Bridging the Interstice in the Advent of Technological Developments: Creating a Framework for Computer-Generated Works in Delineating its Applicability to Copyright

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I. INTRODUCTION

The 1987 Philippine Constitution recognizes the protection of intellectual property rights by providing that "[t]he State shall protect and secure the

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exclusive rights of scientists, inventors, artists, and other gifted citizens to their intellectual property and creations, particularly when beneficial to the people, for such period as may be provided by law."[1]

Intellectual property laws on copyright have always upheld the rights of authors and public interest.[2] The main objective is "to foster creation and dissemination of intellectual works for the public welfare."[3] Likewise, it gives "authors the reward due to them for their contribution to society."[4] A computer program is protected under the copyright laws.[5] However, due to advancements in technology, the copyright of a work "created" by a computer is not explicitly covered by our present Intellectual Property Code (IP Code) or Republic Act No. 8293[6] and existing laws that protect intellectual property rights.

The point of contention is whether the "work of authorship"[7] provided for in statutes includes the protection of intellectual property rights over computer-generated works where there is a supposed lack of human authorship. This Note aims to fill in the supposed lack of human authorship with the legal right of the person who employs the computer program and who then must be rewarded for his intellectual contribution to society.

The reluctance to subject computer-generated works to copyright is a result of the non-recognition of the human authorship of the resulting works.[8] However, past judicial decisions have supported the human authorship of computer-generated works by the user who created a work by his own mental conception, which was not merely trivial and could be

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1. PHIL. CONST. art. XIV, § 13.

2. *See* Edward G. Hudon, *The Copyright Period: Weighing Personal Against Public Interest*, 49 A.B.A. J. 759 (1963).

3. ALAN LATMAN, ET AL., COPYRIGHT FOR THE NINETIES: CASES AND MATERIALS 14-15 (3d ed. 1989).

4. *Id.*

5. *See* An Act Prescribing the Intellectual Property Code and Establishing the Intellectual Property Office, Providing for its Powers and Functions, and for Other Purposes [INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES], Republic Act No. 8293, § 172 (n) (1998).

6. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES.

7. *Compare* The Copyright Act of 1976, 17 U.S.C. § 102 (U.S.) *with* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 172, which uses the term "[l]iterary and artistic works."

8. *See* What are Computer-generated works?, *available at* http://www.inbrief.co.uk/intellectual-property/computer-generated-works-copyright.htm (last accessed May 23, 2011). It recognized that "[g]enerally, for copyright to subsist in a work there must be a human author. On the face of it this means that a computer, being non-human, cannot be the author of a work." *Id.*

regarded as his own.[9] As long as the user employs creativity and the work derived is substantial and original, the expression would be subject to copyright.[10]

A. Factual and Contextual Background

1. Historical Perspective on the Concept of Copyright

The origin of all laws relating to literary and artistic property is England.[11] In elaborating on the history of copyright, Alan Latman, et al. wrote:

> In 1556, the Stationers' Company, composed of the leading publishers of London, was established by royal decree for the primary purpose of checking the spread of Protestant Reformation by concentrating the whole printing business in the hands of the members of that company. Printing was subject of the orders of the Star Chamber so that the Government and the Church could exercise effective censorship and prevent seditious or heretical works from getting into print.
>
> Under this decree, all published works had to be entered in the register of the Stationers' Company and in the name of some member of that company. By virtue of this entry, and supported by the Star Chamber, the stationer successfully claimed the sole right to print and publish the work for himself, his heirs, and assigns forever. ... As a result, the company applied to Parliament for a law to protect its alleged rights in perpetuity against pirates. However, instead of recognizing their perpetual rights, the Parliament proceeded to pass a law limiting the exclusive right of publication to a paltry of terms.[12]

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9. *See, e.g.*, Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884) (U.S.); Jeweler's Circular Publishing Co. v. Keystone Publishing Co., 274 F. 932 (S.D.N.Y.), 281 F. 83 (2d Cir. 1921), *cert. denied,* 259 U.S. 581 (1922) (U.S.); Alfred Bell & Co. v. Catalda Arts, Inc., 191 F.2d 99 (2d Cir. 1951) (U.S.); Apple Computer, Inc. v. Franklin Computer Corp., 545 F. Supp. 812 (E.D. Pa. 1982), *rev'd*, 714 F.2d 1240 (3d Cir. 1983), *cert. dismissed*, 464 U.S. 1033 (1984) (U.S.).

10. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 178.1. This Section provides that "in the case of *original* literary and artistic works, copyright shall belong to the author of the work." *Id.* (emphasis supplied).

11. LATMAN, ET AL., *supra* note 3, at 1.

12. *Id.* (citing HENRY HALLAM, 1 CONSTITUTIONAL HISTORY OF ENGLAND: FROM THE ACCESSION OF HENRY VII TO THE DEATH OF GEORGE II 238 (1927) & EATON S. DRONE, A TREATISE ON LAW OF PROPERTY IN INTELLECTUAL PRODUCTIONS IN GREAT BRITAIN AND THE UNITED STATES: EMBRACING COPYRIGHT IN WORKS OF LITERATURE AND ART, AND PLAYWRIGHT IN DRAMATIC AND MUSICAL COMPOSITIONS 69 (1879)).

