Solving a Copyright Quandary: Proposing a Framework for Assigning Copyright to Creative Works Made by AI

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I. PREFATORY

[*Where*] *we can go*

[*T*]he *sun is singing in the forest rain*

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[*A*]nd *the mist is the sound of the sea*

[*A*]*nd the soul is the golden sun*

[*A*]*nd the light of* [*G*]od *is gone*

— Bei Liu, et al.[1]

In 1710, the Parliament of England enacted what was to be the first copyright statute in the world — the Statute of Anne.[2] The Statute of Anne laid the underpinnings on what was to become the utilitarian philosophy of copyright law, which is prevalent in Anglo-American intellectual property law.[3] The utilitarian philosophy of copyright "does not see [copyright] as an inviolable right, but rather as an artificial scarcity created by the law in order to ensure that authors and artists are incentivized to create [and make works that will benefit the public]."[4] The drafters of the Statute of Anne hoped for the "encouragement of learned men to compose and write useful books[.]"[5] This was to be done by giving authors and creators a monopoly, albeit for a limited time,[6] over their creations, after which the work "[falls] into ... the 'public domain[.]'"[7] The rationale behind this policy is simple — without giving economic incentives to authors who create works of art, they would

1. This poem was made by Artificial Intelligence developed by a team of researchers from Microsoft and Kyoto University. Bei Liu, et al., Beyond Narrative Description: Generating Poetry from Images by Multi-Adversarial Training (A Conference Paper for the 2018 ACM Multimedia Conference) at ⋆7, *available at* https://arxiv.org/pdf/1804.08473.pdf (last accessed Feb. 29, 2020).

2. Craig Joyce, *Prologue: The Statute of Anne: Yesterday and Today*, 47 HOUS. L. REV. 779, 780 (2010).

3. *See* RONAN DEAZLEY, RETHINKING COPYRIGHT: HISTORY, THEORY, LANGUAGE 162 (2006).

4. Mary Morrone, *Moral Rights and Classic Liberal Theory: The Interplay of Two Philosophies in Copyright Law*, 6 N.Y.U. J. L. & LIBERTY 532, 533 (2012).

5. 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 [Copyright Act 1710], 8 Anne c. 19, whereas cl. (1710) (U.K.).

6. The Statute of Anne allows for an initial protection of 14 years for authors and their assigns, measured from date of publication, plus a second term of 14 years, available to the author provided he lived to its commencement. Copyright Act 1710, paras. 2 & 12.

7. Joyce, *supra* note 2, at 784.

not be encouraged to continue creating, and ultimately, "the public would suffer from this lack of creativity."[8]

The Statute of Anne, as a copyright statute, came about as a response to the expiration of the then Licensing Act of 1662, "which made it illegal to publish [any material] without first securing a license from the appropriate authority[.]"[9] The Licensing Act, however, was more than just a licensing statute — it was a comprehensive act for publication control and censorship.[10] Among the influential thinkers who protested against the Licensing Act was John Locke, who actually pushed that "printers [and publishers] must [instead] obtain the author's permission to use his name or that the author retain the right to reprint[.]"[11] John Locke was of the position that since people were sovereign in their bodies, they likewise owned the labor of their bodies and the work of their hands, and, consequently, any fruits of such labor —

> Though the [e]arth, and all inferior [c]reatures be common to all [m]en, yet every [m]an has a [p]roperty in his own [p]erson[. T]his no [b]ody has any [r]ight to but himself. The [*l*]*abour* of his [b]ody, and the [w]ork of his [h]ands, we may say, are properly his. Whatsoever then he removes out of the [s]tate that [n]ature hath provided, and left it in, he hath mixed his [*l*]*abour* with, and joyned to it something that is his own, and thereby makes it his [p]roperty. It being by him removed from the common state [n]ature placed it in, hath by this *labour* something annexed to it, that excludes the common right of other [m]en[. F]or this [*l*]*abour* being the unquestionable [p]roperty of the [L]abourer, no man but he can have a right to what that is once joyned to, at least where there is enough, and as good left in common for others[12]

Locke believed that "by putting labor into their intellectual creations, authors automatically earned a natural property right in their works."[13] Aside from Locke, another voice who added his voice on the issue of licensing and authorial rights was the novelist Daniel Defoe, who said that "[a] Book is the

8. Robert Yu, *The Machine Author: What Level of Copyright Protection is Appropriate for Fully Independent Computer-Generated Works?*, 165 U. PA. L. REV. 1245, 1248 (2017).

9. MARK ROSE, AUTHORS AND OWNERS: THE INVENTION OF COPYRIGHT 31 (1993).

10. *Id.*

11. *Id.* at 33.

12. JOHN LOCKE, THE SECOND TREATISE OF GOVERNMENT § 27 (1689) (emphases supplied).

13. JOHN TEHRANIAN, INFRINGEMENT NATION: COPYRIGHT 2.0 AND YOU 18 (2011).

Author's Property, 'tis the Child of his Inventions, the Brat of his Brain."[14] Locke was successful in his vigorous campaign for the defeat and non-extension of the Licensing Act, as it expired in 1695.[15] However, when the United Kingdom (U.K.)'s copyright law, through the Statute of Anne, was codified, the Lockean perspective on authors' rights was rejected in favor of the utilitarian philosophy espousing "encouragement of learning[.]"[16] In fact, the rejection of Locke's property perspective is evident in the Statute's history. The Statute of Anne originally had a preamble which spoke of authors "in whom the undoubted [p]roperty of such Books and Writings, as the [p]roduct of their [p]earning and [l]abour[,] remains."[17] However, this preamble was removed in the final Statute. Thus, while property rights were granted in intellectual creations, these were due to "legislative fiat, not natural law, and were [merely] tolerated for instrumental purposes."[18]

The year 1787 saw the enactment of the United States (U.S.) Constitution which contained a copyright clause patterned after the Statute of Anne.[19] Article I, Section 8 (8) of the U.S. Constitution provides that the U.S. Congress shall have the power "[t]o promote the [p]rogress of [s]cience and useful [a]rts, by securing for limited [t]imes to [a]uthors and [i]nventors the exclusive [r]ight to their respective [w]ritings and [d]iscoveries[.]"[20] Curiously, even before the existence of the patent and copyright clause under the Constitution, 12 of the original 13 States enacted their own copyright clauses which were "miniature versions of the Statute of Anne."[21] The U.S. Supreme Court, in a multitude of cases before it, discussed that the rationale of the constitutional copyright clause is to promote the dissemination of knowledge to enhance public welfare.[22] In *Mazer v. Stein*,[23]

14. ROSE, *supra* note 9, at 39.

15. *Id.* at 33.

16. TEHRANIAN, *supra* note 13, at 18.

17. ROSE, *supra* note 9, at 42.

18. TEHRANIAN, *supra* note 13, at 18.

19. *See* Joyce, *supra* note 2, at 785.

20. U.S. CONST. art. I, § 8 (8).

21. Oren Bracha, *The Statute of Anne: An American Mythology*, 47 HOUS. L. REV. 877, 879-80 (2010) (citing Oren Bracha, *The Adventures of the Statute of Anne in the Land of Unlimited Possibilities: The Life of a Legal Transplant*, 25 BERKELEY TECH. L.J. 1427, 1444 (2010)).

22. *See generally* Mazer v. Stein, 347 U.S. 201, 219 (1954); Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417, 477 (1984); Harper & Row Publishers, Inc. v. Nation Enterprises, 471 U.S. 539, 558 (1985); Feist

the Supreme Court held that "[t]he economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in 'Science and [U]seful Arts.'"[24]

In *Sony Corp. of America v. Universal City Studios, Inc.*,[25] the U.S. Supreme Court ruled that the limited benefit granted to authors is not an entitlement, but a mere privilege "intended to motivate the creative activity of authors and inventors by the provision of a special reward, and allow the public access to the products of their genius after the limited period of exclusive control has expired."[26] Inasmuch as the U.S. Supreme Court has recognized that the immediate effect of copyright law is to secure a fair return for an author's creative labor, it has clarified that the ultimate aim of copyright law is to stimulate, through the temporary incentives given to authors, their artistic creativity for the general public good.[27] "By 'recognizing that the incentive to profit from the exploitation of copyrights will redound to the public benefit by resulting in the proliferation of knowledge,' copyright law relies on the profit motive to ensure the progress of science [and the arts]."[28]

While the Anglo-American view on copyright was primarily based on the promotion and encouragement of innovation, continental European civil law countries such as France and Germany "[gave] special importance to the principles of natural justice[,]"[29] moral rights, and personality rights.[30] This

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Publications, Inc. v. Rural Telephone Service Company, Inc., 499 U.S. 340, 349-50 (1991); & Fogerty v. Fantasy, Inc., 510 U.S. 517, 526-27 (1994).

23. Mazer v. Stein, 347 U.S. 201 (1954).

24. *Id.* at 219.

25. Sony Corp. of America v. Universal City Studios, Inc., 464 U.S. 417 (1984).

26. *Id.* at 429.

27. *Mazer*, 347 U.S. at 219 (citing Washingtonian Co. v Pearson, 306 U.S. 30, 36 (1939)).

28. Nina I. Brown, *Artificial Authors: A Case for Copyright in Computer-Generated Works*, 20 COLUM. SCI. & TECH. L. REV. 1, 16 (2018) (citing Eldred v. Ashcroft, 537 U.S. 186, 212 n.18 (2003)).

29. Jean-Luc Piotraut, *An Authors' Rights-Based Copyright Law: The Fairness and Morality of French and American Law Compared*, 24 CARDOZO ARTS & ENT. L. J. 549, 554-555 (2006).

30. *Id.* (citing David Ladd, *The Harm of the Concept of Harm in Copyright*, 30 J. COPYRIGHT SOC'Y 421, 425 (1983)).

view on copyright looks beyond public welfare and the economic interest of the authors and instead focuses on copyright as a natural property right,[31] and suggests that authors, because of "the labor they put into their creations[,]" are entitled to certain rewards.[32] Related to this view is the moral view on copyright which proposes that copyright law should be viewed as a means to protect the "personal and reputational connections between a creator and the work he or she creates[.]"[33] Finally, the personality rights theory "holds that an intellectual work embodies its creator's personality or will."[34] Thus, a creative work "is worthy of protection because it is an expression of the personality ... of its creator."[35]

Notwithstanding these differing views and philosophies regarding copyright, what is common between them is that they were envisioned with the "human" author in mind.[36] Jane Ginsburg writes that "[m]uch of copyright law in the [U.S.] and abroad makes sense only if one recognizes the centrality of the author, the human creator of the work."[37] Bruce Boyden opines that the utilitarian, natural rights, and moral rights view on copyright "arguably depend[ ] on the humanness of [the] author."[38] This apparent centrality of the human author, however, poses a problem in situations where the author is not human, but an autonomously creative artificial intelligence (AI). Indeed, AI cannot be encouraged by economic

31. Morrone, *supra* note 4, at 534.

32. Margot E. Kaminski, *Authorship, Disrupted: AI Authors in Copyright and First Amendment Law*, 51 U.C. DAVIS L. REV. 589, 597-598 (2017) (citing Lior Zemer, *The Making of a New Copyright Lockean*, 29 HARV. J.L. & PUB. POL'Y 891, 893-94 (2006)).

33. Morrone, *supra* note 4, at 535.

34. Ana Ramalho, Will robots rule the (artistic) world? A proposed model for the legal status of creations by artificial intelligence systems (An Article Forthcoming in the Journal of Internet Law, July 2017) at 14, *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2987757 (last accessed Feb. 29, 2020).

35. *Id.* (citing Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 330 (1988) & William Fisher, Theories of Intellectual Property, *available at* http://www.law.harvard.edu/faculty/tfisher/iptheory.html (last accessed Feb. 29, 2020)).

36. *See* Piotraut, *supra* note 29, at 557 (citing Jane C. Ginsburg, *The Concept of Authorship in Comparative Copyright Law*, 52 DEPAUL L. REV. 1063, 1064 (2003)).

37. Ginsburg, *supra* note 36, at 1068.

38. Kaminski, *supra* note 32, at 598 (citing Bruce Boyden, *Emergent Works*, 39 COLUM. J.L. & ARTS 377, 391 (2016)).

incentives to create further works,[39] as "[a]ll it takes is electricity (or some other motive force) to [initiate] production."[40] Similarly, just as AI does not need to be incentivized to manufacture, AI also does not need any recognition for the works it makes. AI would have neither use nor appreciation for any rewards as it simply follows the dictates of its programming. AI, at its current state, is also devoid of emotion nor ambition, making the moral view on copyright irrelevant to it. Finally, as the AI has no self-awareness or sentience, it would be difficult to argue that the AI "imprints" its personality on the created work.

From being mere parts of science fiction novels, AI has now permeated modern lives. Increasingly sophisticated AI create artistic works ranging across music, paintings, and literature.[41] Current AI programs are creative, autonomous, unpredictable, efficient, evolving, and are capable, not only of data collection and communication, but also of self-learning.[42] While a discussion on how AI works is not covered by this Article, the Article aims to discuss the quandary of copyright attribution for creative works made by AI. Creative works made by AI that are covered by this Article are those works which the AI creates based on algorithms that allow it to independently create works of art where no specific or particular output was pre-programmed by the AI programmer or developer. Thus, the created work should neither be "repetitive [nor] predictable."[43] In other words, the human programmer has not previously determined what the resulting output will be.

This Article will first discuss the capabilities of existing creative AI. Thereafter, the Article will lay down and compare the different copyright laws of several countries such as the U.S., the U.K., Australia, and several countries in the European Union, among others. Attention will be devoted to the manner these countries treat creative works made by AI and the legal justifications therefor. The Article will then discuss whether there is a need to protect creative works made by AI and, subsequently, assess the claims of

39. Pamela Samuelson, *Allocating Ownership Rights in Computer-Generated Works*, 47 U. PITT. L. REV. 1185, 1199 (1986).

40. *Id*. at 1199.

41. *See* Ramalho, *supra* note 34, at 2.

42. Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era: the Human-Like Authors are Already Here: A New Model*, 2017 MICH. ST. L. REV. 659, 679-681 (2017).

43. Andrew J. Wu, *From Video Games to Artificial Intelligence: Assigning Copyright Ownership to Works Generated by Increasingly Sophisticated Computer Programs*, 25 AIPLA Q.J. 131, 173 (1997).

various parties (such as the AI programmer, the end-user, and the AI itself) as to the copyright. Finally, a proposed bright line framework shall be laid down on how to address copyright attribution issues for work made by AI, taking into account the objectives of copyright law and the shortcomings of existing regulatory models. A *sui generis* copyright over creative works generated by the AI shall be proposed, which shall be granted to the end-user. While this option might appear counter-intuitive, as the AI programmers/developers are considered as the "brains" behind the creative AI (especially in instances where all the end-user has to do is to press a button to order the AI to produce creative works), assigning the *sui generis* copyright to the end-user is nonetheless proposed under this framework as it is the option that best serves the purposes of copyright law, has fewer issues with enforceability, and is easily applicable in most circumstances.

