 12, 2013, Dolby requested that the Office reconsider its initial refusal to register the Works, and urged the Office to register the Works as text without the notation of a rule of doubt, or, alternatively as computer programs. First Request at 4-5. The First Request included an affidavit from Dr. Jens Palsberg, a professor of computer science, in support of Dolby's position. ("First Palsberg Affidavit"). After reviewing the Works in light of the points raised in the First Request, the Office re-evaluated the claims, found that the Works were ineligible for registration under "the Rule of Doubt," stated that "the Works cannot be registered as computer programs," and concluded that because the Works "cannot be recognized as a literary work, [they] therefore[] cannot be registered as text." Letter from Gina Giuffreda, Attorney-Advisor, to John Hughes, Kilpatrick Townsend & Stockton LLP 2, 4 (Apr. 28, 2015) ("Giuffreda Letter").

In a letter dated July 28, 2015, Dolby requested that, pursuant to 37 C.F.R. § 202.5(c), the Office reconsider for a second time its refusal to register the Works, and register them as computer programs, or, alternatively, as text without the notation of a rule of doubt. Letter from Mehrnaz Boroumand Smith, Darius Samerotte, John A. Hughes & Rosaleen Chou, Kilpatrick Townsend & Stockton LLP, to U.S. Copyright Office (July 28, 2015) ("Second Request"). The

Second Request included an additional affidavit from Dr. Jens Palsberg, a professor of computer science in support of Dolby's position. ("Second Palsberg Affidavit"). In that letter, Dolby asserted that "the Works are entitled to copyright protection even if they are referred to as pseudocode." *Id.* at 4. Dolby argued that "the need to convert Dolby's code to another language before it could be executed" does not preclude registration of the Works as computer programs. *Id.* Dolby further argued that "[w]hile not in English, the Works are written in a language, which also supports their registration as source code," and that the "Works . . . have at least 'some minimal degree of creativity' and are entitled to copyright protection." *Id.* at 6.

III.   DISCUSSION

A.   *The Legal Framework*

1. *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), *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 solidify 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).

When assessing the registrability of a computer program, the Copyright Office looks to whether the deposited code is in source code or object code. Source code is a "set of statements and instructions written by a human being using a particular programming language," and is generally legible to humans. COMPENDIUM (THIRD) § 721.3. Before a computer can execute source code, "the source code form of the software must be translated, usually via a computer program known as a 'compiler,' into object code, [which] is directly executable by a computer, but generally unintelligible to humans." *Operating Sys. Support, Inc. v. Wang Laboratories, Inc.*, 52 Fed. App'x 160, 162 (3d Cir. 2002).

2. *Originality*

A 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).

3. Registration Under the Rule of Doubt

Registration under the rule of doubt is a Copyright Office practice by which the Office
may register a claim to copyright "even though the Office has reasonable doubt as to whether the
material submitted for registration constitutes copyrightable subject matter or whether the other
legal and formal requirements of the statute have been met." COMPENDIUM (THIRD) § 607. The
Office applies the rule of doubt only in certain limited situations. *Id.* One of these
circumstances is when the Office is unable to examine the deposits in order to ascertain whether
the work is copyrightable. *Id.* For example, when registrations for computer programs are
issued under the rule of doubt, it is usually because they are written in object code, and not in a
human-readable format. *See, e.g.*, *Lexmark Int'l, Inc. v. Static Control Components, Inc.*, 253 F.
Supp. 2d 943, 949 (E.D. Ky. 2003) ("[T]he Copyright Office cannot determine copyrightability
due to the deposit being in human-unreadable object code."); *Compaq Computer Corp. v.
Procom Tech., Inc.*, 908 F. Supp. 1409, 1417-18 (S.D. Tex. 1995) ("[T]he Copyright Office was
unable to verify that the data was copyrightable because it is not in a format that is
understandable to humans.").