The Statute of Anne[13] entitled, "An Act for the Encouragement of Learning, by Vesting the Copies of Printed Books in the Authors or Purchasers of such Copies, during the Times therein mentioned," was the "first statute of all time specifically to recognize the rights of authors and the foundation of all subsequent legislation on the subject of copyright."[14]

2. Entry of Copyright Law into the Philippines

The first known law on copyright was the Spanish Law on Intellectual Property of 10 January 1879,[15] which considered it as a property right covered under civil law.[16] Subsequently, the United States (U.S.) Copyright Law became applicable when Spain ceded the Philippines to the U.S.[17]

On 6 March 1924, the Philippines' own copyright law, Act No. 3134,[18] was enacted. In *Philippine Education Co. v. Sotto and Alindada*,[19] which was decided under this law, the main issue in contention was whether an article that is published without a copyright constitutes public property.[20] The Supreme Court laid down the doctrine that either the registration of the copyright or the reservation of publication rights remained the most important step in protecting the rights of one's creation.[21]

On 1 August 1951, the Philippines began espousing the national treatment principle when it acceded to the Berne Convention for the Protection of Literary and Artistic Works (Berne Convention).[22] Under such principle, the rights granted by the Berne Convention to authors from member nations shall be recognized even outside the country of origin of their works.[23]

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13. An Act for the Encouragement of Learning, by Vesting the Copies of Printed Books in the Authors or Purchasers of such Copies, during the Times therein mentioned, 1710, 8 Ann. c. 19 (U.K.).

14. LATMAN, ET AL., *supra* note 3, at 2.

15. Ley de la Propiedad Intellectual (1879) (Spain).

16. Christopher L. Lim, *The Developments of Philippine Copyright Law*, 46 ATENEO L. J. 368, 369 (2001).

17. *Id.*

18. An Act to Protect Intellectual Property, Act No. 3134 (1924).

19. Philippine Education Co. v. Sotto and Alindada, 52 Phil. 680 (1929).

20. *Id.* at 686.

21. *Id.* at 687-88.

22. The Berne Convention for the Protection of Literary and Artistic Works, Sep. 9, 1886, 828 U.N.T.S. 221 [hereinafter Berne Convention].

23. Lim, *supra* note 16, at 370.

Then, President Ferdinand E. Marcos, in the exercise of the legislative powers vested in him during the period of Martial Law,[24] issued Presidential Decree (P.D.) No. 49,[25] which took effect on 15 December 1972.[26] This Decree granted rights to different classes of works "from the moment of creation."[27]

More than 30 years after the Philippines' accession to the Berne Convention, on 25 September 1984, the country acquiesced to the International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations,[28] more popularly referred to as the Rome Convention, which took effect on 26 October 1961.[29]

The 1973 Philippine Constitution provides that, "[t]he State shall promote scientific research and invention. The advancement of science and technology shall have priority in the national development."[30] With regard to intellectual property rights, "[t]he exclusive rights to inventions, writings, and artistic creations shall be secured to inventors, authors, and artists for a limited period."[31]

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24. 1976 Amendments to the 1973 Constitution of the Republic of the Philippines, ¶ 6 (1976). It provides that

> [w]henever in the judgment of the President (Prime Minister), there exists a grave emergency or a threat or imminence thereof, or whenever the interim Batasang Pambansa or the regular National Assembly fails or is unable to act adequately on any matter for any reason that in his judgment requires immediate action, he may, in order to meet the exigency, issue the necessary decrees, orders, or letters of instructions, which shall form part of the law of the land.

Id.

25. Decree on the Protection of Intellection Property [Decree on Intellectual Property], Presidential Decree No. 49 (1972).

26. *Id.*

27. *Id.* § 2.

28. International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, Oct. 26 1961, 496 U.N.T.S. 43.

29. Lim, *supra* note 16, at 370-71.

30. 1973 PHIL. CONST. art. XV, § 9 (1) (superseded 1987).

31. 1973 PHIL. CONST. art. XV, § 9 (3) (superseded 1987).

Under the 1987 Philippine Constitution, the creations of "scientists, inventors, artists, and other gifted citizens" are protected for a certain period provided by law and when beneficial to public interest.[32]

The Philippines also acceded to the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement)[33] on 15 December 1994.[34]

The IP Code was enacted on 6 June 1997, which established the Intellectual Property Office[35] and declared that

> [t]he State recognizes that an effective intellectual and industrial property system is vital to the development of domestic and creative activity, facilitates transfer of technology, attracts foreign investments, and ensures market access for our products. It shall protect and secure the exclusive rights of scientists, inventors, artists[,] and other gifted citizens to their intellectual property and creations, particularly when beneficial to the people, for such periods as provided in this Act.
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> The use of intellectual property bears a social function. To this end, the State shall promote the diffusion of knowledge and information for the promotion of national development and progress and the common good.
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> It is also the policy of the State to streamline administrative procedures of registering patents, trademarks[,] and copyright, to liberalize the registration on the transfer of technology, and to enhance the enforcement of intellectual property rights in the Philippines.[36]

3. Computers and Copyright

The highly innovative field of computer technology displays two-pronged aspects: (1) that the software programs are expensive to develop and (2) the innovation, in contrast, is inexpensive to copy.[37]

Copyright is a "right of an author to control the reproduction of his intellectual creation."[38] It relates to the "literary, musical, graphic, or artistic

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32. PHIL. CONST. art. XIV, § 13.

33. Agreement on Trade Related Aspects of Intellectual Property Rights, Apr. 15, 1994, 33 I.L.M. 81 (1995) [hereinafter TRIPS Agreement].

34. Lim, *supra* note 16, at 372.

35. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 5.

36. *Id.* § 2.

37. *See generally* Trevor T. Moores, Software Piracy, *available at* http://www.bookrags.com/research/software-piracy-csci-03/ (last accessed May 23, 2011) & Anirudh Rao, Combating threats of copyright infringement of software, *available at* http://www.lawguru.com/articles/law/internet-law/combating-threats-of-copyright-infringement-of-software (last accessed May 23, 2011).