For the purposes of this Article, the AI covered is the AI currently in existence: narrow (or "weak") AI "programmed to perform a [ ] task" and does not perform tasks beyond its programmed parameters.[44] Unlike general (or "strong") AI, "[n]arrow AI is not conscious, sentient, or driven by emotion[s.]"[45] Narrow AI acts as if it were intelligent while general AI actually thinks, and not merely simulates thinking.[46] This Article does not cover conscious, sentient, and self-aware AI as these are still not in existence. In any event, an entirely different framework appears necessary for these sentient AI if and when they come into light.

II. THE RISE OF THE CREATIVE AI

Technology has always pushed the envelope of copyright law.[47] Nearly 150 years ago, the U.S. Supreme Court tackled an issue of a then emerging technology when it ruled that a photograph could be protected by

44. Tannya D. Jalal, Distinguishing Between Narrow AI, General AI, and Super AI, *available at* https://medium.com/@tjajal/distinguishing-between-narrow-ai-general-ai-and-super-ai-a4bc44172e22 (last accessed Feb. 29, 2020).

45. *Id.*

46. STUART RUSSELL & PETER NORVIG, ARTIFICIAL INTELLIGENCE: A MODERN APPROACH 1021 (3d ed. 2010).

47. Copyright law's impact on emerging technology has been subject of many U.S. Supreme Court cases. *See generally* Fortnightly Corp. v. United Artists Television, Inc., 392 U.S. 390 (1968); *Sony Corp. of America*, 464 U.S. at 417; Lotus Dev. Corp. v. Borland Intern., Inc., 516 U.S. 233 (1996); Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd., 545 U.S. 913 (2005); & American Broadcasting Companies, Inc. v. Aereo, Inc., 573 U.S. 431 (2014).

copyright,[48] highlighting "the tension between ... emerging technology" and copyright protection.[49] Ruling in favor of copyright protection, the U.S. Supreme Court held that photographs were not included in the then-existing copyright law in the U.S. as photography was then unknown, and the scientific principles behind it were then not yet discovered.[50] The camera, in that case, was treated as a mere inert "tool that helped facilitate the fixation of the author's creativity."[51]

In the 1960s, questions on whether computers could own rights in computer-generated works came about. In 1965, the Register of Copyrights of the U.S., in a report to the U.S. Congress, posed several questions, the most significant of which was whether a computer could own rights in works that it creates.[52] This would eventually lead the U.S. Congress to create the National Commission on New Technological Uses of Copyrighted Works (CONTU) "to study a variety of new technology issues, among them, the issue of authorship of computer-generated works."[53] In its Final Report in 1978, the CONTU stated —

> On the basis of its investigations and society's experience with the computer, the Commission believes that there is no reasonable basis for considering that a computer in any way contributes authorship to a work produced through its use. The computer, like a camera or a 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.[54]

This question would again be addressed less than a decade after the CONTU's Final Report. In the 1986 Report of the U.S. Congressional Office of Technology Assessment (OTA) countered the CONTU opinion when it stated —

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48. Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 60 (1884).

49. Brown, *supra* note 28, at 33.

50. *Burrow-Giles Lithographic Co.*, 111 U.S. at 58.

51. Yu, *supra* note 8, at 1254.

52. *See* Samuelson, *supra* note 39, at 1192 (citing U.S. COPYRIGHT OFFICE, SIXTY-EIGHT ANNUAL REPORT OF THE REGISTER OF COPYRIGHTS FOR THE FISCAL YEAR ENDING JUNE 30, 1965 5 (1965)).

53. Samuelson, *supra* note 39, at 1193.

54. 79 U.S. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, JULY 31, 1978, at 44 (1979).

> It is misleading, however, to think of programs as inert tools of creation, in the sense that cameras, typewriters, or any other tools of creation are inert. Moreover, CONTU's comparison of a computer to other instruments of creation begs the question of whether interactive computing employs the computer as co-creator, rather than as an instrument of creation. It is still an open question whether the programmed computer is unlike other tools of creation.[55]

Now, however, there is no question that computers, through AI, are not just mere tools that assist in the creation process but have also become creators in their own right. Recent advances in AI development "allows machines to learn from examples and drive results on their own, '[instead of merely having been specifically] programmed for a [certain and expected] outcome.'"[56] This "deep learning" process is where the AI "rel[ies] on artificial neural networks to learn specific behavior by analyzing vast amounts of data."[57] Neural networks can even generalize the vast amounts of data it analyzed to solve new problems even those outside the scope of its initial training and programming to "create new works based on their approximations of how they should look or sound."[58] As a result, an AI using neural networks "could ... 'learn' how to paint, write, or compose and generate a work whose creative content is not the result of any human intervention."[59] Because of this, many creative works by AI have now become indistinguishable from human work.[60] There are even awards given to AI creations that are "most indistinguishable from human [creations in the fields of literature, poetry, and music]."[61]

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55. U.S. CONGRESS, OFFICE OF TECHNOLOGICAL ASSESSMENT, INTELLECTUAL PROPERTY RIGHTS IN AN AGE OF ELECTRONICS AND INFORMATION, OTA-CIT-302 72 (1986).

56. Brown, *supra* note 28, at 7 (citing Erik Brynjolfsson & Andrew McAfee, The Business of Artificial Intelligence: What it can — and cannot — do for your organization, *available at* https://hbr.org/cover-story/2017/07/the-business-of-artificial-intelligence (last accessed Feb. 29, 2020)).

57. Brown, *supra* note 28, at 7 (citing Cade Metz, *How A.I. Is Creating Building Blocks to Reshape Music and Art*, N.Y. TIMES, Aug. 14, 2017, *available at* https://www.nytimes.com/2017/08/14/arts/design/google-how-ai-creates-new-music-and-new-artists-project-magenta.html (last accessed Feb. 29, 2020)).

58. Brown, *supra* note 28, at 8.

59. Yanisky-Ravid, *supra* note 42, at 675.

60. *See* Yu, *supra* note 8, at 1256.

61. Brown, *supra* note 28, at 4 (citing Dartmouth College Neukom Institute Turing Tests in the Creative Arts, Creative Turing Tests 2017 Winners, *available at*

In 2014, a team of data scientists, engineers, and art historians was brought together by banking and insurance company ING, advertising agency J. Walter Thompson, software giant Microsoft, and two Dutch art museums (Mauritshuis and Rembrandthuis) to analyze the painting techniques and style of the Dutch master Rembrandt van Rijn, and "transfer that knowledge into the software which could generate the new work using the latest in 3D printing technology."[62] *The Next Rembrandt*, as the project was called, recognized the most common facial structures, composition details, brushstrokes, and geometric patterns of almost 350 paintings of Rembrandt "to produce the textures and layers necessary for [The] Next Rembrandt to have the painterly presence of an original work" by Rembrandt.[63] The resulting painting, also christened *The Next Rembrandt*, became critically acclaimed and the Project garnered multiple awards.[64] *The Next Rembrandt* was subsequently exhibited along with the paintings of the real Rembrandt in the Musée Jacquemart-André in Paris.[65]

http://bregman.dartmouth.edu/turingtests/2017Winners (last accessed Feb. 29, 2020)).

62. Steve Schlackman, Who holds the Copyright in AI Created Art, *available at* https://alj.artrepreneur.com/the-next-rembrandt-who-holds-the-copyright-in-computer-generated-art (last accessed Feb. 29, 2020).

63. *Id*. *See also* Brown, *supra* note 28, at 5.

64. David Gianatasio & Tim Nudd, JWT's 'The Next Rembrandt' Wins Two Grand Prix at Cannes, in Cyber and Creative Data, *available at* https://www.adweek.com/brand-marketing/jwts-next-rembrandt-wins-two-grand-prix-cannes-cyber-and-creative-data-172171 (last accessed Feb. 29, 2020).

65. J. Walter Thompson Amsterdam, The Next Rembrandt/ING, *available at* https://www.jwt.com/en/work/thenextrembrandt (last accessed Feb. 29, 2020).

The Next Rembrandt[66]

AI has also been making waves in the field of literature. The Hoshi Shinichi Awards is a competition that awards the best science fiction stories written in Japanese.[67] While the past competitors have been human, the competition, in 2016, allowed for the entry of stories written by AI.[68] In the same year, an AI generated story aptly named "The Day a Computer Writes a Novel" made it through the first round of selection for the Hoshi Shinichi Literary Awards and almost won the award.[69]

However, this is not the first time an AI has written extensive prose. "In 1993, Scott French ... published a book entitled *Just This Once*[.]"[70] A self-

66. ING, et. al., The Next Rembrandt, *available at* https://www.nextrembrandt.com (last accessed Feb. 29, 2020).

67. The Hoshi Library, The Hoshi Awards, *available at* https://shinichihoshi.com/hoshi_awards.html (last accessed Feb. 29, 2020).

68. Emiko Jozuka, A Japanese AI Almost Won a Literary Prize, *available at* https://www.vice.com/en_us/article/wnxnjn/a-japanese-ai-almost-won-a-literary-prize (last accessed Feb. 29, 2020).

69. Danny Lewis, An AI-Written Novella Almost Won a Literary Prize, *available at* https://www.smithsonianmag.com/smart-news/ai-written-novella-almost-won-literary-prize-180958577 (last accessed Feb. 29, 2020).

70. Ralph D. Clifford, *Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up?*, 71 TUL. L. REV. 1675, 1691 (1997).

taught programmer, French programmed his computer, which he called "Hal," to write like the late author Jacqueline Susann.[71] Two books of Susann[72] were used in programming Hal.[73] "French identified 200 idiosyncrasies [related to language, character, and action] in Susann's writing."[74] "The 6000 rules he wrote into his computer program served to 'teach' the 200 idiosyncrasies"[75] to Hal, who then proceeded "to produce the tone and plot of the book."[76] French said that "he wrote about a quarter of the prose, the computer cranked out about the same amount and the remainder can only be described as a collaboration of man and machine."[77] Curiously, reviews of *Just This Once* were "generous" compared to the reviews of the late Susann's work, which were described as "unanimously unkind."[78]

AI has likewise made much progress in terms of music composition. The AI called *Creativity Machine* "has autonomously composed music and developed new words consistent with the rules of the English language."[79] *Creativity Machine* was trained on a sampling of top 10 hits of three decades, and then composed music autonomously, producing over 11,000 new musical

71. Tal Vigderson, *Hamlet II: The Sequel? The Rights of Authors vs. Computer-Generated "Read-Alike" Works*, 28 LOY. L.A. L. REV. 401, 402-03 (1994) (citing Steve Lohr, *The Media Business: Encountering the Digital Age — An occasional look at computers in everyday life.; Potboiler Springs from Computer's Loins*, N.Y. TIMES, July 2, 1993, *available at* https://www.nytimes.com/1993/07/02/us/media-business-encountering-digital-age-occasional-look-computers-everday-life.html (last accessed Feb. 29, 2020)).

72. JACQUELINE SUSANN, VALLEY OF THE DOLLS (1966) & JACQUELINE SUSANN, ONCE IS ENOUGH (1973).

73. Vigderson, *supra* note 71, at 403 (citing John Boudreau, *A Romance Novel with Byte; Author Teams Up with Computer to Write Book in Steamy Style of Jacqueline Susann*, L.A. TIMES, Aug. 11, 1993, *available at* https://www.latimes.com/archives/la-xpm-1993-08-11-vw-22645-story.html (last accessed Feb. 29, 2020)).

74. Vigderson, *supra* note 71, at 405.

75. *Id.* (citing *Morning Edition: Computer Software Designed to Emulate Creative Styles*, (NPR radio broadcast), Aug. 23, 1993, *available in* LEXIS, News Library, CURNWS File).

76. Vigderson, *supra* note 71, at 403 (citing Boudreau, *supra* note 73).

77. Lohr, *supra* note 71.

78. *Id.*

79. William T. Ralston, *Copyright in Computer-Composed Music: Hal Meets Handel*, 52 J. COPYRIGHT SOC'Y U.S.A. 281, 283 (2005) (citing Stephen Thaler, *Neural Networks that Create and Discover*, PC AI, May/June 1996).

melodies on a single weekend.[80] AI composers have in fact spilled over to mainstream music. Taryn Southern, an American singer-songwriter, has created an entire album using AI platforms such as Amper Music.[81] Southern "plugs in [the] genre [for each track and then selects] the instruments she wants to use, and [the corresponding] beats per minute."[82] Amper, in turn, "churns out disjointed verses that can be rearranged into a song, and layered beneath Southern's vocals."[83] While it could be argued that there is as much creative control on the part of Southern in this process, it is also undisputable that AI, particularly Amper, has become sufficiently capable of creating songs on its own even without human intervention.[84]

Since it is sufficiently clear that AI has reached a level of sophistication that it can create artistic works without human intervention, the question now arises on whether artistic work made by AI deserve copyright protection and if so, which party should hold such copyright.

III. EXISTING COPYRIGHT REGIMES REGARDING AI-CREATED WORK

> *Copyright is, in my view at least, critically important to a healthy culture. Properly balanced, it is essential to inspiring certain forms of creativity. Without it, we would have a much poorer culture. With it, at least properly balanced, we create the incentives to produce great new works that otherwise would not be produced.*
>
> — Lawrence Lessig[85]

A. The United States of America

The United States copyright law is contained in Chapters 1 to 8 and 10 to 12 of Title 17 of the U.S. Code (the U.S. Copyright Act).[86] The U.S.

80. Ryan Abbott, *I Think, Therefore I Invent: Creative Computers and the Future of Patent Law*, 57 B.C.L. REV. 1079, 1084 (2016).

81. Dani Deahl, How AI-Generated Music is Changing the Way Hits are Made, *available at* https://www.theverge.com/2018/8/31/17777008/artificial-intelligence-taryn-southern-amper-music (last accessed Feb. 29, 2020).

82. Lizzie Plaugic, Musician Taryn Southern on composing her new album entirely with AI, *available at* https://www.theverge.com/2017/8/27/16197196/taryn-southern-album-artificial-intelligence-interview (last accessed Feb. 29, 2020).

83. *Id.*

84. *See* Deahl, *supra* note 81.