B. Analysis of the Works

After carefully examining the Works and applying the legal standards discussed above,
the Board finds that the Works contain the requisite authorship necessary to sustain a claim to
copyright. As explained below, the Board finds that the Works are sufficiently original to be
registrable, and that the most appropriate registration, based on the materials submitted, would be
as text without application of the Rule of Doubt.

The Office had previously refused to register the Works as text because they lacked
sufficient creative expression and had a minimal amount of natural language. Giuffreda Letter at
4-6. Furthermore, the Office found that the Works could not be registered as a computer
program because they contain material not written in a programming language. *Id.* at 2-3.

Upon reconsideration, the Board has determined that the Works may properly be
registered as text. On examining the Works, the Board notes that in addition to programming-
type language, the Works include a large number of comments written in plain English. For
example, "2005 e-code E21 syntax.txt Pseudo-code" includes such lines as "/* coupling can use
AHT only when coupling in use for all blocks */," "/* if 1+1 mode (dual mono, so some items
need a second value) /*," and "/* These fields for audio frame transient pre-noise processing data
*/" that can easily be comprehended by a human reader. Similarly, "1994 a-code 53 syntax.txt
Pseudo-code" contains statements such as "/* if a surround channel exists/*," "/* these fields for
coupling strategy information," and "/* these fields for inclusion of unused dummy data/*." In

total, "2005 e-code E21 syntax.txt Pseudo-code" contains 86 comments written in plain English, and "1994 a-code 53 syntax.txt Pseudo-code" contains 45 comments written in plain English. The Board also notes Dolby's arguments that "the Works are highly expressive," Second Request at 6, and that "Dolby's programmers incorporated their creativity, judgment and skill in the art of programming." Letter from John A. Hughes, Kilpatrick Townsend & Stockton LLP, to Duke Latkovic, Registration Specialist, at 6 (Sept. 12, 2012). In sum, the Board finds that these elements, taken together, provide the Works with the minimal degree of creativity required for copyright protection.

Moreover, the Board finds that the Rule of Doubt would not apply here. Rather, under its current practices, the Office will apply the Rule of Doubt only where the registration specialist is unable to examine the deposit copy to determine if the work contains copyrightable authorship, or in other "exceptional cases." COMPENDIUM (THIRD) § 607. Therefore, the Board reverses the Office's prior refusal to register the Works as text.

At the same time, the Board affirms the Office's prior refusal to register the works as a computer program. The Board has determined that it is more appropriate to register the Works as text in light of several submissions by Dolby suggesting that the Works do not fit within the definition of a computer program under the Copyright Act. Most obviously, the Works are styled as "Pseudo-code" in their titles, as well as in the initial application claims. As the Compendium explains, "[a]s a general rule, these types of works do not contain 'statements or instructions' that may be used 'directly or indirectly in a computer in order to bring about a certain result,' nor do they contain any executable program code." COMPENDIUM (THIRD) § 724 (citing 17 U.S.C. § 101 (definition of "computer program")). More substantively, however, even if the Works are *close* to source code, they are not *in fact* source code—a fact that Dolby and its experts have admitted. For instance, Mr. Jeffords notes that the pseudocode constitutes "a *nearly final* step in the process of writing computer instructions;" that is, a nearly final step in writing a computer program. Jeffords Affidavit at 2 (emphasis added). He also states that pseudocode "may be easily converted into actual source code," with "modifications," demonstrating that the pseudocode—though "essentially" a type of source code—is not currently source code. *Id.* at 2–3. Dr. Palsberg, too, explains that the Works are not source code; he states the Works require the addition of "small pieces of missing information" before they may be source code. Second Palsberg Affidavit at 1–2 ("[T]he code can be translated easily into some well-known, executable programming language."); *see also* First Palsberg Affidavit at 7–8 (showing the changes a theoretically compiler would have to make to the Works in order to render them executable source code). In its own letters, Dolby has made clear that the Works are similar to source code—and may nearly be source code—but are not in fact source code. For instance, Dolby states the Works are "very much like source code, but with added expression." First Request at 4. Dolby also notes that "[i]t would take very little effort to convert these pseudo-codes into typical source code," and that the Works are "similar to source code." Letter from John A. Hughes, Kilpatrick Townsend & Stockton LLP, to Duke Latkovic, Registration Specialist 3, 5 (Sept. 12, 2012).