38. LATMAN, ET AL., *supra* note 3, at 12.

form in which the author expresses intellectual creations."[39] It prohibits others from "reproducing [the author's] individual expression without his consent" but does not stop them from "using the ideas or information revealed by the author's work.[40] Copyright law aims to encourage the creation of works for the public welfare and rewards the creators for their contribution to society.[41]

In the U.S., copyright law already protects the forms of the computer program, called the "source code," "written in computer languages that can be understood by humans."[42] These days, computer programs are often sold in the form directly intelligible to the computer, known as the "object code."[43] Being directly intelligible, it is not protected by copyright law.[44]

The IP Code defines a computer program as "a set of instructions expressed in words, codes, schemes[,] or in any other form, which is capable when incorporated in a medium that the computer can read, of causing the computer to perform or achieve a particular task or result."[45] Since these instructions enable the systematic operation of the computer, they are considered as protected ideas or procedures under the IP Code.[46]

4. Inclusion of Computer Programs in the Context of Intellectual Property Laws

During the emergence of intellectual property laws, any conception of a computer program was inexistent.[47] Man evidently relied upon the labor of one's work and not upon the input and output of a processing device.

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39. *Id.*

40. *Id.*

41. *Id.* at 14-15.

42. Harvard Law Review Association, *Copyright Protection of Computer Program Object Code*, 96 HARV. L. REV. 1723 (1983) (citing The Copyright Act of 1976, 17 U.S.C. § 117 (U.S.)).

43. *Id.*

44. *Id.*

45. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 171.4.

46. *But see* RANHILIO C. AQUINO, INTELLECTUAL PROPERTY LAW: COMMENTS AND ANNOTATIONS 58 (2003 ed.).

47. *See* Lee A. Hollaar, Legal Protection of Digital Information, *available at* http://digital-law-online.info/lpdi1.0/treatise17.html (last accessed May 23, 2011).

Intellectual property laws were reluctant in accepting computer programs into the scope of protected works under copyright laws.[48]

A computer program is "essentially a detailed set of instructions telling the computer what to do with a specific collection of data."[49] It functions in the following manner:

> The first stage in computing is 'input' — the process for giving information and instructions to the machine. Data punch cards and magnetic tape are the usual media for this operation. The information and instructions are then stored in the 'memory' unit, where they are immediately accessible for use in the machine. A 'control' unit interprets the program's instructions, directs the proper sequence of the instructions and the data to the 'arithmetic' unit, which does the actual calculating, and redirects the results of these operations to new memory locations. The final stage is 'output,' in which the results of the calculation are transmitted to the outside world ... [T]he fact that the computer can perform these operations in a directed sequence specified by the program, can modify the program by substituting new instructions into the memory locations where the original instructions were stored, and can do so at a fantastic speed, accounts for its flexibility and apparent sophistication.[50]

Computer programs were initially not recognized under intellectual property laws in the country under Act No. 3134.[51] However, Section 2 of P.D. No. 49 did recognize computer programs as one of the classes of work under its protection.[52] Protection over it is continued under the present IP Code.[53]

5. Technology's Challenge to the Scope of Copyright

The copyright of a computer program is based from the premise that a computer program is akin to a "literary work."[54] Thus, the computer program is protected under the intellectual property laws.[55] However, due to

48. *Id.*

49. Harvard Law Review Association, *Computer Programs and Proposed Revisions of the Patent and Copyright Laws*, 81 HARV. L. REV. 1541 (1968). *See also* T.C. BARTEE, DIGITAL COMPUTER FUNDAMENTALS (2d ed. 1966) & N. CHAPIN, AN INTRODUCTION TO AUTOMATIC COMPUTERS (2d ed. 1963).

50. Harvard Law Review Association, *supra* note 49, at 1541-42.

51. *See* Act No. 3134.

52. *See* Decree on Intellectual Property, § 2.

53. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 172.

54. *Id. See also* United Kingdom Intellectual Property Office, Are computer programs protected by copyright?, *available at* http://www.ipo.gov.uk/types/copy/c-applies/c-applies-faq/c-applies-faq-computerprograms.htm (last accessed May 23, 2011).

55. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 172 (n).

advancements in technology, the copyright of a work "created" by a computer is not covered under our present IP Code and existing laws that protect intellectual property rights.[56] The question is whether the country's present laws on intellectual property allow the extension of the protection of intellectual property rights to computer-generated works.

B. Legal Issues

The Author of this Note seeks to address the possibility of a computer-generated work being subject to copyright. Even though the emergence of technological developments calls for the protection of intellectual property rights of copyright owners, the delineation of fair use of new software programs, in consonance with intellectual property laws, warrants that computer-generated works can further be protected by copyright laws.

The IP Code does not include any indication of recognition of computer-generated works. Though the defense of fair use[57] may be invoked by the users of software programs, the protection of the rights of copyright owners must still be invoked. Hence, there is a need to reconcile the adaptation of the rights of copyright owners of software programs to users in the case of computer-generated works. The problem that arises is the supposed lack of human authorship in computer-generated works.

The discomfort exists despite the extraordinarily successful history of assimilating new technologies and the inability of many opponents to articulate a principled reason for their resistance. The computer-copyright battle initially centered on computer programs being protected as literary works.[58] Although that contest largely has been fought and resolved in favor of copyrightability, the next battlefield may be the protectability and authorship of computer-generated works.

Technological developments have not outstripped the capacity of our current copyright law to adapt to the creative opportunities offered by new technologies. When the U.S. revised its Copyright Act in 1976,[59] it recognized that forms of expression would continue to evolve; thus, the new statute was drafted with commensurate flexibility. In fact, in enacting the new Act, Congress acknowledged that the "history of copyright law has

56. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES.

57. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 185.

58. *Id.* § 172 (n).