85. LAWRENCE LESSIG, REMIX: MAKING ART AND COMMERCE THRIVE IN THE HYBRID ECONOMY xvi (2008).

Copyright Act provides that "copyright ... vests [ ] in the author or authors of the work."[87] Curiously, however, the term "author" is not specifically defined within the Copyright Act.[88] Ralph Clifford argues that although "author" is not specifically defined in the law, "the use of the term 'author' in the [law] implies that Congress meant a human author."[89] Specifically, he mentions of the copyright duration ("'the life of the author and 50 years after the author's death'"[90]) to indicate that the "author[,]" as contemplated by the drafters of the copyright law, is someone that is "capable of dying" — and thus necessarily eliminates non-human entities.[91]

While the copyright law as laid down in the U.S. Code is unclear as to the term "author," the U.S. Copyright Office, in its *Compendium of U.S. Copyright Office Practices* (*Compendium*), has consistently ruled that a creative work with no human author is not a subject of copyright protection. In the first edition of the *Compendium* in 1973, it was stated that copyrightable works must owe their origin to a "human agent[.]"[92] In the second edition of the *Compendium*, it was specified that "for a work to be copyrightable, it must owe its origin to a human being."[93] It further held that "[m]aterials produced solely by nature, by plants, or by animals are not copyrightable."[94] The second edition of the *Compendium* also provided that sound recordings are not copyrightable when there is no human authorship/performer "and the recording results from a purely mechanical process."[95]

86. An Act for the general revision of the Copyright Law, title 17 of the United States Code, and for other purposes [Copyright Act of 1976], 17 U.S.C. §§ 101-810 (1976).

87. *Id.* § 201 (a).

88. Garett Huson, *I, Copyright*, 35 SANTA CLARA HIGH TECH L.J. 54, 69-70 (2018) (citing Copyright Act of 1976, § 101).

89. Clifford, *supra* note 70, at 1682.

90. *Id.* at 1683 (citing Copyright Act of 1976, § 302 (a)).

91. Clifford, *supra* note 70, at 1683.

92. U.S. Copyright Office, Compendium of Copyright Office Practices (As of July 1, 1973), § 2.8.3. (I) (a) (1) (b) (1st ed. 1973).

93. U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, § 202.02 (b) (2d ed. 1984) [hereinafter U.S. Copyright Office, 1984 Compendium]. *See also* U.S. Copyright Office, 1984 Compendium, § 503.03 (a).

94. U.S. Copyright Office, 1984 Compendium, § 202.02 (b).

95. *Id.* § 495. *See also* U.S. Copyright Office, 1984 Compendium, § 495.02.

The third and current edition of the *Compendium* continues with this position, and even includes a section purposely named "The Human Authorship Requirement" which provides —

> *The Human Authorship Requirement*
>
> The U.S. Copyright Office will register an original work of authorship, provided that the work was created by a human being.
>
> The copyright law only protects "the fruits of intellectual labor" that "are founded in the creative powers of the mind." ... Because copyright law is limited to "original intellectual conceptions of the author," the Office will refuse to register a claim if it determines that a human being did not create the work ... .[96]

Compared to the past two editions of the *Compendium*, however, the third and current edition went further and included a section entitled "Works That Lack Human Authorship"[97] where it said —

> *Works That Lack Human Authorship*
>
> [T]o qualify as a work of "authorship" a work must be created by a human being ... Works that do not satisfy this requirement are not copyrightable.
>
> The Office will not register works produced by nature, animals, or plants. Likewise, the Office cannot register a work purportedly created by divine or supernatural beings, although the Office may register a work where the application or the deposit copy(ies) state that the work was inspired by a divine spirit.
>
> ...
>
> Similarly, the Office will not register works produced by a machine or mere mechanical process that operates randomly or automatically without any creative input or intervention from a human author.[98]

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96. U.S. Copyright Office, Compendium of U.S. Copyright Office Practices, Third Edition, § 306 (3d ed. 2017) [hereinafter U.S Copyright Office, 2017 Compendium].

97. *Id.* § 313.2.

98. *Id.* Examples of works produced by nature, animals, plants, or divine beings as provided are: (1) "A photograph taken by a monkey[;]" (2) "A mural painted by an elephant[;]" (3) "A claim based on the appearance of actual animal skin[;]" (4) "A claim based on driftwood that has been shaped and smoothed by the ocean[;]" (5) "A claim based on cut marks, defects, and other qualities found in natural stone[;]" and (6) "An application for a song naming the Holy Spirit as the author of the work." Examples of works produced by a machine or mere mechanical process that operates randomly are: (1) "Reducing or enlarging the

Despite the consistent policies laid down by the U.S. Copyright Office necessitating a human author before it registers an original work of authorship, there have been a few cases which fell through the cracks, these being creative works which are computer-generated but were nevertheless afforded copyright protection by the U.S. Copyright Office. "[I]n 1985, the [U.S.] Copyright Office granted copyright registration for *The Policeman's Beard is Half Constructed*," a book written by Racter, a computer program designed to generate prose and poetry.[99] While Racter was designated as the "author" of the work, the copyright was assigned to Racter's programmer, William Chamberlain, and the latter's illustrator, Joan Hall.[100] In 1993, Scott French was able to register a copyright in his name for *Just This Once* for work that was partly made by his computer named "Hal."[101] Curiously, no litigation over the copyright validity or ownership was made or initiated.[102] A probable reason why these creative works were registered and granted copyright is because the users of Racter and Hal made contributions, albeit small, in the end product, thus making the end products deemed authored by the users of the AI, with them using Racter and Hal as mere tools or implements in the creative process.

As human creation is a prerequisite to copyright protection under the U.S. copyright law, even works of animals are excluded from its coverage. The recent case of *Naruto v. Slater*[103] was an occasion to address the issue of

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size of a pre-existing work of authorship[;]" (2) "Making changes to a preexisting work of authorship that are dictated by manufacturing or materials requirements[;]" (3) "Converting a work from analog to digital format, such as transferring a motion picture from VHS to DVD[;]" (4) "De-clicking or reducing the noise in a preexisting sound recording or converting a sound recording from monaural to stereo sound[;] (5) "Transposing a song from B major to C major[;]" (6) "Medical imaging produced by x-rays, ultrasounds, magnetic resonance imaging, or other diagnostic equipment[;]" and (7) "A claim based on a mechanical weaving process that randomly produces irregular shapes in the fabric without any discernible pattern." *Id*.

99. Wu, *supra* note 43, at 154 (citing RACTER, THE POLICEMAN'S BEARD IS HALF-CONSTRUCTED (1984) (Copyright Registration No. TX-1-454-063, computer generated prose and poetry)).

100. *Id*.

101. Ralston, *supra* note 79, at 283.

102. *Id*. (citing Steve Lohr, *supra* note 71).

103. Naruto v. Slater, Case No. 15-cv-04324-WHO (N.D. Cal. 2016) (U.S.) [hereinafter *Naruto* 2016] and affirmed in Naruto v. Slater, 888 F.3d 418, 426 (9th Cir. 2018) (U.S.) [hereinafter *Naruto* 2018].

copyright protection for work made by an animal. The case involved a six-year-old crested macaque named Naruto who was living on the island of Sulawesi, Indonesia.[104] Naruto took pictures of himself using the camera of photographer David Slater, and the latter subsequently published the pictures in a book.[105] A case was filed against Slater by the People for Ethical Treatment of Animals (PETA), as they alleged that "[the] sales of the book violated Naruto's copyright."[106] PETA claimed that Naruto took the selfie "by 'independent, autonomous action' in examining and manipulating Slater's unattended camera and 'purposely pushing' the shutter release multiple times, 'understanding the cause-and-effect relationship between pressing the shutter release, the noise of the shutter, and the change to his reflection in the camera lens.'"[107]

The District Court for the Northern District of California dismissed the claim of PETA, ruling that "Naruto is not an 'author' within the meaning of the [U.S.] Copyright Act" and thus has no standing to pursue the case.[108] On appeal, the Ninth Circuit affirmed the dismissal on the ground that Naruto lacks statutory standing to sue.[109] The Ninth Circuit ruled that "[i]f the statute does not so plainly state, then animals do not have statutory standing. The Copyright Act does not expressly authorize animals to file copyright infringement suits under the statute. Therefore, ... Naruto lacks statutory standing to sue under the Copyright Act."[110] The Ninth Circuit also relied on terms in the Copyright Act such as "children," "grandchildren," and "legitimate," among others, to rule that humanity was contemplated in the Copyright Act and thus necessarily excludes animals.[111]

104. *Naruto* 2016, Case No. 15-cv-04324-WHO, ¶ 2.

105. *Id.*

106. Victor M. Palace, *What if Artificial Intelligence Wrote This? Artificial Intelligence and Copyright Law*, 71 FLA. L. REV. 217, 226 (2019) (citing *Naruto* 2016, Case No. 15-cv-04324-WHO, ¶ 1).

107. *Naruto* 2016, Case No. 15-cv-04324-WHO, ¶ 2.

108. *Id.* ¶ 13.

109. *Naruto* 2018, 888 F.3d at 426.

110. *Id.*

111. *Id.*

The Naruto Selfie[112]

Despite this requirement of humanness, it should be noted, however, that U.S. copyright law allows non-human authors to hold copyright, but

112. The authorship rights of this photograph was awarded to David Slater in the *Naruto* 2018 case. Complaint for Copyright Infringement, Sep. 21, 2015, at 15 (N.D. Cal. 2015) (U.S.), *in Naruto* 2016, Case No. 15-cv-04324-WHO & *Naruto* 2018, 888 F.3d at 426.

only in the specific circumstance of the work-for-hire model.[113] The U.S. Copyright Act provides that

> [i]n the case of a work made for hire, the employer or other person for whom the work was prepared is considered the author for purposes of this title, and, unless the parties have expressly agreed otherwise in a written instrument signed by them, owns all of the rights comprised in the copyright.[114]

The work-for-hire model is the exception to the general rule that the author has to be a human who actually created the work, as in the work-for-hire model, a person, whether natural or legal (such as a corporation), "who may have played no role at all in the actual creation of the copyrighted work is nevertheless treated as its 'author' and owner."[115]

B. The United Kingdom

Unlike in the U.S., the copyright laws of the U.K. expressly grant copyright protection for computer-generated works,[116] which necessarily cover creative works made by AI. The Copyright, Designs and Patents Act of 1988 (CDPA) defines the term *computer-generated* to mean a work that is "generated by computer in circumstances such that there is no human author of the work[.]"[117] Section 9 (3) of the CDPA provides that "[in] the case of

113. Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?*, 106 HARV. L. REV. 977, 1050 (1993). *See also* U.S. Copyright Act of 1976, § 201 (b).

114. U.S. Copyright Act of 1976, § 201 (b).

115. Robert C. Denicola, *Ex-Machina: Copyright Protection for Computer-Generated Works*, 69 RUTGERS U. L. REV. 251, 276 (2016).

116. An Act to restate the law of copyright, with amendments; to make fresh provision as to the rights of performers and others in performances; to confer a design right in original designs; to amend the Registered Designs Act 1949; to make provision with respect to patent agents and trade mark agents; to confer patents and designs jurisdiction on certain county courts; to amend the law of patents; to make provision with respect to devices designed to circumvent copy-protection of works in electronic form; to make fresh provision penalising the fraudulent reception of transmissions; to make the fraudulent application or use of a trade mark an offence; to make provision for the benefit of the Hospital for Sick Children, Great Ormond Street; Henry Lau, London; to enable financial assistance to be given to certain international bodies; and for connected purposes [Copyright, Designs and Patents Act], 1988 c. 48, § 9 (3) (1988) (U.K.).

117. *Id.* § 178.

a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken." While creative works made by humans are protected until after 70 years from the end of the calendar year of the author's death,[118] the copyright of computer-generated creative works shall be for a period of 50 years from the end of the calendar year in which the work was made.[119]

The U.K. provisions for copyright protection for computer-generated works "do not imply or assume a human author in the absence of one; rather, they expressly create a legal fiction of authorship by means of which copyright vests as a matter of law in a party who is not the author-in-fact."[120] In other words, the concept of authorship is extended "beyond persons who actually create [the creative works] to persons who originate the *process* of creating copyrightable expression."[121]

There is a dearth of jurisprudence in the U.K. dealing with the issue of copyright protection for computer-generated works, which one author opines is probably due to the clear language of the CDPA.[122] The CDPA's provisions on computer-generated works have also been described as "elegant and concise ... [and] does away with most potential debates about the creative works produced by artificial intelligent agents."[123] The CDPA has likewise been the inspiration of other countries who have subsequently instituted protection for computer-generated works such as New Zealand,[124] Ireland,[125] and India,[126] using the practically the same words and formulation as used in the CDPA.[127]

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118. *Id.* § 12 (2).

119. *Id.* § 12 (7).

120. Annemarie Bridy, *Coding Creativity: Copyright and the Artificially Intelligent Author*, 2012 STAN. TECH. L. REV. 5, 32 (2012).

121. Denicola, *supra* note 115, at 282 (emphasis supplied).

122. Andres Guadamuz, Do Androids Dream of Electric Copyright? Comparative analysis of originality in artificial intelligence generated works (Journal Article published in INTELL. PROP. Q., Summer 2017) at *8 [hereinafter Guadamuz, Do Androids Dream of Electric Copyright?].

123. *Id.*

124. An Act to consolidate and amend the law relating to copyright [Copyright Act 1994], Public Act 1994 No 143, § 5 (2) (a) (1994) (N.Z.).

125. An Act to Make Provision in Respect of Copyright, Protection of Rights of Performers and Rights in Performances, to Make Provision for Licensing Schemes and Registration Schemes for Copyright and Related Rights; to

C. The European Union

Most European countries, like the U.S., do not grant copyright protection for computer-generated works or creative works made by AI.[128] A reason for this could be the prevalence of the natural justice and moral rights philosophy of copyright in continental Europe, which necessarily requires the presence of a human author. Further, the subject of copyright protection for computer or AI generated creative works have "not [been] covered by the international treaties and ... copyright directives that [harmonize] the subject."[129]

The Commission of the European Communities, one of the precursors of the European Union, in discussing the issue of copyright on programs created by computers, stated —

> The basis of all copyright protection is the exercise of sufficient skill and lab[o]r for a work to be considered original. The Commission inclines to the view that it is those who use the programmed computer, which is essentially a tool, who should be regarded as entitled to protection. This

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Restate the Law in Respect of Council Directive No. 91/250/Eec of 14 May 1991 on the Legal Protection of Computer Programs; to Give Effect to Council Directive No. 92/100/Eec of 19 November 1992 on Rental Right and Lending Right and on Certain Rights Relating to Copyright in the Field of Intellectual Property; to Give Effect to Council Directive No. 93/83/Eec of 27 September 1993 on the Co-ordination of Certain Rules Concerning Copyright and Rights Related to Copyright Applicable to Satellite Broadcasting and Cable Retransmission; to Restate the Law in Respect of Council Directive No. 93/98/Eec of 29 October 1993 Harmonising the Term of Protection of Copyright and Certain Related Rights and to Give Effect to Article 2.1 Thereof; to Give Effect to Directive No. 96/9/Ec of the European Parliament and of the Council of 11 March 1996 on the Legal Protection of Databases; and to Provide for Related Matters [Copyright and Related Rights Act 2000], Act No. 28/2000, § 21 (f) (2000) (Ir.).