Further, according to the affidavit submitted by Dr. Jens Palsberg, "a compiler must be constructed specially for the language of the Dolby code." Second Palsberg Affidavit at 3–4.

Without a compiler, the Works are not computer programs, because they are not executable by a computer. Though "compilation [of the Works] can be done by a human or by a computer," no such compiler yet exists. Second Palsberg Affidavit at 2, 4 ("[A] compiler must be constructed specially for the language of the Dolby code."). As such, the Works are not yet readable directly by a computer, or indirectly via an existing compiler that renders the Works directly readable by a computer. Indeed, Dr. Palsberg shows that the "compiler" that he theorizes could be constructed simply would compile the Works into executable *source* code, which would then need to be compiled again into computer-readable object code. First Palsberg Affidavit at 7–8.

Further, according to the affidavit submitted by Dr. Jens Palsberg, a "grammar" has not yet been created for the Works, which the Office understands to mean that a programming language specification has not been created.[1] First Palsberg Affidavit at 6; Second Palsberg Affidavit at 3 ("[W]e can easily construct a grammar that covers all aspects of the code."). Without such a specification, no compiler may convert the Works into executable code. First Palsberg Affidavit at 6–7.

This view is not "inconsistent with the Copyright Act" as Dolby suggests. Second Request at 3. Courts have discussed their interpretations of what "indirectly" means in the Copyright Act's definition of "computer program." 17 U.S.C. § 101 (defining 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"). They note that "source code is executed indirectly," insofar as it must be "translated into the appropriate object code" using a compiler. *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 44 (D. Mass. 1990); *see also NLFC, Inc. v. Devcom Mid-Am., Inc.*, 45 F.3d 231, 234 (7th Cir. 1995) ("Computers do not act directly on source code instructions, but rather transform them into object code within the machine."); *Bernstein v. U.S. Dep't of State*, 922 F. Supp. 1426, 1436 (N.D. Cal. 1996) ("Source code is essentially a set of instructions that is used *indirectly* in a computer since it must first be translated into object code to achieve the desired result.") (emphasis added). It is only object code that is executed directly. *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1248 (3d Cir. 1983) ("As source code instructions must be translated into object code before the computer can act upon them, only instructions expressed in object code can be used 'directly' by the computer."). It is clear, then, that in order for a work to be registered as a computer program, even one executed "indirectly" in a computer, it must at least constitute executable source code.

Text that does not have the capability of instructing a computer to perform tasks, either directly or indirectly, is not unprotectable by copyright entirely, but until it does have the capability of instructing a computer to perform tasks (*i.e.*, until it is deemed "executable code"), it is merely unprotectable as a computer program. *See* COMPENDIUM (THIRD) § 721.7 ("To register a claim in executable code, the applicant should state 'computer program' in the application. . . . By contrast, to register a claim in nonexecutable comments, the applicant should state 'text' in the application.").

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[1] *See* D.M. Dhamdehere, SYSTEMS PROGRAMMING AND OPERATING SYSTEMS 19 (1999) (discussing fundamentals of programming language specification, and explaining that "[t]he lexical and syntactic features of a programming language are specified by its grammar").

The Office's decision to grant Dolby's registration does not grant Dolby any rights in any algorithm, system, or method of operation; Dolby is granted a registration only in its chosen expression of the Works.

IV.   CONCLUSION

For the reasons stated herein, the Review Board of the United States Copyright Office reverses the refusal to register the copyright claim in the Work. Accordingly, the Board's decision will be referred to the Office's registration Program so that the application for the Work can be registered.

BY: _____

Chris Weston
Copyright Office Review Board