59. The Copyright Act of 1976, 17 U.S.C. § 117 (U.S.).

been one of gradual expansion in the types of works accorded protection,"[60] including new forms of creative expression (such as electronic music and computer programs) that never existed before but had been made possible by new scientific discoveries and technological developments.

II. COMPUTERS AND COMPUTER PROGRAMS

A. What is a Computer?

1. Definition

A computer is defined as "a device that accepts input, processes data, stores data, and produces output, all according to a series of stored instructions."[61] As for its capacity, "[a] computer cannot perform any operation which cannot also be performed by a human, but the computer executes operations with such speed that it is in a different class."[62]

A computer is, technically, a "calculating devi[c]e."[63] The name originates from the Latin word *computare*, which means "to reckon" or "to compute," and this "can be applied as properly to an abacus or an adding machine as to the modern computer."[64]

2. Basic History of Computers

The history of the computer dates back centuries further than intellectual property laws. The abacus, one of the oldest calculating devices, stores information "by moving beads along rods."[65]

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60. *See* H.R. REP. NO. 1476, 94th Cong., 2d Sess. 116 (1976) [hereinafter H.R. REP. NO. 1476].

61. JUNE JAMRICH PARSONS & DAN OJA, COMPUTER CONCEPTS 4 (9th ed. 2007). Discussing further, "computer input" is

> [w]hatever is typed, submitted, or transmitted to a computer system. Input can be supplied by a person, by the environment, or another computer. ... '[D]ata' refers to the symbols that represent facts, objects, and ideas. ... The series of instructions that tell a computer how to carry out processing tasks is referred to as a computer program.

Id.

62. GORDON B. DAVIS, COMPUTER DATA PROCESSING 99 (1969).

63. GORDON B. DAVIS, INTRODUCTION TO COMPUTERS 4 (3d ed. 1977).

64. LATMAN, ET AL., *supra* note 3, at 4.

65. History of Computers, *available at* http://www.allbusiness.com/glossaries/analytical-engine/4946384-1.html (last accessed May 23, 2011). *See also* Jeremy Meyers, A Short History of the Computer, *available at* http://www.jeremymeyers.com/img/comp/comp.pdf (last accessed May 23, 2011).

In 1642, an adding machine was built by Blaise Pascal, which employed toothed wheels to facilitate carries from one digit to the other.[66] Then, in 1833, Charles Babbage, also known as the "Father of the Computer,"[67] designed the Analytical Engine and the concept of a stored program computer was born.[68] However, the Analytical Engine's mechanical devices failed and it was never completed.[69] Decades later, the punch card, an "important data processing device," was developed by Herman Hollerith for the U.S. Census Bureau.[70]

The "first electronic digital computer," the Electronic Numerical Integrator and Calculator (ENIAC), was built by J. Presper Eckert and John W. Mauchly of the Moore School of Engineering of the University of Pennsylvania for the U.S. Army in 1946.[71] Completed in 1947, the ENIAC was instrumental in calculating ballistics tables during World War II.[72] During their work on the ENIAC, Echert, Mauchly, and others working with them designed a larger machine called the Electronic Discrete Variable Automatic Computer (EDVAC),[73] which was different from the ENIAC in two fundamental ways:

(1) Use of binary numbers for electronic arithmetic operations; and

(2) Internal storage of digital instructions.[74]

The Universal Automatic Computer (UNIVAC) was the "first commercially available computer"[75] and went into operation at the Census

66. History of Computers, *supra* note 65.

67. *See* Miki Garcia, Charles Babbage Biography: The Inventor of the Computer, *available at* http://www.suite101.com/content/charles-babbage-a-father-of-the-computer-a222227 (last accessed May 23, 2011).

68. History of Computers, *supra* note 65.

69. *Id.*

70. *Id.*

71. *Id. See also* Meyers, *supra* note 65, at 4.

72. History of Computers, *supra* note 65.

73. EDVAC, *available at* http://www.thocp.net/hardware/edvac.htm (last accessed May 23, 2011).

74. Chan Mich, History of Computer, *available at* http://hubpages.com/hub/History-of-computer (last accessed May 23, 2011).

75. Meyers, *supra* note 65, at 6.

Bureau in April 1951.[76] Integrated circuits were improved over the years and this triggered the advent of miniaturized computers.[77]

3. Recent innovations

The speed and reliability of computers improved with the invention of transistors in 1947.[78] The "first fully transistorized computer[s]" were introduced by Control Data Corporation and by IBM in 1958 and in 1959, respectively.[79] Due to technological advancements,

> the [1960s] saw the creation of the integrated circuit which contained thousands of transistors and other parts on a silicon chip. This meant that computers could become smaller. During the early [1970s], many different kinds of circuits were available some of which could even hold memory as well as computer logic. This resulted in smaller computers becoming available and the central chip that controlled the computer became known as the microprocessor.[80]

Since computers have rapidly developed, man has tried to keep up with these innovations. With smaller computers becoming more powerful,

> [these computers] could be linked together, or networked, to share memory space, software, information[,] and communicate with each other. As opposed to a mainframe computer, which was one powerful computer that shared time with many terminals for many applications, networked computers allowed individual computers to form electronic co-ops. Using either direct wiring, called a Local Area Network (LAN), or telephone lines, these networks could reach enormous proportions. A global web of computer circuitry, the Internet, for example, links computers worldwide into a single network of information.[81]

B. What is a Computer Program?

A computer is directed by a set of instructions called a program.[82] Section 171.4 of the IP Code provides that a computer program is "a set of instructions expressed in words, codes, schemes[,] or in any other form,

76. Mich, *supra* note 74.

77. History of Computers, *supra* note 65.

78. Oracle ThinkQuest, The Development of Computers, *available at* http://library.thinkquest.org/28787/develpm1.htm (last accessed May 23, 2011).