126. An Act to amend and consolidate the law relating to copyright [The Copyright Act, 1957], Act No. 14 of 1957, § 2(d) (iv) (1957) (as amended) (In.).

127. *See* Guadamuz, Do Androids Dream of Electric Copyright?, *supra* note 122, at ⋆8.

128. *Id.* at ⋆14.

129. Guadamuz, Do Androids Dream of Electric Copyright?, *supra* note 122, at ⋆11 (citing Christian Handig, *The copyright term "work" – European harmonization at an unknown level*, 40 INT'L REV. INTELL. PROP. & COPYRIGHT L. 665, 668 (2009)).

> solution has the important advantage of conferring the right on those who are most easily identified.[130]

Currently, there are no explicit directives which direct the member-states of the European Union to grant copyright protection to creative works made by AI. As there is no express ruling on the matter, member states have the latitude in their individual copyright laws to determine whether creative works made by AI should be protected by copyright.

Under the Spanish Intellectual Property Law of 1987, a natural person (i.e., a human being), shall be considered the author of any literary, artistic, or scientific work.[131] On the other hand, German copyright law, as codified in the *Gesetz über Urheberrecht und verwandte Schutzrechte*, does not define the author as a natural person unlike in the Spanish copyright law.[132] However, the same law declares that copyright "protects the author in his intellectual and personal relationships to the work[,]"[133] which strongly implies a necessary connection with personhood."[134]

The Court of Justice of the European Union (CJEU), particularly in its ruling in the case of *Infopaq International A/S v. Danske Dagbaldes Forening*, held that "copyright only applies to original works, and that originality must reflect the 'author's own intellectual creation.'"[135] While the CJEU ruled that national courts are to make the determination as to whether an expression constitutes the intellectual creation of their author,[136] Andres Guadamuz interprets the "author's own intellectual creation" requirement as

130. *Commission Green Paper on Copyright and the Challenge of Technology – Copyright Issues Requiring Immediate Action*, ¶ 5.6.26, COM (1988) 172 final (June 7, 1988).

131. Ley 22/11 sobre la Propiedad Intelectual de 1987, Act 22/1987 § 5 (1) (1987) (repealed) (Spain). *See also* Guadamuz, Do Androids Dream of Electric Copyright?, *supra* note 122, at *11.

132. Copyright Act of 9 September 1965 as last amended by Article 1 of the Act of 1 September 2017 [Act on Copyright and Related Rights], § 7 (1965) (as amended) (Ger.).

133. *Id.* § 11.

134. Guadamuz, Do Androids Dream of Electric Copyright?, *supra* note 122, at *11.

135. Andres Guadamuz, Artificial intelligence and copyright, *available at* https://www.wipo.int/wipo_magazine/en/2017/05/article_0003.html (last accessed Feb. 29, 2020) (citing Infopaq International A/S v. Danske Dagblades Forening, 2009 ECR I-06569, ¶ 37) [hereinafter Guadamuz, AI & Copyright].

136. *Infopaq International A/S*, ¶ 48.

one which necessarily requires a human author, as the original work must reflect the author's personality.[137]

The Berne Convention, an international agreement governing copyright which has among its parties all of the European Union member states, is "neutral on the possibility of non-human authorship ... [and] does not [in fact] define 'author.'"[138] This is because of the wide variance in national laws, particularly on whether only natural persons could be considered as authors.[139]

To summarize, the European Union has no single standard on the treatment of creative works made by AI, and gives much leeway to the individual member-states to determine whether a created work is entitled to copyright protection under their national copyright law. Given that "Continental [European] copyright tradition places greater emphasis on a human author,"[140] it will not be surprising if creative works made by AI will not be protected under the national copyright laws of most, if not all, of the EU member states. Efforts are underway, however, to change the framework on how to view AI altogether. On 12 January 2017, a report was passed by the Committee on Legal Affairs (JURI) of the European Parliament, urging the European Commission to set-up laws and regulations governing robots and AI by defining electronic personhood.[141] This is complemented by the Ethics Guidelines for Trustworthy AI which requires accountability as one of the requirements that AI systems should implement and meet throughout their entire life cycle.[142]

137. Guadamuz, AI & Copyright, *supra* note 135.

138. Miller, *supra* note 113, at 1050.

139. *Id.* (citing WORLD INTELLECTUAL PROPERTY ORGANIZATION, GUIDE TO THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS (PARIS ACT, 1971) 11 (1978)).

140. Miller, *supra* note 113, at 1066.

141. Report with recommendations to the Commission on Civil Law Rules on Robotics, EUR. PARL. DOC. A8-0005/2017, at 29 (2017).

142. *See* High-Level Expert Group on Artificial Intelligence, Ethics Guidelines for Trustworthy AI (A Document Published Online by the Independent High-Level Expert Group on Artificial Intelligence set up by the European) at 14, *available at* https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=60419 (last accessed Feb. 29, 2020).

D. Other Developed Countries

1. Australia

The Australian Copyright Act of 1968 specifically provides that copyright subsists in original literary, dramatic, musical, and artistic works where the author is a "qualified person."[143] A "qualified person" under the same law refers to "an Australian citizen or a person resident in Australia[,]"[144] thus seemingly requiring it to be a human being.[145]

Australian jurisprudence has supported this view. Several cases involving computer-generated work have been heard where the courts ruled that "authorship is a key element where assessing a work is protected by copyright," and in these cases, copyright protection was refused as they lacked human input. [146]

2. Singapore

The Singapore Copyright Act as revised in 2006 adopts the phrasing used in the Australian Copyright Act of 1968 where it specifically provides that copyright subsists in original literary, dramatic, musical, and artistic works where the author is a "qualified person."[147] A "qualified person," under the same law, "means a citizen of Singapore or a person resident in Singapore."[148]

The Singapore Court of Appeal, in the case of *Asia Pacific Publishing Pte Ltd v. Pioneers & Leaders (Publishers) Pte.*,[149] explicitly ruled that no "original

143. An Act relating to copyright and the protection of certain performances, and for other purposes [Copyright Act 1968], No. 63, 1968, § 32 (1) (a) (1968) (Austl.).

144. *Id.* § 32 (4).

145. *See* Ramalho, *supra* note 34, at 9 (citing A Ricketson, *The need for human authorship – Australian developments: Telstra Corp Ltd v Phone Direcotries Co Pty Ltd*, 34 EUR. INTELL. PROP. REV. 2012).

146. IceTV Pty Ltd v. Nine Network Australia Pty Ltd., 239 CLR 458 (2009) (Austl.); Telstra Corporation Limited v. Phone Directories Co Pty Ltd., FCA 44 (2010), 264 ALR 617 (2010) (Austl.), as affirmed in FCAFC 149 (2010) & 194 FCR 142 (2010); & Acohs Pty Ltd v. Ucorp Pty Ltd., FCAFC 16 (2012) (Austl.).

147. An Act relating to copyright and matters related thereto [Copyright Act], Act 2 of 1987, § 27 (1) (a) (1987) (as amended) (Sing.).

148. *Id.* § 27 (4).

149. Asia Pacific Publishing Pte Ltd. v. Pioneers & Leaders (Publishers) Pte., SGCA 37 (2011) (Sing.).

work" can be under copyright protection without having an identifiable human author who created the work and that only a human being — not even a company — can qualify as an author.[150] This case involved the supposed infringement by another corporation of horse-racing information generated by software.[151] The Court of Appeal, in ruling against the grant of copyright, stated that "[i]t would clearly be against public policy to allow copyright protection in perpetuity[,]" which it said would happen if a corporation is deemed capable of being an author for the purpose of copyright.[152] Moreover, it was likewise ruled that "in cases involving a high degree of automation, there will be no original work produced for the simple reason that there are no identifiable human authors."[153]

IV. INADEQUACY OF THE EXISTING REGIMES

> *Awareness is like consciousness. Soul is like spirit.*
>
> *But soft is not like hard and weak is not like*
>
> *strong. A mechanic can be both soft and hard, a*
>
> *stewardess can be both weak and strong. This is*
>
> *called philosophy or a world-view.*
>
> — Racter[154]

As discussed above, there are jurisdictions which provide copyright protection to creative works made by computers/AI and there are those that do not. The question now presents itself: should creative works made by computers/AI be granted copyright protection? Should the answer be in the affirmative, are the current copyright regimes adequate to accommodate advances in technology and ensure the proper allocation of benefits and protection to the most deserving parties?

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150. Benita Lau, How copyright applies to AI-generated works, *available at* https://www.techinasia.com/talk/copyright-apply-ai (last accessed Feb. 29, 2020).

151. *Asia Pacific Publishing Pte Ltd.*, ¶ 9.

152. *Id.* ¶ 72.

153. *Id.* ¶ 81.

154. Excerpt from *The Policeman's Beard is Half Constructed*, a prose written by RACTER. STEFANO FRANCHI & GUVEN GUZELDERE, MECHANICAL BODIES, COMPUTATIONAL MINDS: ARTIFICIAL INTELLIGENCE FROM AUTOMATA TO CYBORGS 301 (2005).

Countries like the U.S., Germany, and Australia do not grant copyright protection to creative works made by AI for the simple reason that they are not made by human beings. Indeed, under the current framework, "it [ ] does not make sense to allocate intellectual property rights to machines because they do not need to be given incentives to generate output."[155] As one of the purposes of the intellectual property system is to grant rights to induce creators to innovate, "[t]he system has assumed that if such incentives are not necessary, rights should not be granted."[156] Ralph Clifford restates the current framework succinctly —

> The current federal systems are based on the axiom that works will be created only through the exercise of human creativity, whether machine-assisted or not. Once the computer can literally 'do it on its own,' the created works fall outside of the scope of intellectual property protection. Although this exclusion from coverage was not intentional, it is the appropriate policy for the present age. No extra incentives are needed to make currently available creative computers produce works — if the computer program is executed, the works will result.[157]

Several authors have concurred in the position that creative works made by AI should not be granted copyright protection. It has been proposed that that preventing protection for creative works made by AI will be appropriate until computers acquire consciousness.[158] It has likewise been opined that granting copyright to creative works made by AI is not necessary to promote progress and development in this field of science as AI research is likely to continue "as a matter of national pride and policy."[159] One author even questions the wisdom of granting copyright protection to creative works made by AI, as there is supposedly "no objective, humanitarian goal" to promote creative works such as paintings, compared to the universal benefit humanity derives from discoveries in the scientific fields.[160] This view of not granting copyright protection to creative works made by AI, as currently practiced in the U.S. and most countries in Europe, however, has become much criticized and now appears to be the minority view.

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155. Samuelson, *supra* note 39, at 1199.

156. *Id.* at 1199-200.

157. Clifford, *supra* note 70, at 1702-03.

158. *Id.* at 1703.

159. Palace, *supra* note 106, at 239. This statement was made in the context that "there is a fierce international race as to which country will lead humanity into the age of artificial intelligence." *Id.*

160. *Id.* at 240.

The emerging view is that there is a considerable disadvantage if creative works made by AI are not granted copyright protection and immediately fall into the public domain. While the contemporary belief is that AI cannot be incentivized or rewarded to produce more work, this belief ignores the reality that human beings are needed to: (1) develop the technology that produced the AI, and (2) to distribute and disseminate the output made by the AI.[161]

First, if creative works made by AI would immediately fall into the public domain, there will be less incentive for AI programmers and creators to develop more sophisticated AI.[162] Simply stated, AI developers and programmers, as well as the companies that finance them, would be dissuaded from developing and investing in AI research if they would not enjoy copyright protection or the financial benefits that come along with it.[163] This would reasonably result not only in the decline of AI, but also in the decline of innovation as to its related sectors.[164] In addition, the certainty of copyright protection avoids the possibility of "[leaving] potentially expensive or valuable works in the public domain [allowing] investment [to go] unrewarded."[165] As concisely laid out by Nina Brown —

> A common argument against providing copyright protection to computer-generated works is that machines cannot be incentivized to create works because they are not human. This simplistic argument overlooks the fact that certainty of copyright in computer-generated works could provide valuable incentives for the creators of the machines that generate those works. The algorithms do not need the incentive to create works, but the programmers need the incentive to write the algorithms. Copyright can provide this incentive by offering one of the stakeholders (the programmer, end-user, or both) a 'fair return' for their effort. Thus, recognizing a copyright in these works increases the likelihood that innovators will continue to develop code to generate new creative works for the benefit of society.[166]

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161. Denicola, *supra* note 115, at 273.

162. Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, 57 IDEA 431, 438 (2017).

163. *Id.*

164. Jani McCutcheon, *The Vanishing Author in Computer-Generated Works: A Critical Analysis of Recent Australian Case Law*, 36 MELB. U. L. REV. 917, 956 (2012).

165. *Id.*

166. Brown, *supra* note 28, at 22 (citing Amir H. Khoury, *Intellectual Property Rights for Hubots: On the Legal Implications of Human-like Robots as Innovators and Creators*, 35 CARDOZO ARTS & ENT. L.J. 635, 653 (2017)).

Second, aside from developing the AI, distributing and disseminating the creative works made by AI is a human activity which needs to be incentivized. In the case of *Golan v. Holder*,[167] the U.S. Supreme Court ruled that aside from creation, dissemination of existing and future works was an appropriate means to promote science and the arts.[168] Indeed, someone must be motivated to bringing the creative works into the public circulation, as dissemination is critical in ensuring the ultimate public benefits sought by copyright.[169] If there is no human circulating the work, it will most likely not reach a wide audience and fail to benefit the public in general. Indeed, "[i]nnovations that are kept secret do not promote the progress of science and the useful arts as much as innovations that are revealed and disseminated."[170]

Third, if copyright protection is not afforded to creative works made by AI, it might create a situation where the human beings who caused the AI to do the creation would conceal such fact in order to establish a stake in the creative works.[171] This is problematic because this framework disincentivizes the disclosure of any contribution by the AI in the creation process. If AI-created works are not made known in the public as such, discussed, and put up for public scrutiny, it would result in the setback of AI development as the said acts are crucial in the development and progress of AI technology. More importantly, granting copyright protection to works created by AI would be beneficial as it would cover ambiguous instances where a human being adds creative input to work made by the AI. There have been many instances where a creative work was a result of a computer-human combination.[172] An example of this is Google's *PoemPortraits*,[173] which is described as an "experiment at the boundaries of AI and human collaboration."[174] *PoemPortraits* asks the user to contribute a single word and take a self-portrait, after which it will generate a unique poem based on an

167. Golan v. Holder, 565 U.S. 302 (2012).

168. *Id.* at 326.