79. *Id.*

80. *Id.*

81. Christopher LaMorte and John Lilly, Computers: History and Development, *available at* http://www.dia.eui.upm.es/asignatu/sis_op1/comp_hd/comp_hd.htm (last accessed May 23, 2011).

82. *See* Definition of: computer, *available at* http://www.pcmag.com/encyclopedia_term/0,2542,t=computer&i=40137,00.asp (last accessed May 23, 2011).

which is capable when incorporated in a medium that the computer can read, of causing the computer to perform or achieve a particular task or result."[83]

A way of categorizing computer programs is by distinguishing its function as either object code or source code.[84] Object code is "simply the program as it's stored in the computer, the ones and zeros, the ons and offs that tell the computer what it's supposed to do. ... Even a sophisticated computer programmer [cannot fully] decipher all these ones and zeros, and doesn't usually write programs directly in object code."[85] Instead, the programmer usually writes in source code, which is a "more abstract, or 'higher,' programming language, such as Basic or C or Pascal, and uses a computer program, a *compiler*, to convert the highly intelligible source into the computer-intelligible object code."[86]

A program consisting of steps for directing a computer has three salient features:

(1) Each computer instruction specifies the execution of an elementary step or operation in data processing.

(2) The sequences of instruction specify what shall be done under all possible conditions during data processing.

(3) Instructions can be altered by other instructions as the program is run.[87]

III. COMPUTER-GENERATED WORKS AND ITS TREATMENT AROUND THE WORLD

The question of authorship and copyrightability of computer-generated works is controversial around the world, precisely because the idea of recognizing copyright in a work created by a machine does not fit with the traditional frame of thought that a human is the artist of his or her own creation.[88] However, creators have always been aided by instruments or

83. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 171.4.

84. EDWARD SAMUELS, THE ILLUSTRATED STORY OF COPYRIGHT 76 (2000 ed.).

85. *Id.*

86. *Id.* at 77.

87. DAVIS, *supra* note 63, at 69.

88. *See generally* Jane C. Ginsburg, *The Concept of Authorship in Comparative Copyright Law*, 52 DEPAUL L. REV. 1063 (2003). Ginsburg explored the concept of authorship in several civil and common law jurisdictions and found that the general concept of authorship is that of human authorship. However, her

others factors that suggest that computer-generated works are not absent of any human contribution.[89] Thus, there may be an attribution to an "author" as defined in intellectual property laws.[90]

The TRIPS Agreement of 15 December 1993 established the copyright protection of a computer program.[91] Article 10 of the Agreement provides that, "[c]omputer programs, whether in source or in object code, shall be protected as literary works under the Berne Convention."[92] However, the Berne Convention seems neutral on the possibility of nonhuman authorship.[93]

A. In the United States

The constitutional authorization for the protection of intellectual property in the U.S. is to "[p]romote the [p]rogress of [s]cience and the useful [a]rts, by securing for [l]imited [t]imes to [a]uthors and [i]nventors the exclusive [r]ight to their respective [w]ritings and [d]iscoveries."[94] However, the Copyright Act of 1976 "froze the law on a variety of issues and left responsibility for exploring and formulating policy regarding the intersection of copyrights and computers to the National Commission on New Technological Uses of Copyrighted Works (CONTU), which had been created in 1974 in anticipation of the legislative moratorium."[95]

The Commission would later on produce a report on the possibility of treating computer programs as copyrightable works.[96] In this report, Commissioner Hersey, in his Dissenting Opinion, says that

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Article likewise posits the argument that this is not an exhaustive definition of authorship. *Id.*

89. *See* STEPHEN FISHMAN, THE PUBLIC DOMAIN: HOW TO FIND & USE COPYRIGHT-FREE WRITINGS, MUSIC, ART & MORE 137 (5th ed. 2010). Fishman recognized that "the presence of human 'choices' would make a work of art created by a machine protected by copyright." *Id.*

90. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 171.1. This Section provides that an "'[a]uthor is the natural person who has created the work." *Id.*

91. TRIPS Agreement, art. X (1).

92. *Id.*

93. *See generally* Berne Convention.

94. U.S. CONST. art. I, § 8.

95. Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since Contu?*, 106 HARV. L. REV. 977, 979 (1993) (citing H.R. REP. NO. 1476 & Act of Dec. 31, 1974, Pub. L. No. 93-573, s. 201, 88 Stat. 1873, 1873-74).

96. National Commission on New Technological Uses of Copyrighted Works (CONTU), *Final Report of the National Commission on New Technological Uses of Copyrighted Works* 29 (July 31, 1978) [hereinafter CONTU Report].

> [c]opyright should subsist in any original work of authorship that is fixed in any way (including books, records, film, piano rolls, videotapes, etc.) which communicate[s] the work's means of expression. But a program, once it enters a computer and is activated, does not communicate information of its own, intelligible to a human being. ... The functions of computer programs are fundamentally and absolutely different in nature from those in sound recordings, motion pictures, or videotapes. ... The direct product of a sound recording, when it is put in a record player, is the sound of music — the writing of the author in its audible form. Of film, it is a combination of picture and sound — the writing of the author in its visible and audible forms. Of videotape, the same. But the direct product of a computer program is a series of electronic impulses which operate a computer; the 'writing' of the author is spent in the labor of the machine. The first three communicate with human beings. The computer program communicates, if at all, only with a machine.[97]

The CONTU Report, where the Majority Opinion supported the proposition that programs are works of authorship, said that the "instructions that make up with program may be read, understood, and followed by human being" and are "capable of communication with humans."[98]

During his testimony before the Congress of the U.S., Paul Goldstein described the ability of copyright law to adapt to technological change:

> I believe that the challenges presented [by present and emerging technologies] differ little — certainly not in kind, and only slight in degree — from the challenges that such technologies as radio, television, motion pictures, semiconductor chips — and, indeed, the printing press — have posed in the past. We have been there before. Thus, I believe that history and established principle offer the surest guides to Congress in resolving issues at the intersection between copyright and the new technologies. [99]

From a limited protection over maps, charts, and books, U.S. copyright law has expanded its scope to include all "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,

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97. *Id.*

98. *Id.* at 30.