169. Samuelson, *supra* note 39, at 1226–27.

170. *Id.* at 1227.

171. *Id.* at 1192.

172. *See* Ralph D. Clifford, *Creativity Revisited*, 59 IDEA 25, 29 (2018).

173. *See* Es Devlin, PoemPortraits, *available at* https://artsexperiments.withgoogle.com/poemportraits (last accessed Feb. 29, 2020).

174. *Id.*

algorithm that is "trained on millions of words of [19th] century poetry."[175] The developers of *PoemPortraits* "trained an algorithm to learn to write poems by reading over 25 million words written by 19th century poets."[176]

It can be argued that the poems generated by *PoemPortraits* fall immediately into the public domain because they are generated by an algorithm used by the software. However, it can likewise be argued that the human end-user owns the copyright because of the creative element he or she introduced by virtue of his contributed word and self-portrait. It can be argued that *PoemPortraits* is a mere tool used by the human end-user, or at most, that the poem is a human-computer collaboration. To avoid the possibility that no copyright protection is extended to situations like the above where the role of the computer could be subject of debate, it is opined that a safer proposition is to grant protection, as this would encourage and reward development and human participation, especially since the dangers of overprotection (e.g. the "stifling [of] the creative process and preclud[ing] people from building upon the creations of others")[177] would not be present. As copyright subsistence is more likely to be contested in instances where an algorithm or AI was utilized in the production of the creative work, this will undoubtedly result in increased litigation costs.[178] This uncertainty leads to "wasted expense and time."[179] Certainly, while there may be difficulties attributing authorship to any given individual, especially in convoluted situations involving algorithms and AI, achieving "greater certainty of authorship and thus ownership ... is a compelling policy goal."[180]

It has been said that "maximizing intellectual property rewards, especially for high technology innovators" will likely strengthen high technology industries.[181] This is the reason why copyright laws are continuously being amended to accommodate advances in technology, at

175. Es Devlin, Create a personalized poem, with the help of AI, *available at* https://www.blog.google/outreach-initiatives/arts-culture/poemportraits (last accessed Feb. 29, 2020).

176. *Id.*

177. David R. Owen, *Interfaces and Interoperability in Lotus v. Borland: A Market-Oriented Approach to the Fair Use Doctrine*, 64 FORDHAM L. REV. 2381, 2397 (1996).

178. McCutcheon, *supra* note 164, at 956.

179. *Id.*

180. *Id.*

181. Samuelson, *supra* note 39, at 1225-26.

times lengthening the duration of existing copyright protection, or extending protection to previously unprotected material.[182] Indeed, if the purposes of intellectual property laws are to be served, granting protection to computer or AI generated creative works appears to be the most logical option.

Having concluded that granting copyright protection to computer or AI generated creative works is necessary, the question now is whether the existing models in place (those in the CDPA of the U.K. and as duplicated by other countries such as New Zealand, Ireland, and India) are sufficient in effectively attributing copyright protection over creative works to the appropriate parties. To recall, the CDPA provides that in the cases of "literary, dramatic, musical[,] or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken."[183] The CDPA also defines the term *computer-generated* to mean a work that is "generated by computer in circumstances such that there is no human author of the work[.]"[184] While this formulation and definition has been described as an "elegant and concise wording that does away with most potential debates about the creative works produced by artificial intelligence agents[,]"[185] it has likewise been criticized for the confusion it brings as to which person made the arrangements necessary for the creation of the work.[186]

Indeed, the programmer who made the AI or the end-user who instructed the AI, among others, may claim that it is they who made the necessary arrangements for the creation of the work.[187] It is thus submitted that the formulation in the CDPA is woefully insufficient for the purposes of purposes of rightfully and conveniently assigning copyright to the proper party. Given this seeming inadequacy of the CDPA, a new framework with respect to clearly attributing copyright to computer/AI generated creative works is necessary to prevent disputes between the different stakeholders in the computer/AI generated creative works.

182. *Id.* at 1225-26 & n. 160.

183. Copyright, Designs and Patents Act, § 9 (3) (U.K.).

184. *Id.* § 178.

185. Guadamuz, Do Androids Dream of Electric Copyright?, *supra* note 122, at *8.

186. Ramalho, *supra* note 34, at 12.

187. *Id.*

V. POTENTIAL COPYRIGHT OWNERS AND THEIR RIGHT TO CLAIM OWNERSHIP

Because of the confusion as to who is the proper party who should own the copyright of a creative work made by AI, "it is necessary to consider the overall [societal value] of the copyright attribution process."[188] This part of the Article analyzes the arguments for and each against each party, which are divided into the following: (1) the AI itself as the copyright owner; (2) the AI programmers/developers as the copyright owner; and (3) the AI end-user as the copyright owner, or a combination of one or more of these entities. It is only after a complete analysis of the claims of each potential copyright owner can a rational proposal be forthcoming.

A. The AI Itself

Current AI is no doubt, highly intelligent. Shlomit Yanisky-Ravid stated that we are in the era of automated, autonomous, and advanced technology that can "generate products and services, make decisions, act, and independently create artworks."[189] In a report by the JURI of the European Parliament, it was stated —

> [W]hereas the more autonomous robots are, the less they can be considered to be simple tools in the hands of other actors (such as the manufacturer, the operator, the owner, the user, etc.); whereas this, in turn, questions whether the ordinary rules on liability are sufficient or whether it calls for new principles and rules to provide clarity on the legal liability of various actors concerning responsibility for the acts and omissions of robots where the cause cannot be traced back to a specific human actor and whether the acts or omissions of robots which have caused harm could have been avoided[.][190]

Given this apparent intelligence of existing AI, the question presented is whether the AI itself should be granted the copyright over the creative works it produces.

Most commentators are against the idea of assigning the copyright over AI generated creative works to the AI itself. Andrew Wu argues that the purpose of copyright, that is, the promotion of the progress of science and the arts, is not served in granting copyright to AI as they cannot be

188. Hristov, *supra* note 162, at 443.

189. Yanisky-Ravid, *supra* note 42, at 663.

190. Report with recommendations to the Commission on Civil Law Rules on Robotics, *supra* note 141, at 6-7.

encouraged to generate works of authorship for the public's benefit.[191] Pamela Samuelson similarly stated that it "does not make any sense to allocate intellectual property rights to machines because they do not need to be given incentives to generate output."[192] As the principal rationale of the intellectual property laws is to motivate creators and induce innovation by granting them limited rights, then, similarly, rights should be withheld if such incentives are not necessary.[193]

Aside from failing to serve the utilitarian purposes of copyright law, granting copyright directly to the AI would not serve natural rights, moral rights, and personality rights theories that are prevalent in continental Europe. As AIs currently do not have consciousness and emotions, they cannot engage in any type of emotional connection with their work, nor can their "personality" be imprinted in their works, as this implies a human being imparting his persona to a creative work.[194]

It has likewise been argued that giving authorship rights to a computer is "absurd ... [as] the computer would be incapable of enforcing [authorship] rights."[195] As observed by Kalin Hristov, "[n]on-humans are not natural persons and may not be held legally responsible in a court of law."[196] Robert van den Hoven van Genderen argues that an AI system itself "can never bear any legal responsibility until there is a degree of legal personality and a certain acceptance of a legal position to perform legal actions with legal effect."[197] He describes *legal personhood* to involve "the status of an entity as a person before the law, leading to recognition of certain rights and obligations under the law. Consequently, a legal person has the duty to obey the law, while enjoying the benefit of protections to rights and privileges accorded to a legal person."[198] While advances have been made towards developing

191. Wu, *supra* note 43, at 156.

192. Samuelson, *supra* note 39, at 1199.

193. *Id.*

194. Ramalho, *supra* note 34, at 15.

195. Evan H. Farr, *Copyrightability of Computer-Created Works*, 15 RUTGERS COMPUTER & TECH. L.J. 63, 79 (1989). *See also* Woodrow Barfield, *Intellectual Property Rights in Virtual Environments: Considering the Rights of Owners, Programmers and Virtual Avatars*, 39 AKRON L. REV. 649, 664 (2006).

196. Hristov, *supra* note 162, at 441.

197. Robert van den Hoven van Genderen, *Do We Need New Legal Personhood in the Age of Robots and AI?*, *in* ROBOTICS, AI AND THE FUTURE OF LAW 49 (Marcelo Corrales, et al. eds., 2018).

198. *Id.* at 20.

increasingly intelligent and autonomous AI, their lack of self-awareness and sentience would make arguing for legal personhood rather challenging.

Another problem in granting copyright directly to the AI is the determination of the length of copyright. Being an entity that has no lifespan yet with the potential to exist forever, the traditional copyright period which contemplates a number of years after the author's death is now inapplicable, and in fact runs contrary to the grant of an economic monopoly only for "limited times[.]"[199] While it could be argued that there are jurisdictions which have granted the right to own copyright to non-human entities such as corporations, these entities have legal personhood which clarifies their standing in law, which circumstance is not present with respect to AI.

Lastly, it is submitted that the time has not yet come to grant authorship rights to AI. Granting authorship rights to AI at this stage is not only controversial, but may also lead to "an uncertain future full of legal challenges and systemic abuse."[200] However, this could very well change once sentient and self-aware AI is developed. An example of a sentient AI is the fictional character Data in the television series *Star Trek: The Next Generation*, a self-aware android capable of independent decision whether or not it will generate output.[201] Data is a "violinist, sculptor, and painter in his free time."[202] We currently do not have AI as sophisticated as Data, and thus, it appears improper to deal with questions such as whether AI should have personhood, whether AI should have political and civil rights, and if so, how these rights are to be enforced. When that time comes, however, "copyright will be the least of our concerns."[203]

B. The AI Programmer/Developer

AI programmers and developers, along with the companies they work for, have been classified as the "most important contributors to the research and development of the AI sector."[204] Programmers and developers have likewise been called as the "true masterminds" behind computer-generated works, as they "exercise the most creative control in determining ... the

199. Huson, *supra* note 88, at 65.

200. Hristov, *supra* note 162, at 441.

201. *See* Wu, *supra* note 43, at 156.

202. *Id.*

203. James Grimmelman, *There's No Such Thing as a Computer-Authored Work—And It's a Good Thing, Too*, 39 COLUM. J.L. & ARTS 403, 403 (2016).

204. Hristov, *supra* note 162, at 444.

creative output and the processes the algorithm will use to create [a creative] work."[205] This holds true even if "the programmer [does] not know exactly what the [AI] will produce each time it is [used], ... [as the programmer still was the one who programmed the AI and gave it the parameters and] rules [enabling it] to produce its output."[206] Indeed, it appears but "fair to reward the programmer for the value attributable to this fruit of his intellectual labor, even though it may be a fruit he [or she] had not envisioned."[207] Because of these reasons, several commentators [208] have pushed that copyright be attributed to the AI programmers and developers.

It has been suggested that AI programmers and developers should be attributed the copyright of the works generated by the AI they create by virtue of "[i]ntuition and the principle of transitivity[.]" [209] The AI programmer/developer is technically the "author of the author" of the works and thus should be assigned the copyright of the works made by their creations. Aside from transitivity, attributing copyright to AI programmers/developers would "ens[ure] sustainable growth and development of the AI sector."[210] This belief is based on the utilitarian model of copyright, believing that incentivizing AI programmers and developers with the copyright over creative works made by AI would encourage them to continue with efforts to advance and make progress in the sciences and the arts.[211] Yanisky-Ravid states that "[f]rom a policy and practical standpoint, it makes sense to incentivize people or firms as well as other entities to use creative AI systems to create works of authorship because doing so will most efficiently promote the proliferation of the devices and the works they produce."[212]

Several authors have proposed that copyright be attributed to the AI programmer/developer and that this could be made through a modified

205. Brown, *supra* note 28, at 35.

206. Farr, *supra* note 195, at 73.

207. Samuelson, *supra* note 39, at 1205.

208. Hristov, *supra* note 162, at 453 & Farr, *supra* note 195, at 79-80.

209. Bridy, *supra* note 120, at 21.

210. Hristov, *supra* note 162, at 445.

211. *See* Hristov, *supra* note 162, at 444.

212. Yanisky-Ravid, *supra* note 42, at 712. While Yanisky-Ravid espouses for the work-for-hire model for creative work made by AI, she clarifies that the "employer" may either be the AI programmer/owner or the user, depending on the circumstances. However, she leans in favor of the user as the "employer" because of accountability concerns. *Id.*

work-for-hire model as seen in the U.S.[213] and a few other countries such as Japan[214] and the Philippines.[215] The work-for-hire model is the exception to the general rule that copyright protection belongs to the author-in-fact, or the person who actually created the work.[216]

The work-for-hire model provides that copyright for creative works made by employees as part of their employment belongs to their employers. This policy aims to incentivize the employer who bankrolls the project by giving him or her control over the work and all its commercial applications.[217] Annemarie Bridy proposes the work-for-hire doctrine, a mechanism already existing in the intellectual property system, as a fitting framework that can tackle the problem of AI-generated work authorship as it allows for the "vesting [of copyright] ownership ... [to] a person [or entity] who is not the author-in-fact of the [creative] work ... ."[218] Since an employer may be considered as a person or entity engaging the services of another for the completion of a task, the AI programmer/developer would satisfy the definition as he or she "employs the services" of the AI in generating new creative works.[219] This model would effectively solve the issue of creative works made by AI falling into the public domain.

On the other hand, there are also criticisms for the proposal to allocate the copyright to the AI programmer/developer. The first criticism targets the transitivity principle (the "author of the author") discussed above, the criticism being that this principle "assumes that the [AI] programmer

213. *See* U.S. Copyright Act of 1976, § 101.

214. Copyright Law of Japan, Law No. 48, art. 15 (1970) (as amended) (Jap.).

215. An Act Prescribing the Intellectual Property Code and Establishing the Intellectual Property Office, Providing for Its Powers and Functions, and for Other Purposes [INTELL. PROP. CODE], Republic Act No. 8293, § 178 (1783) (as amended).

216. Yanisky-Ravid, *supra* note 42, at 711.

217. *Id.* (citing Community of Creative Non-Violence v. Reid, 490 U.S. 730, 746 (1989) & Catherine L. Fisk, *Removing the 'Fuel of Interest' from the 'Fire of genius': Law and the Employee-Inventor, 1830-1930*, 65 U. CHI. L. REV. 1127, 1131 (1998)).