99. Miller, *supra* note 95, at 1055 (citing OTA Report on Intellectual Property Rights in an Age of Electronics and Information: Joint Hearing Before the Subcomm. on Patents, Copyrights and Trademarks of the Sen. Comm. on the Judiciary, and the Subcomm. on Courts, Civil Liberties, and the Administration of Justice of the House Comm. on the Judiciary, 99th Cong., 2d Sess. 30 (1986) (statement of Paul Goldstein, Professor of Law, Stanford Law School)).

either directly or with the aid of a machine or device."[100] Not only has the U.S. been in the situation of emerging technologies before but also the "breadth of the statute's coverage" gives an assurance that the country would have to continually adapt copyright laws to technological change.[101]

B. Outside the U.S.

Two of the world's most dominant copyright systems — the moral rights doctrine, originating from civil law jurisdictions, and the view of copyright as an economic right, embraced by the Anglo-American system — have always been at odds with each other.[102] The integrity of the author's work is what the moral rights doctrine primarily focuses on and this "appears to be a difficult concept to apply to computer-produced works"[103] as

> [u]nlike the Anglo-American system, the civil law tradition commonly views moral rights as independently protected and separate from economic rights. Economic rights, such as the exclusive right to exploit the copyrighted work, are not based on a notion that the work is a reflection of the author's personality. Thus, protecting a work created by a nonhuman author does not appear incompatible with the economic aspects of civil law copyright.[104]

The focus of the two systems may be different but their approaches to the "copyrightability of computer-generated works" differ only in degree.[105] To illustrate:

> [T]he Commission of the European Communities has given the matter preliminary consideration and concluded that computer-generated programs should be accorded copyright protection, and that because the programmed computer is essentially a tool, those who use the computer should be entitled to a copyright in its output. The approach originally proposed by the European Community presumes that there is ultimately a human author.
>
> The Berne Convention, in contrast, seems neutral on the possibility of nonhuman authorship. Article 1 states that the Union is created 'for the protection of the rights of authors in their literary and artistic works.' However, the Convention does not define 'author.' The Berne Convention Guide states that this is because 'national laws diverge widely,

100. *Id.* (citing The Copyright Act of 1876, 17 U.S.C. § 102 (a) (U.S.)).

101. *Id.*

102. *Id.* at 1049.

103. *Id.*

104. *Id.* at 1049-50.

105. Miller, *supra* note 95, at 1050.

> some recognizing only natural persons as authors, while others treat certain legal entities as copyright owners.'[106]

The World Intellectual Property Organization (WIPO) also deliberated regarding this issue:

> The proposed WIPO draft provided that the owner of the moral rights and the original owner of the economic rights in a computer-produced work may be either the person or entity 'by whom or by which the arrangements necessary for the creation of the work are undertaken,' or the person or entity 'at the initiative and under the responsibility of whom or of which the work is created and disclosed.' The draft's authors took the view, however, that to qualify for Berne Convention protection, these works must trace their origin to a human author. When the Committee of Experts considered this proposal, it concluded that further study was needed. WIPO's International Bureau advanced the proposal again in identical form, but the Committee of Experts once more concluded that it was premature.[107]

On the other hand, the Anglo-American regime is untroubled about these matters since it emphasizes "the economic aspects of copyright" and "is not preoccupied with metaphysical notions of the relationship of the copyrighted work to its creator's 'personality.'"[108]

However, it is important to note that

> [d]espite the historical differences in focus of the two copyright systems, the experience both within and without the [U.S.] suggests a growing consensus that works generated with computer assistance should be granted copyright protection. Differences begin to appear when the discussion turns to the identification of the owner of the copyright and whether there is a requirement of human authorship or simply a question of ascribing

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106. *Id.* (citing Berne Convention & World Intellectual Property Organization, *Guide to the Berne Convention for the Protection of Literary and Artistic Works (Paris Act, 1971)* 11 (1978)).

107. *Id.* at 1051-52 (citing Russell J. DaSilva, *Droit Moral and the Amoral Copyright: A Comparison of Artists' Rights in France and the United States*, 28 BULL. COPYRIGHT SOC'Y U.S.A. 1, 12 (1980); International Bureau of World Intellectual Property Organization, *Preparatory Document, Draft Model Law on Copyright* 258-59, No. CD/MPC/III/2 (Mar. 30, 1990); Berne Convention; Committee of Experts on Model Provisions For Legislation in the Field Of Copyright, *Report Adopted By The Committee* 72-76 & 134, No. CE/MPC/III/3 (July 13, 1990); World Intellectual Property Organization Committee of Experts on a Possible Protocol to the Berne Convention for the Protection Of Literary and Artistic Works, *Report Adopted by the Committee* 88, No. BCP/CE/1/4 (Nov. 4-8, 1991)).

108. *Id.* at 1052.

authorship to a particular person or legal entity. As the WIPO experience suggests, these matters remain to be resolved in many places.[109]

IV. PRESENT INTELLECTUAL PROPERTY LAWS

To qualify for copyright protection, a work must be the expression of an idea.[110] Copyright law does not protect the idea itself.[111] Expressions must also satisfy additional criteria for copyright protection, namely:

(1) Expression must be one of original authorship;

(2) Expression must be in a physical form, such as a computer program, a tape recording, or a handwritten work; and

(3) Expression must be unavailable to the public in general.[112]

The IP Code defines these works, literary and artistic, as "original intellectual creations in the literary and artistic domain protected from the moment of their creation."[113] Copyright protection is based on "the sole fact of their creation, irrespective of their mode or form of expression, as well as of their content, quality[,] and purpose."[114]

Authors under the Code have "the exclusive right to carry out, authorize[,] or prevent the following acts:"[115]

177.1. Reproduction of the work or substantial portion of the work;

177.2. Dramatization, translation, adaptation, abridgment, arrangement[,] or other transformation of the work;

177.3. The first public distribution of the original and each copy of the work by sale or other forms of transfer of ownership;

177.4. Rental of the original or a copy of an audiovisual or cinematographic work[;] a work embodied in a sound recording, a computer program, a compilation of data[,] and other materials[;] or a musical work in graphic form, irrespective of the ownership of the original or the copy which is the subject of the rental;

177.5. Public display of the original or a copy of the work;

177.6. Public performance of the work; and

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109. *Id.* at 1053.

110. Thomas L. Peterson, How Copyrights Work, *available at* http://money.howstuffworks.com/copyright.htm (last accessed May 23, 2011).

111. *Id.*

112. TOBEY B. MARZOUK, PROTECTING YOUR PROPRIETARY RIGHTS IN THE COMPUTER AND HIGH TECHNOLOGY INDUSTRIES 19 (1988 ed.).

113. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 172.1.

114. *Id.* § 172.2.

115. *Id.* § 177.

177.7. Other communication to the public of the work.[116]

A. Computer-Generated Works Not Included

The IP Code does not include any indication of recognition of computer-generated works.[117] More particularly, the IP Code does not include computer-generated works within the scope of artistic and literary works[118] or derivative works[119] that are protected by copyright.

Is a computer-generated work absent of any human intervention? With the expansion of copyright law to embrace new technologies, there is still some apprehension in including computer-generated works within the family of copyrighted works.[120] The point of contention is whether a computer-generated work is one of human authorship to sufficiently address the constitutional and statutory requirement that a "natural person" be the author of the work.[121] The Author enthuses that the author of a computer-generated work is not the computer or machine but a natural person. In fact, the debatable matter is "not whether there is a human author, but rather who that author is."[122]

B. Why It Should be Subject to Copyright: Originality, Expression, and Creativity

As the world has been revolutionized by new waves of technology, a development in information technology is leading to a digitization in information processing. Judicial approaches do not "provide any significant bar to the potential copyrightability" of computer-generated works.[123] Case law in the U.S. has held that "machines involved in the creation of artistic works are simply tools that assist the human beings who employ them."[124]

In *Burrow-Giles Lithographic Co. v. Sarony*,[125] the plaintiff's picture of renowned playwright Oscar Wilde was reproduced by the defendant who

116. *Id.*

117. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES.

118. *Id.* § 172.

119. *Id.* § 173.

120. Miller, *supra* note 95, at 1055.

121. INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, § 171.1.

122. Miller, *supra* note 95, at 1056.

123. *Id.* at 1059.

124. *Id.*

125. Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884) (U.S.).

argued that the photograph is not copyright-protected.[126] The U.S. Supreme Court disagreed with that contention and upheld the copyrightability of the photograph.[127] However, the Court did not make a blanket determination of the copyrightability of all photographs, but only that particular photograph which was "entirely from his own original mental conception."[128]

Burrow-Giles implicitly tackles "whether a camera can be an author."[129] However, it did not decide whether a machine-created work was entitled to copyright.[130] Rather, the Supreme Court resorted to the dictionary meaning of an "author" who is one "to whom anything owes its origin; originator; maker; one who completes a work of science or literature."[131] The Court held that "the nature of copyright" as the "exclusive right of a man to the production of his own genius or intellect"[132] is in consonance with the broad scope of the U.S. Constitution "to cover an act authorizing copyright of photographs, so far as they are representatives of original intellectual conceptions of the author."[133]

In *Jeweler's Circular Publishing Co. v. Keystone Publishing Co.*,[134] Judge Learned Hand was of the opinion that since "no photograph, however simple, can be unaffected by the personal influence of the author, and no two will be absolutely alike," all photographs are copyright-protected.[135]

In *Alfred Bell & Co. v. Catalda Arts, Inc.*,[136] a case that involved the copyrighted mezzotint reproductions of old master paintings, the Court held that the originality requirement is satisfied when "the 'author' contributed something more than a 'merely trivial' variation, something recognizably 'his own.'"[137]

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126. *Id.*

127. *Id.* at 59-61.

128. *Id.* at 54-55.

129. Miller, *supra* note 95, at 1061.

130. *Id.*

131. *Burrow-Giles Lithographic Co.*, 111 U.S. at 58 (citing WORCESTER'S ELEMENTARY DICTIONARY OF THE ENGLISH LANGUAGE 48 (Boston, et al. eds., 1860)).

132. *Id.*

133. *Id.*

134. Jeweler's Circular Publishing Co. v. Keystone Publishing Co., 274 F. 932 (S.D.N.Y.), 281 F. 83 (2d Cir. 1921), *cert. denied*, 259 U.S. 581 (1922) (U.S.).

135. *Id.* at 934.

136. Alfred Bell & Co. v. Catalda Arts, Inc., 191 F.2d 99 (2d Cir. 1951) (U.S.).

137. *Id.* at 102-03 (citing Chamberlin v. Uris Sales Corp., 2 Cir., 150 F.2d 512 (U.S.) & Gross v. Seligman, 2 Cir., 212 F. 930 (U.S.)).