218. Bridy, *supra* note 120, at 26. She proposes that the AI programmer/developer be considered as the "employer" of the AI. *Id.*

219. Hristov, *supra* note 162, at 446.

explicitly programmed the AI with step-by-step instructions."[220] Advanced AI programs currently in place learn using neural networks, and not by simply feeding them a specific and limited set of information.[221] As the AI learns by unsupervised deep learning, the AI makes changes in itself in ways never contemplated by the AI or the algorithm's original programmer, effectively cutting him or her off the creative process.[222] To assign the copyright to the AI programmer/developer just because they made the original code of the AI amounts to what commentators call "double dipping."[223] Another aspect to this double dipping (or sometimes called "free-riding") issue is that it might result in underproduction.[224] There is a possibility of underproduction because the AI programmer/developer reaps the benefits from the output of his created AI without any additional work himself or herself, giving the AI programmer/developer little or no reason to create anymore by himself or herself.[225]

Related to this is the criticism that attributing the copyright to the AI programmer/developer over-rewards them when there is no policy rationale for such over-rewards. While it has been argued that rewarding AI programmers/developers with the copyright over the creative works made by their AI is justified as it would encourage them to continue making better and more sophisticated AI, [226] a counter-argument is that AI programmers/developers are already incentivized by the market to create AI or software in the form of prospective sales revenues or licensing royalties from prospective end-users.[227] As AI programmers/developers already have a valuable copyright in the AI code itself, it is proposed by some authors that allowing the AI programmers/developers to reap the reward of copyright

220. Russ Pearlman, *Recognizing Artificial Intelligence (AI) as Authors and Inventors under U.S. Intellectual Property Law*, RICH. J.L. & TECH., Volume No. 24, Issue No. 2, at 28.

221. *Id.*

222. Brown, *supra* note 28, at 23.

223. *Id.* at 22-23.

224. Huson, *supra* note 88, at 73-74 (citing Anne Barron, Copyright Infringement, 'Free-Riding' and the Lifeworld (A Working Paper Published Online By the London School of Economics and Political Science Law Department), *available at* http://www.lse.ac.uk/law/working-paper-series/2007-08/WPS2008-17-Barron.pdf (last accessed Feb. 29, 2020)).

225. *Id.*

226. Hristov, *supra* note 162, at 444.

227. Denicola, *supra* note 115, at 283.

also in the creative works of the AI would be unjust as it allow them to have "two bites at the apple."[228] Thus, this model unduly over-rewards the AI programmer/developer especially in light of the fact that "the programmer is no more able to anticipate the output than anyone else." [229]

Furthermore, as the AI programmer/developer is already exploiting the AI by charging fees for its sale or royalties for its use, "it seems [ ] fair that [the AI programmer/developer] agree[s] to yield some of his rights to [the end-users who] have paid for [the use of the AI]."[230] End-users of a creative AI have a reasonable expectation that paying for the use of the creative AI brings with it the rights over its output, and would feel defrauded if the AI programmer/developer demanded rights over the created work. [231] If copyright is immediately and directly granted to AI programmers/developers who sell/lease the creative AI, end-users would be left with no incentive to use the technology, leading to a possible stagnation of AI development and innovation.

The AI programmer/developer is not left without recourse though. In a situation where copyright ownership over the works generated by the AI is of utmost importance, the AI programmer/developer may opt to "retain control over the [creative AI] and [consequently assert] ownership of those works [created by the AI] as the user [thereof]."[232] If this is done by the AI programmer/developer, he or she will not make any money directly from the AI, although he or she "may profit [by benefiting] from the output that the [creative AI] generates. Thus, the [AI programmer/developer] has a choice, and should not complain about the consequences of his [or her] choice to market the [creative AI.]" [233] Another option is for the AI programmer/developer to enter into an agreement with the end-users of the creative AI for a "share of ownership or royalties attributable to works generated by the software."[234]

228. Brown, *supra* note 28, at 37.

229. Samuelson, *supra* note 39, at 1208.

230. *Id.* at 1207. *See also* Ralston, *supra* note 79, at 304.

231. Ralston, *supra* note 79, at 304.

232. Denicola, *supra* note 115, at 283.

233. Samuelson, *supra* note 39, at 1207.

234. Denicola, *supra* note 115, at 283-84.

Another criticism to the attribution of copyright to the AI programmer/developer is the looming enforcement difficulties in protecting the copyright. From an enforcement point of view, AI programmers/developers would have no interest to defend copyright over something it did not know was created. As the created work will be in the hands of the end-users or the person instructing the AI to manufacture the creative work, these end-users would have an incentive not to report to the AI programmer/developer that a new creative work was made over which the AI programmer/developer has rights. [235] This leaves the AI programmer/developer with a choice of either licensing the AI into a "shroud of distrust and suspicion" or avoid licensing the creative AI altogether.[236]

Lastly, this model of attribution would give an unreasonable burden on the part of the AI programmer/developer because aside from exercising vigilance over unauthorized use or reproduction of the creative AI, he or she also has to be vigilant over creative works created by AI which he or she has right over, and if the end-user have been economically benefitting from them without his knowledge or consent.[237]

C. The End-User of the AI

The end-user, for the purposes of this Article, is the person who instructed or utilized the creative AI to generate the creative works or the person or entity under whose direction or instructions the creative AI generated work. It is not limited to the person who literally pushed a button to engage the AI, but also includes the person or entity who is the proximate cause for giving such instructions and has a legitimate right to use the AI, either as its owner or license-holder. AI programmers/developers may likewise be considered as end-users of the AI if they themselves use the AI to produce creative works. The end-user may or may not have contributed to the creative process, but what is certain is that he or she is the proximate cause in the generation of the creative work, he or she having directed the AI to manufacture the creative work.

As early as the 1970s, the CONTU was already of the position that the person who employs the computer, or the end-user, is the author of the

235. *See* Samuelson, *supra* note 39, at 1208.

236. Wu, *supra* note 43, at 171 (citing Samuelson, *supra* note 39, at 1208).

237. Wu, *supra* note 43, at 171-72.

creative works generated by a computer.[238] While the CONTU, in coming with this position, looks at a computer as a mere tool in the production of the creative works, the argument remains that had it not been for the end-user, the creative works would not have been made, which is the test set by the U.S. Supreme Court in *Burrow-Giles Lithographic Co. v. Sarony*,[239] where the author was considered as the one "to whom anything owes its origin."[240] While the AI programmer/developer could also argue that had it not been for him or her then the creative works would not have been generated, this is akin to saying that a knife manufacturer is likewise responsible for murders committed by a knife wielding murderer.[241] Indeed, unless AI becomes sophisticated enough that it either gains self-awareness or decides for itself the circumstances when it will produce the creative works, the fact remains that a user is necessary to engage the AI to produce creative works. It is the end-user, after all, who determines the volume and quality of the creative works released to the public, thus giving them a more meaningful role in generating such works.[242]

Allocating copyright to the end-user is justified and supposedly "does the most to advance the purpose of copyright in promoting the progress of science [as] end-users are incentivized to operate and generate new works."[243] Also, and as discussed previously, while AI programmers/developers have been called the "most important contributors to the research and development of the AI sector" and the true masterminds behind AI generated creative works, they are already incentivized as they could sell or license the creative AI to the end-users.[244] End-users who purchase creative AI from their programmers/developers also have a reasonable expectation to use and control the output made by the AI.[245] This model, however, is not totally oppressive on the AI programmer/developer and in fact provides benefits to them. If copyright over AI-generated products is attributed to the end-user, the value of the AI itself increases, and, accordingly, the ability of the AI

238. U.S. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, *supra* note 54, at 45.

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

240. *Id.* at 58.

241. Ralston, *supra* note 79, at 303.

242. Yu, *supra* note 8, at 1261.

243. Brown, *supra* note 28, at 38.

244. *Id.* at 39.

245. Samuelson, *supra* note at 39, at 1207. *See also* Ralston, *supra* note 79, at 304.

programmers/developers to economically exploit the AI they developed likewise increases.[246] The AI programmer/developer then would have the option of keeping such creative AI to himself or herself to retain copyright over all future works of the creative AI, or to sell or license the AI at a more expensive price.[247]

End-users of AI are also the best parties to enforce copyrights arising from AI-generated creative works, thus justifying the grant of such rights to them. As the creative works are in the control of the end-user, he or she is in the best position to contest any infringement, with them being aware of what the created works are, compared to the AI programmer/developer who may have no idea of the potentially limitless creative works made by the AI. If copyright would not be attributed to the end-user, they will "have an incentive to conceal the [creative] output[.]"[248]

Yanisky-Ravid flips this enforcement angle and looks at the issue from the viewpoint of accountability, raising that ownership of intellectual property rights "is not merely a question of benefits arising from the right to exclude others from enjoying, using, or licensing the objects"[249] but also "a question of accountability for using it with consideration for other humans' and entities' rights."[250] Yanisky-Ravid believes that the party who enjoys the benefits of using AI systems should also take responsibility for them.[251] Inasmuch as end-users are in the best position to efficiently use, sell, and distribute the creative works, as well as to take action against infringement, they are also in the best position to respond to any possible wrongdoing made while the AI was in their control.[252] Yanisky-Ravid further contends that as AI systems are working for the end-users, the end-users should bear accountability for their production.[253] This model, she believes, would

246. Brown, *supra* note 28, at 37.

247. *Id.* at 39.

248. Wu, *supra* note 43 at 171 (citing Samuelson, *supra* note at 39, at 1208).

249. Yanisky-Ravid, *supra* note 42, at 683 (citing Hanoch Dagan & Michael A. Heller, *The Liberal Commons*, 110 YALE L.J. 549, 559-60 (2001) & Hanoch Dagan, *Pluralism and Perfectionism in Private Law*, 112 COLUM. L. REV. 1409, 1421-22 & 1438-39 (2012)).

250. Yanisky-Ravid, *supra* note 42, at 683.

251. *Id.* at 698.

252. *Id.*

253. *Id.*

"assist[ ] in solving the problem of the lack of accountability for the outcomes of AI systems."[254]

A more important reason in attributing copyright to the end-user is that doing so would eliminate the necessity for distinguishing "between computer-assisted [(or AI-assisted)] and computer-generated [(or AI-generated)] creative works."[255] If the copyright is not attributed to the end-user, then a potentially chaotic situation would come about, especially in cases where the end-user makes a contribution to the creative process participated in by a creative AI. In such a case, there will be a potential skirmish between the AI programmer/developer and the end-user as to which party should be granted the copyright over the end product. The end-user may argue that he or she used the AI merely as a tool used in the creative process while the AI programmer/developer may argue that the AI created a distinct copyrightable product over which it has rights. Furthermore, the distinction on whether a work is AI-assisted or AI-generated spells the difference between protection or no protection in countries such as the U.S. or Australia. Verily, this exercise has been described as "obviously difficult, indeed indeterminate, and ultimately pointless endeavor."[256] It thus subjects the parties to exhaustive litigation in order to determine the nature and interaction between the end-user and the AI, a process that is not just wasteful, but also sidetracks the parties from exploiting the creative abilities of the AI and from pursuing activities which would promote the progress of science and the arts.

Robert Denicola cites *Telstra Corporation Ltd v. Phone Directories Co Pty Ltd.*[257] from Australia, a country that requires human authorship and does not protect creative works made by computers/AI, to illustrate the difficulty of distinguishing between computer-assisted (or AI-assisted) and computer-generated (or AI-generated) creative works.[258] In that case which involved the use of an automated procedure in the production of telephone directories, the Federal Court of Australia conducted an in-depth analysis of the said automated procedure and thoroughly examined the creation process: from the various components of the software systems, the "rules" applicable

254. *Id.* at 713.

255. Denicola, *supra* note 115, at 284.

256. *Id.*

257. Telstra Corporation Limited v. Phone Directories Co Pty Ltd., FCR 142 (2010) (Austl.).

258. Denicola, *supra* note 115, at 285 (citing *Telstra Corporation Limited*, FCR 142, 178-79).

to content entry and verification, the listing information, and the application of reference tables as guidelines for action.[259] The Federal Court of Australia ruled that a telephone phone directory was not protected by copyright because it was "not the result of human authorship but was computer-generated"[260] because "majority of the creation process ... was heavily automated"[261] —

> Even if the authors of the Works could be identified with sufficient clarity and certainty (and they cannot), the people suggested to be the authors of the Works did not exercise 'independent intellectual effort' and/or 'sufficient effort of a literary nature'. A majority of the creation process of the (telephone directory) was heavily automated. Human intervention was regulated and controlled according to either the various computer systems in place including the Rules. Further, the contribution of the people suggested to be authors of the Works was anterior to the work taking its material form. Very few people had any part to play in the final presentation of the Works or the particular form of expression of the information. Those people, again, could not have been said to have exercised 'independent intellectual effort' and/or 'sufficient effort of a literary nature[.]'[262]

On appeal, the Full Court of the Federal Court of Australia affirmed the findings of the prior court and ruled that the activities carried out by the computer were "transformative steps" that were obviously fundamental to the making of the compilation.[263] The Full Court similarly said that a compilation (like the telephone directories in the case) does not "originate with the individual who engages the mechanical processes to produce the compilation."[264]

The Case above demonstrates why distinguishing between computer-assisted (or AI-assisted) and computer-generated (or AI-generated) creative works is a difficult, if not pointless matter. Aside from fostering an environment of frequent litigation where the human end-user would be hard-pressed to litigate to prove his or her rights over the end product,

259. *Id*. *See also* McCutcheon, *supra* note 164, at 925 (citing *Telstra Corporation Ltd.*, 264 ALR at 621).

260. *Telstra Corporation Ltd.*, 264 ALR at 338.

261. *Id*.

262. *Id*.

263. McCutcheon, *supra* note 164, at 926 (citing *Telstra Corporation Ltd.*, 194 FCR at 190).

264. *Id*. 944 (citing *Telstra Corporation Ltd.*, 194 FCR at 163).

judges would also be required to take a deep dive into the process of creation and the AI's participation in it. This could be a very technical endeavor which would be rendered unnecessary if the copyright for computer or AI-generated work is simply attributed to the end-user.

Moreover, the distinction between AI-assisted and AI-generated creative works shows the "strict and probably undesirable divide between human-authored and computer-generated works, with copyright protection for the former but none for the latter."[265] This might result in an unfavorable situation where increasingly numerous creative works generated by computers and AI which are protected by copyright in some states but not in others.[266] Thus, attribution to the end-user would be ideal if only to avoid (1) distinguishing between AI-assisted and AI-generated creative works; (2) disputes between AI programmers/developers and the end-users, and (3) putting end-users to the defensive as to their entitlement over creative works created at their behest.

There are, of course, criticisms to the model of attributing copyright over AI-generated creative works to the end-user. One commentator argues that end-users should have no claim to the copyright as they have the "smallest contribution to the initial development of the AI" and that attributing copyright to the end-users would be "detrimental to the growth of the AI" since the AI programmers/developers "may restrict the use of AI by third parties[,]" thereby "limit[ing] the applications of AI and the numerous benefits associated with them."[267] This, as argued, would result in a "significant decline in AI[-]generated works and a decline in the overall development of the AI industry."[268]

Aside from having the least contribution to the initial development of the AI, the end-user may, in some instances, also be considered as having the least contribution in the creative process. It has been opined by commentators that the end-user's ownership in a creative work made by an AI is void if the end-user provides "little to no guidance for the creation" of such creative work.[269] William Ralston, despite saying that the end-user is the "likely" party to whom the copyright should be vested, also argues that "[a]warding copyright to a user who does no more than double-click a

265. McCutcheon, *supra* note 164, at 967.

266. *Id.*

267. Hristov, *supra* note 162, at 444-45.

268. *Id.* at 445.

269. Pearlman, *supra* note 220, at 27.

computer screen icon seems at odds with the underlying policy for copyright as an incentive for creation."[270] To this, argument, Pamela Samuelson argues that even if the end-user merely typed the word "compose," it is still sensible to allocate copyright to the end-user as he or she "will have been the instrument of fixation for the work, that is, the person who most immediately caused the work to be brought into being."[271] Since it is the end-user who "most immediately and directly cause[d] [the creative works] to be generated, ... [it would appear that the end-user would] have the strongest claim" over the works generated by the AI.[272]

D. Special Questions Arising From AI Generated Works

The advent of the creative AI has brought about situations previously not thought of when copyright laws were originally codified. These situations prove to be increasingly complex, each leaving more questions than answers in their wake. For this Article, the questions on whether there is joint authorship (between and among the AI programmer/developer, the AI end-user, the AI, and the dataset contributor) in AI-generated creative works and whether these works are derivative works of the AI code shall be tackled and addressed.

1. The Issue of Joint Authorship

Joint authorship appears to be an attractive approach to solve possible conflicts between potential rights-holders in creative works generated by AI. [273] Possible parties to claim joint authorship are the AI programmer/developer, the AI end-user, the AI itself, and the dataset contributor.

The Berne Convention recognizes that joint authorship exists but does not specify the requirements for joint authorship, possibly recognizing national differences in how they treat joint authorship.[274] In the U.S., a joint work is defined as "a work prepared by two or more authors with the intention that their contributions be merged into inseparable or

270. Ralston, *supra* note 79, at 307.

271 Samuelson, *supra* note 39, at 1202.

272. *Id.*

273. *Id.* at 1221.

274. *See* Berne Convention for the Protection of Literary and Artistic Works, art. 7*bis*, opened *for signature* Sep. 9, 1886, 828 U.N.T.S. 221 [hereinafter Berne Convention].

interdependent parts of a unitary whole."[275] While there are conflicting rulings [276] as to whether the contribution must be independently copyrightable works, what is clear is that a creative work is considered a joint work if the "[parties] collaborated with each other, or if each of the authors prepared his or her contribution[s] with the knowledge and intention that it would be merged with the contribution of other authors as ' ... parts of a unitary whole.'"[277] In the U.K., "a 'work of joint authorship' means a work produced by the collaboration of two or more authors in which the contribution of each author is not distinct from that of the other author or authors."[278] Virtually the same formulation for joint authorship is seen in the Australian Copyright Law of 1968.[279]

It is submitted that joint authorship, in any of the permutations of the potential claimants to the copyright, is an untenable proposition. In view of the nature of existing creative AI which learns through unsupervised deep learning where even the AI programmer/developer cannot predict or anticipate its output, the AI programmer/developer cannot be reasonably said to have significantly contributed to the actual creative process. As opined by Robert Yu, "[i]f the code cannot be considered his contribution, the programmer would have contributed nothing to the scheme."[280] Thus, the AI programmer/developer cannot be said to have intended to be a joint author with another party when his contribution to the output itself is put into question. Moreover, "it will often be impossible for the [AI programmer/] developer to know who the various end users will be, thereby making it impossible that they share an intent to be [joint] authors."[281] As observed by Samuelson —

> With a computer-generated work, however, the user, who will be the direct cause for the work being brought into existence, will typically have had no direct dealings with the programmer. Even where some direct dealings have occurred, it is unlikely that the kind of collaborative animus that typifies joint authorship situations will exist. The user typically will use the generator program at a site remote from the programmer, and at a time

275. U.S. Copyright Act of 1976, § 101.

276. *See generally* Childress v. Taylor, 945 F.2d 500 (2d Cir. 1991) (U.S.) & Gaiman v. McFarlane, 360 F.3d 644 (7th Cir. 2012) (U.S.).

277. U.S. Copyright Office, 2017 Compendium, § 505.1.

278. Copyright, Designs and Patents Act, § 10 (1).

279. Copyright Act 1968, § 10.

280. Yu, *supra* note 8, at 1260.

281. Brown, *supra* note 28, at 35.

> when the programmer has no involvement in the work done by the program's user.[282]

AI, having no legal personhood, likewise cannot become an author or a joint author. It cannot intend to collaborate with other parties nor can it be said to have intended to contribute something that will be merged into a unitary whole.

The strongest possible claim for joint authorship might be the dataset contributor and the end-user of the AI. This would have been the situation between Scott French and Jacqueline Susann, had the latter been alive. It can be argued that French and Susann (through the AI which used Susann's novels for its dataset) were significant contributors in the creative process and in coming up with the book *Just This Once*. However, while a collaboration between a user and an author is possible in real life, the use of AI in this case appears to remove the intention of the parties to actually collaborate. Also, the end-user may, for all intents and purposes, have zero contribution to the creative process and could have merely pressed a single button to produce the creative work. This would mean that the end-user had no real creative contribution to the creative end product, making him or her ineligible for joint authorship. For the dataset contributor, while he or she does not get to become a joint author, a commentator proposes that he or she be given compensation for their involvement in the programming of the AI.[283]

The biggest argument against joint authorship is that "it could result in a 'fractionalization' of ownership rights."[284] It is argued that if joint authorship is allowed, other parties such as the operating system programmer and the computer manufacturer, among others, will likewise lay claim for joint ownership.[285] As deftly stated by a commentator, "[o]nce fractionation begins, it is difficult to stop."[286] Thus, despite its seeming allure of joint authorship to "solve" conflicting claims, it is a relatively untenable solution.

2. AI-Generated Creative Works as Derivative Works

Aside from joint authorship, another potential solution to solve the ownership problem in AI-generated creative works is to treat them as derivative works. Indeed, the simplicity of treating AI-generated creative

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282. Samuelson, *supra* note 40, at 1223.

283. Vigderson, *supra* note 71, at 431.

284. Brown, *supra* note 28, at 35 (citing Ralston, *supra* note 79, at 306).

285. *Id.*

286. Samuelson, *supra* note 39, at 1222.

works as derivative works belonging to the programmer/developer of the creative AI is appealing. However, this matter "is not that simple."[287]

The U.S. Copyright defines a *derivative work* as follows —

> A 'derivative work' is a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications, which, as a whole, represent an original work of authorship, is a 'derivative work.'[288]

The U.K. CDPA provides for derivative work in the form of adaptations, which are defined as follows —

> In this Part "adaptation"—
>
> (a) in relation to a literary work, other than a computer program or a database, or in relation to a] dramatic work, means —
>
> i. a translation of the work;
>
> ii. a version of a dramatic work in which it is converted into a non-dramatic work or, as the case may be, of a non-dramatic work in which it is converted into a dramatic work;
>
> iii. a version of the work in which the story or action is conveyed wholly or mainly by means of pictures in a form suitable for reproduction in a book, or in a newspaper, magazine or similar periodical;
>
> (ab) in relation to a computer program, means an arrangement or altered version of the program or a translation of it;
>
> (ac) in relation to a database, means an arrangement or altered version of the database or a translation of it;
>
> (b) in relation to a musical work, means an arrangement or transcription of the work.[289]

As can be seen, there is no internationally harmonized norm on what constitutes derivative works.[290] In the U.S. at least, derivative works are defined in a broad fashion which covers all works "based upon ... [a] pre-

287. *Id*. at 1209.

288. Copyright Act of 1976, § 101.

289. Copyright, Designs, and Patents Act 1988, § 21 (3) (U.K.).

290. Ramalho, *supra* note 34, at 13.

existing work[,]" regardless of how it is transformed or recast.[291] It appears reasonable to argue that all AI-generated work springs from and are "based upon" the AI and its original programming, over which the AI programmer/developer has copyright over.[292] However, examining the legislative history of the concept of derivative works would reveal that "a second work is a derivative work only if it incorporates protected elements of expression from an underlying work."[293] Thus, for a secondary work to be considered as "derivative" of the primary work, there should be a "'substantial similarity' between the two works ... that 'an average lay observer would recognize the alleged copy as having been appropriated.'"[294]

For AI-generated works, however, they would be derivative works only if they show content from the code of the AI programming.[295] However, this would not be the case as AI-generated work does not incorporate the code that produces it nor are they at least substantially similar to it.[296] Accordingly, AI-generated creative works cannot be accurately classified as derivative works as these are not based on a "recognizable block of expression from the underlying program."[297] In any event, however, treating AI-generated creative works as derivative works would not solve the ownership problem since the AI programmer/developer would not automatically own the generated work, as the derivative works can be independently copyrightable.[298]

The recent case of *Rearden LLC v. Walt Disney Company*[299] is instructive with respect to the AI owner's claim of supposed copyright infringement based on derivative works. In *Rearden*, the plaintiff (Rearden LLC) developed MOVA Contour Reality Capture Program (MOVA), a "program

291. *Id.* (citing U.S. Copyright Act of 1976, § 101).

292. U.S. Copyright Act of 1976, § 101.

293. Wu, *supra* note 43, at 139-40 (citing H.R. Rep. No. 94-1476, at 62 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5675 (U.S.)).

294. Wu, *supra* note 43, at 140 (citing Steinberg v. Columbia Pictures Industries, Inc., 663 F. Supp. 706, 711 (1987) (U.S.); Berkic v. Crichton, 761 F.2d 1289, 1291 n.1, (9th Cir. 1985) (U.S.); & Litchfield v. Spielberg, 736 F.2d 1352, 1357 (9th Cir. 1984) (U.S.)).

295. Bridy, *supra* note 120, at 25.

296. *Id.*

297. Samuelson, *supra* note 39, at 1218 & 1221.

298. Ramalho, *supra* note 34, at 13.

299. Rearden LLC v. Walt Disney Company, 293 F.Supp.3d 963 (N.D. Cal. 2018) (U.S.).

for capturing the motion of the human face to create images used in motion pictures."[300] However, unlike previous motion capture technologies, MOVA "precisely captures and tracks the 3D shape and motion of a human face to sub-millimeter precision."[301] Rearden brought suit against movie studios[302] who dealt with a corporation that had wrongfully acquired its MOVA technology.[303] Rearden argues that characters, "such as the animal-like face of the Beast (in the movie *Beauty and the Beast*)[,] were generated through ... MOVA, [and that they] are derivative works [belonging] ... to Rearden, which owns the MOVA technology.[304] Rearden alleges that "Disney used the stolen MOVA Contour systems and methods, made derivative works, and reproduced, distributed, performed, and displayed at least *Guardians of the Galaxy*, *Avengers: Age of Ultron*, and *Beauty and the Beast*, in knowing or willfully blind violation of Rearden Mova LLC's intellectual property rights."[305] According to a commentator, Rearden's claim "is based on the legal paradigm of derivative works, which might assume that the output of a computer program or system is a derivative work of the owner of the copyrighted program or patented system."[306]

The movie studios' defense is that Rearden "cannot show that the copyright in the software program extends to the output files; and even if it

300. *Id.* at 967.

301. *Id.*

302. The Walt Disney Company, Twentieth Century Fox Film Corporation, and Paramount Pictures Corporation. *Id.*

303. In the case of Shenzhenshi Haitiecheng Science and Technology Co., Ltd. v. Rearden LLC, the U.S. District Court declared Rearden as the owner of the MOVA technology which was previously bought by several corporations from Rearden's employee, despite not being the real owner of the same. Shenzhenshi Haitiecheng Science and Technology Co., Ltd. v. Rearden LLC, Case No. 15–CV–00797 JST, ECF No. 1 (N.D. Cal. 2015) (U.S.).

304. Shlomit Yanisky-Ravid & Luis Antonio Velez-Hernandez, *Copyrightability of Artworks Produced by Creative Robots and Originality: The Formality-Objective Model*, 19 MINN. L.J. SCI. & TECH. 1, 16 (2018) (citing Complaint, July 17, 2017, *in* Rearden LLC v. Walt Disney Co., No. 3:17-cv-04006 (N.D. Cal.) (U.S.)).

305. Yanisky-Ravid & Velez-Hernandez, *supra* note 304, at 16 (citing Complaint, *supra* note 304, at 3).

306. Yanisky-Ravid & Velez-Hernandez, *supra* note 304, at 16.

could, Rearden cannot show that the CG characters or the movies are derivative works of the film."[307]

The U.S. District Court acknowledged recent jurisprudence where the copyright protection afforded to a computer program was extended to its output only if the program "'does the lion's share of the work' in creating the output" and that the "user's role is so marginal that the output reflects the programs' contents."[308]

The movie studios were able to present the defense that the "human contribution to the expressive components of the output file is substantial and performs the 'lion's share of the creativity' in the facial motion capture" and that '[t]he human contribution cannot be deemed marginal in any sense.'"[309] Rearden, for its part, argued that it adequately alleged that it owns the copyright in MOVA.[310] However, the Court found that Rearden failed to adequately plead that MOVA did the "lion's share" of the creating and that the end-user's role in creating the products were "marginal."[311] In fact, the Court found that Rearden "repeatedly acknowledge[d] the actors' contributions" in its pleadings.[312]

Nonetheless, the Court, while recognizing the significant amount of work contributed by MOVA, ruled that the output could not have been created "without [ ] substantial contribution from the actors or directors."[313] The Court acknowledged that the actors' performance was precisely captured by the system, which merely "retain[ed] the subtleties of the human performance."[314] The Court, however, dismissed the copyright claims of Rearden without prejudice as it had not made the sufficient allegations in its pleadings.[315]

307. *Rearden LLC*, 293 F.Supp.3d at 969.

308. *Id.* (citing Design Data Corporation v. Unigate Enterprise, Inc., 847 F.3d 1169, 1173 (9th Cir. 2017) (U.S.)).

309. *Rearden LLC*, 293 F.Supp.3d at 970.

310. *Id.*

311. *Id.* at 971.

312. *Id.*

313. *Id.* at 970.

314. *Id.* at 971.