In *Apple Computer, Inc. v. Franklin Computer Corp.*,[138] a federal court decided that a computer program is copyright-protected if it is in a language understandable by human beings:[139]

> If the concept of 'language' means anything, it means an ability to create human interaction. It is the fixed expression of this that the copyright law protects, and only this. To go beyond the bounds of this protection would be ultimately to provide copyright protection to the programs created by a computer to run other computers. With that, we step into the world of Gulliver where horses are 'human' because they speak a language that sounds remarkably like the one humans use.[140]

In the past, copyright protection

> [m]eant only maps, charts, and books, all of which at that time had only human authors. Today, of course, 'Writings' embraces an amazing spectrum of modes of expression completely unknown at that time, including computer programs, computer databases, sound recordings, motion pictures, photographs, and countless others. There is no reason why 'Authors' cannot undergo a comparable transformation.[141]

Therefore, in computer-generated works, the user of the computer program who creates a new creation out of "his own mental conception"[142] that is not "merely trivial"[143] would be the author, and the computer or machine would only be the tool for the attainment of the purpose.[144]

According to the Final Report of CONTU,

> [h]uman ingenuity will continue to develop new works which may be in themselves copyrightable and will employ existing copyrighted works in new ways in the production of literary, artistic, and even utilitarian works. If this process of innovation and enrichment of our cultural heritage is to continue, the rights of authors and creators of these works must be

138. *Apple Computer, Inc. v. Franklin Computer Corp.*, 545 F. Supp.

139. *Id.* However, "the [C]ase did not involve an issue of the copyrightability of a work created by a computer, and the judge's comments were in dicta. Moreover, the decision was reversed by the court of appeals." *See* Miller, *supra* note 95, at 1064.

140. *Apple Computer, Inc.*, 545 F. Supp. at 825.

141. Miller, *supra* note 95, at 1065.

142. *Burrow-Giles Lithographic Co.*, 111 U.S. at 54-55.

143. *Alfred Bell & Co.*, 191 F.2d at 102-03.

144. Miller, *supra* note 95, at 1066-67.

> protected and the public dissemination and use of these works encouraged.[145]

The goal of the Commissioners was that the "recommendations and considerations contained in [the Report] ... promote the progress of science and the useful arts for the advancement of the general public welfare."[146] The report stated that a computer or computer program did not itself contribute "authorship to a work produced through its use."[147] Instead, "[t]he computer, like a camera or typewriter, is an inert instrument, capable of functioning only when activated either directly or indirectly by a human. When so activated it is capable of doing only what it is directed to do in the way it is directed to perform."[148]

Thus, "the fragments in the cases do not resolve the question whether the Constitution requires human authorship. Thus, reliance on any of the pieces of language in the judicial opinions of the past century shows that the Court has upheld the copyrightability of computer-generated works."[149] If the public waits for the judicial body in the country to decide on this matter, a reliable resolution of the issue of copyrightability of computer-generated works with few traces of human intermediation would not arrive in the near future.[150]

In the case of computer-generated works, it is obvious that "the author is one who employs the computer" to produce the work.[151] The reluctance to subject computer-generated works to copyright is a result of the non-recognition of the human authorship of the resulting works.[152] Now that it has been settled that there is in fact a human authorship, there is no more impediment to deny the creators of computer-generated works from enjoying the protection of copyright under the law.[153] As long as the user employs creativity and the work derived is substantial and original, the expression would be subject to copyright.[154]

C. Necessary Implications in IP Laws

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145. CONTU Report, *supra* note 96, at 80.

146. *Id.*

147. *Id.* at 44.

148. *Id.*

149. Miller, *supra* note 95, at 1065.

150. *Id.*

151. CONTU Report, *supra* note 96, at 45.

152. *See* CONTU Report, *supra* note 96, at 43-46 & Miller, *supra* note 95, at 1065-70.

153. *Id.*

154. *Id.*

With the inclusion of computer-generated works within the ambit of the IP Code, Sections 171 and 172 would have to be amended, as follows, to accommodate the intellectual creation:

> Section 171. *Definitions*. — For the purpose of this Act, the following terms have the following meaning:
>
> ...
>
> 171.5. 'Computer-Generated Work' is a work of art created through the use of a computer program that results in its creation.
>
> Section 172. *Literary and Artistic Works*. —
>
> 172.1. Literary and artistic works, hereinafter referred to as 'works', are original intellectual creations in the literary and artistic domain protected from the moment of their creation and shall include in particular:
>
> ...
>
> (o) Computer-Generated Work; and
>
> (p) Other literary, scholarly, scientific[,] and artistic works.[155]

V. CONCLUSION

There is evidently a gap in Philippine law with regard to computer-generated works.[156] A search of laws and jurisprudence yields unsatisfactory results when it comes to this matter; as such, the IP Code must be amended to accommodate the applicability of copyright to computer-generated works.

A computer-generated work is a work of art created through the use of a computer program that results in its creation. The Proponent of this Note sought to address the possibility of programming computers to create a resulting program that would be original and a proper subject of copyright.

This Note adopts a humanistic approach by giving protection not only to the author but also to society. The purpose of this Note is to link the human author and establish a human chain before one may afford protection under intellectual property laws. It is further recommended that with the frame of mind of linking the human to a work created by the use of the computer, society may also be protected. For instance, in the case of viruses, one must track the source, which is certainly a human. The essence is that determining authorship is vital for computers and technologies. Therefore, this is the frame of mind that this Note seeks to propose.

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155. *See* INTELLECTUAL PROPERTY CODE OF THE PHILIPPINES, §§ 171 & 172.

156. *Id.*

After a thorough analysis, the Author recommends that the IP Code be amended to accommodate the inclusion of computer-generated works amongst the intellectual creations that can be subject to a copyright. Sections 171 and 172, which deal with the definition of terms and the list of artistic and literary works respectively, should be amended by way of specific legislation to cover computer-generated works within the ambit of copyright.