315. *Rearden LLC*, 293 F.Supp.3d at 974.

Indeed, while the Court denied Rearden's copyright claims based on derivative works, the Court highlighted extant case law enumerating the circumstances on when copyright protection afforded to a computer program extends to its output.[316]

VI. PROPOSED FRAMEWORK

> *But, like all metaphoric wars, the copyright wars are not actual conflicts of survival. Or at least, they are not conflicts for survival of a people or a society, even if they are wars of survival for certain businesses or, more accurately, business models. Thus we must keep in mind the other values or objectives that might also be affected by this war. We must make sure this war doesn't cost more than it is worth. We must be sure it is winnable, or winnable at a price we're willing to pay.*
>
> — Lawrence Lessig[317]

The advent of new technology has been a major driving force in the introduction of new laws or the revision of existing ones. In fact, we face a current of advanced technology in fast-changing environments that unfortunately are not covered by existing laws or regulations. The difficult thing, however, is that the pace of technology has moved so fast that by the time a regulation is approved, the technology has already evolved into something else.[318] This phenomenon is called the pacing problem, where the "technological innovation outpaces the ability of laws and regulations to keep up[.]"[319] This phenomenon could be specifically true for AI and its impact to copyright. Even without AI, courts have been described to "grapple[ ] with the issue of emerging technology and copyright protection."[320] An example is when the U.S. Supreme Court ruled that photographs are subject of copyright despite being novel technology at the

316. *See* Rearden LLC, 293 F.Supp.3d at 969.

317. LESSIG, *supra* note 85, at xvi.

318. *See* Daniel Malan, The law can't keep up with new tech. Here's how to close the gap, *available at* https://www.weforum.org/agenda/2018/06/law-too-slow-for-new-tech-how-keep-up (last accessed Feb. 29, 2020).

319. Adam Thierer, The Pacing Problem and the Future of Technology Regulation, *available at* https://www.mercatus.org/bridge/commentary/pacing-problem-and-future-technology-regulation (last accessed Feb. 29, 2020).

320. Yu, *supra* note 8, at 1253. This is in the context of the "tension between technology and copyright protection" with respect to photographs. *Id*. at 1253-54.

time and despite not being among the items explicitly mentioned in the then Copyright Act of 1802.[321]

AI is considered as the "most significant field of disruptive innovation."[322] AI has had significant effects on many sectors of the economy and have posed extensive challenges for policy makers.[323] In terms of copyright law, there is what we can consider a pacing problem with respect to regulating creative works generated by AI. Yanisky-Ravid believes conventional copyright law is inadequate to address recent developments in technology concerning AI-generated artworks.[324] She states that "[c]opyright laws are simply ill-equipped to accommodate this tech revolution and are therefore unlikely to survive in their current form."[325] Indeed, change is slow when it comes to copyright law and computer-generated works. Previous creative AI only relied on a given set of rules and information such as Hal as developed by Scott French. Recent developments, however, have shown us the development of creative AI that learns through deep learning, i.e., "learn[s] from examples and drive results on their own"[326] where the AI would "rely on artificial neural networks to learn specific behavior by analyzing vast amounts of data."[327] Aside from a few jurisdictions which attribute copyright to computer-generated works, there are plenty more which do not, either for sophisticated AIs capable of deep learning or for comparatively simpler AIs such as Racter and Hal.

As it has already been concluded that there is a need to protect creative works made by AI, this Article will propose a framework which aims to address the problems of the existing copyright regimes, and put forward a "bright line" approach in order to cover most situations involving AI-generated creative works, in the hopes of limiting litigation, which undoubtedly shall be very technical as it will focus on the workings of the AI and its interaction with the relevant stakeholders. The alternative to this

321. *Burrow-Giles Lithographic Co.*, 111 U.S. at 58.

322. Mark Fenwick, et al., *Regulation Tomorrow: What Happens When Technology Is Faster than the Law?*, 6 AM. U. BUS. L. REV. 561, 564 (2017).

323. *Id.* at 564-65.

324. Yanisky-Ravid, *supra* note 42, at 691.

325. *Id.* at 670.

326. Brown, *supra* note 28, at 7 (citing Brynjolfsson & McAfee, *supra* note 56).

327. Brown, *supra* note 28, at 7 (citing Cade Metz, *How A.I. Is Creating Building Blocks to Reshape Music and Art*, N.Y. Times, Aug. 14, 2017, *available at* https://www.nytimes.com/2017/08/14/arts/design/google-how-ai-creates-new-music-and-new-artists-project-magenta.html (last accessed Feb. 29, 2020)).

"bright line" approach is to come up with a multi-step analysis like the one proposed by Andrew Wu.[328] However, adopting such a multi-step analysis is not only tedious, but also prompts an environment of constant litigation between the various potential copyright holders.

This Article puts forward a radical proposal that incorporates new approaches to address concerns brought about by the similar radical advances in technology. A seemingly *sui generis* right in AI-generated creative works shall be proposed, in a framework that is hopefully fair for all parties in the creative process. It bears noting that proposing a *sui generis* copyright regime is not novel, as a *sui generis* right has already been devised by the European Parliament in the Database Directive (Directive on the legal protection of databases), where the "maker of a database ... [who has made] a substantial investment in the obtaining, verification[,] or presentation of the contents "[329] in the database is given *sui generis* rights over the database, which lasts for a period of 15 years.[330]

In line with the foregoing discussions, it is proposed that a *sui generis* form of copyright, covering both economic and moral rights, be vested on the end-user of the AI who had a valid and legitimate right to use the said AI, albeit in a drastically different regulatory regime from that of existing frameworks. After a review of literature on the subject, the following criteria were used in determining whether to allocate the *sui generis* copyright to the AI programmer/developer or the end-user: purpose or causation, enforcement, and ease of applicability, particularly in difficult cases.

First, as to causation, it is submitted that allocating the *sui generis* copyright over AI-generated creative works to end-users would promote the progress of science and the arts better than allocating it to the AI programmers/developers. Even if the *sui generis* copyright is not allocated to the AI programmers/developers, they are nevertheless motivated to develop AI because of the financial rewards they would get in either economically exploiting the AI through sale or licensing, or by using the AI as end-users

328. Wu, *supra* note 43, at 173-74. Wu's multi-step analysis which will result in attributing the copyright to the AI programmer, the end-user, the AI programmer and the end-user jointly, the AI itself, or to a Fictional Human Author. *Id.*

329. Council Directive 96/9/EC, arts. 7 (1), 1996 O.J. (L 77) 20 (EC).

330. *Id.* art. 10 (1).

themselves.[331] End-users, on the other hand, shall be incentivized to operate the AI and generate new works because of such copyright allocation.[332]

Second, as to enforcement, end-users, compared to the AI programmers/developers, are in a better position to enforce copyrights arising from AI-generated work and contest any possible infringement especially since they are in control of the creative works generated by the AI. Once the AI is turned over for use by the end-user, the AI programmers/developers may have limited knowledge as to the creations of the AI.

Third, and most importantly, allocating the attributing *sui generis* copyright to the end-user is easier to apply in most circumstances. Specifically, it would eliminate the necessity for distinguishing between AI-assisted and AI-generated creative works.[333] If copyright was attributed to the AI programmer/developer, then the AI programmer/developer may claim ownership over the end product despite any creative contribution made by the end-user. This could lead to a situation where litigation is necessary to determine the particular contributions of the end-user vis-à-vis that of the AI and its programmer/developer. This untenable situation could be easily avoided if copyright was simply attributed to the end-user. Moreover, this approach would be ideal for the bright line approach in this proposed framework, as copyright shall be attributed to all kinds of end-users, from those who make significant contributions to the creative process to those who simply press a single button to instruct the AI to generate the creative work. It is submitted that attributing copyright to the end-user, despite making no contribution to the creative process, is fair and reasonable as the end-user has a reasonable expectation that paying for the use of the AI allows him or her to claim rights over its generated works.[334]

What sets the *sui generis* copyright over AI-generated creative works apart from conventional copyrights is the regulatory regime behind it and the requirements for it to vest.

As to coverage, *sui generis* copyright over AI-generated creative works covers literary and artistic works as commonly referred to in existing copyright laws. The definition does not need to be an exhaustive definition and may be described as "every production in the literary, scientific and

331. Denicola, *supra* note 115, at 283.

332. Brown, *supra* note 28, at 38.

333. Denicola, *supra* note 115, at 284.

334. Ralston, *supra* note 79, at 304.

artistic domain, whatever may be the mode or form of its expression," as defined in the Berne Convention.[335]

As to subsistence, *sui generis* copyright over AI-generated creative works arises only from the moment of registration. This is a fundamental difference compared to traditional copyright which arises spontaneously upon creation and without need of registration.[336] Aside from registering the creative works made by the AI, it is proposed that the creative AI itself be registered, along with the name of the AI owner or its programmer/developer and the persons to whom the AI is sold or licensed to. This registration shall serve many purposes, foremost being the avoidance of potential infringement disputes, particularly when the AI owner or programmer/developer sells or licenses the AI to multiple parties. Another is to formally recognize AI programmers/developers and make their creations known to the general public. Registration, however, will not require the disclosure of proprietary information about the AI such as their source codes, among others. The standards for copyrightability, however, will depend on the individual country, as the standards differ from one country to the next but, in all instances, there should be originality, i.e., the work was independently created and was not copied from other works.[337]

Registration by the end-user of the AI of all AI-generated work, including ones where the end-user had creative contribution, shall be necessary for the *sui generis* copyright over AI-generated creative works to vest. The end-user shall be bestowed with all economic and moral rights with respect to the generated work.[338] However, the fact that the work was made through the AI should be disclosed in all instances along with the name of the end-user. This is proposed for two reasons. First, it would avoid

335. Berne Convention, *supra* note 274, art. 2 (1).

336. *Id.* art. 5 (2) & Shyamkrishna Balganesh, *Causing Copyright*, 117 COLUM. L. REV. 1, 4 (2017) (citing Copyright Act of 1976, § 102 (a)). For the U.S., however, copyright arises upon creation and fixation. *See* U.S. Copyright Office, 2017 Compendium, § 102.2 (A).

337. For example, there are states which require fixation for copyright to arise, while some do not. Moreover, some jurisdictions have different standards for originality whereas some states rely on the *sweat of the brow* doctrine while others follow the criterion of *modicum of creativity*.

338. Moral rights are proposed to be attributed to the end-user even for works made solely by AI as this would minimize litigation particularly in cases where the end-user claims even a minimal contribution to the end product. Litigation on such matter would involve balancing the contributions of the AI and the end-user, which would be both grueling and time-consuming.

unduly increasing (or decreasing) the reputation of the end-user. For example, an end-user who does no more than to press a single button is seemingly undeserving of being recognized as a "prolific author" and of any rewards for such recognition. In the same vein, a notoriously bad work by an AI may impact the good reputation of an otherwise good artist. Second, it would also avoid unduly increasing (or decreasing) the value of the generated end product. For example, if Gerhard Richter, a German visual artist who is arguably one of the greatest living painters alive, uses an AI to generate paintings, the AI-generated work would unduly increase in value if the attribution was to Richter alone and without recognizing that it was made by the AI. In an auction held in 2015, Richter's painting, *Abstraktes Bild*, was sold for a staggering U.S.$46.3 million.[339] If Richter used an AI like *The Next Rembrandt*, he could make several more paintings with the most minimal of efforts, with each painting probably fetching similar prices, to the detriment of the unknowing buyer.

A problem with this approach is the recognition of which agency shall this registration be made. For jurisdictions like the U.S. and the Philippines, there are specialized agencies such as the U.S. Copyright Office[340] and the Intellectual Property Office of the Philippines[341] which would accept such registrations. However, there are jurisdictions like the U.K. which have no entity that registers copyright. Aside from establishing agencies which would be for the purpose of receiving copyright registrations, an option is to establish an agency specifically devoted to AI similar to the proposals of Matthew Scherer.[342] This agency can be tasked with ensuring that "AI is safe, secure, susceptible to human control, and aligned with human interests, both by deterring the creation of AI that lack those features and by encouraging the development of beneficial AI that include those features."[343]

339. David Ng, *Gerhard Richter painting brings in $46.3 million at auction*, L.A. TIMES, Feb. 11, 2015, *available at* https://www.latimes.com/entertainment/arts/culture/la-et-cm-gerhard-richter-painting-sothebys-20150211-story.html (last accessed Feb. 29, 2020).

340. *See generally* U.S Copyright Office, Overview of the Copyright Office, *available at* https://www.copyright.gov/about (last accessed Feb. 29, 2020).

341. *See generally* Intellectual Property Office of the Philippines, Mandate & Function, *available at* https://www.ipophil.gov.ph/mandate-function (last accessed Feb. 29, 2020).

342. *See* Matthew Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARV. J.L. & TECH. 354, 393-97 (2016).

343. Scherer, *supra* note 342, at 394.

In the grander scheme of things, establishing an entity particularly concerned with AI might be a better proposal as a specialized agency would have the necessary expertise to properly frame AI issues, and prevent the occurrence of a pacing problem in terms of technological advancement and regulatory overtures. Furthermore, an entity solely devoted to AI would have access to different sources of data surrounding new technologies and their diverse applications across sectors, which is useful in determining "*what*, *when* and, to a certain extent, *how* to regulate."[344]

The framework proposed in this Article aims to be a modest first step in reforming copyright laws that are not attuned to the recent advances in technology. While no framework is perfect, this proposal seeks to maximize the economic and technological potential of AI and the creative works they generate. It likewise seeks to fairly allocate intellectual property rewards while, at the same time, ensure that the underlying purposes of copyright law are served. A "bright line" approach was adopted with the hopes of covering as many situations concerning creative AI and reduce litigation between all potential copyright holders.

VII. CONCLUSION

Human beings no longer have a monopoly on creativity. Increasingly creative AI are pushing the boundaries of manufactured creativity and have produced works that are undeniably indistinguishable from human-made creations. Creative AI can now paint, write, and compose as well as, if not better, than human authors. Sadly, existing laws and regulations have not been able to draw level with these advances in technology. The existing frameworks are woefully unprepared and irrelevant for the creative AI. This is a quandary that needs immediate solutions. It would seem that the best way to maximize economic benefit from AI-generated creative works, as well to satisfy the goal of promoting the progress of science and the arts, is through the introduction of a framework where copyright over AI-generated creative works would be assigned in favor of the AI end-user.

As the march of technology is both fast and certain, it is only a matter of time until we must grapple with the idea of legal personhood for what, for now, seems to be the inevitable advent of the sentient AI. That event will surely bring about a whole set of problems altogether, and indubitably, the attribution of copyright will not be on the top of that list.

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344. *See* Fenwick et al., *supra* note 322, at 585.