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NASCENT MACHINES: A COMPARATIVE LOOK TOWARD UNITED STATES AND ITALIAN CONSTITUTIONAL COPYRIGHT PROTECTIONS

ABSTRACT. *Just like Victor Frankenstein's infamous monster, artificial intelligence is a developing hodgepodge in need of supervision. The broad applicability of AI in its current, nascent state warrants specific regulation that addresses the need for (1) a uniform, legislative definition of artificial intelligence, (2) a determination of the requisite degree of human participation in artificial intelligence machine usage that is both sufficient and necessary for copyright protection, (3) an ad hoc approach to future litigation involving artificial intelligence usage, and (4) both the precautionary and innovation principles to be considered as overarching guidance in the regulation of artificial intelligence. This paper provides a comparative analysis of United States and Italian Constitution and copyright protections afforded to humans as contrasted to artificial intelligence. As such, this paper will first establish some background on artificial intelligence regarding how it is used to derive outputs under its human user's direction. The applicability of United States and Italian laws will also be briefly overviewed alongside the precautionary and innovation principles. An analytical comparison of United States and Italian Constitution and copyright provisions will provide the foundation for the above referenced four-part solution. Responses to possible counterarguments will also be addressed and rebutted.*

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1. Introduction

The perpetuated belief that artificial intelligence and human intelligence are equally meritorious of the same legal protections is fictional at best. Just like Victor Frankenstein's infamous monster, artificial intelligence is a developing hodgepodge in need of supervision.[1] The theme of responsibility is prevalent in *Frankenstein,* and it should be just as salient in regulating artificial intelligence since the consequences of letting a creation run wild without supervision are dire.[2] What is not understood cannot be properly regulated. As such, a suitable legal framework is required to ensure the proper regulation of artificial intelligence as more and more entities incorporate machine learning into their products and services.[3]

This paper will provide a comparative analysis of current United States (hereinafter 'U.S.') and Italian Constitution and copyright protections afforded to humans as contrasted to artificial intelligence. More specifically, this paper will consider the First Amendment and Copyright Act as well as certain Articles of the Italian Constitution alongside select provisions of the 'legge sul diritto d'autore' ('laws on the rights of the author'). A consideration of the international law concepts inherent in the precautionary and innovation principles will supplement the comparative analysis that follows. This comparative analysis will serve to propose that the Italian approach suggests a more workable basis for formulating a solution which addresses the lack of salient artificial intelligence regulation in the U.S. The subsequent comparative, four-pronged solution geared specifically toward the U.S. legislature will accordingly (1) articulate the need for a concise definition that encompasses the current state of artificial intelligence, (2) mandate a requisite degree of human participation and supervision

[1] See M Shelley, *Frankenstein: or, The Modern Prometheus* (first published 1818, Maurice Hindle ed, Penguin 2003) 81.

[2] Shelley's character, Dr. Victor Frankenstein, warns: 'Learn from me, if not by my precepts, at least by my example, how dangerous is the acquirement of knowledge and how much happier that man is who believes his native town to be the world, than he who aspires to become greater than his nature will allow'. Ibid 54.

[3] See K Peretti and others, 'AI Regulation in the U.S.: What's Coming, and What Companies Need to Do in 2023: Part One of a Two-Part Article' (*Cybersecurity Law & Strategy*, 14 February 2023) <https://www.law.com/2023/02/14/ai-regulation-in-the-u-s-whats-coming-and-what-companies-need-to-do-in-2023/> accessed 28 March 2023.

both sufficient and necessary for legal protections to apply to the process and outputs of artificial intelligence, (3) require an ad hoc approach to future litigation involving artificial intelligence usage, and (4) establish that the precautionary and innovation principles should be seen as overarching guidance to U.S. legislators in the regulation of artificial intelligence.[4]

Part I begins by establishing some background on artificial intelligence machines specifically related to how exactly the computer program is used to derive outputs from the source material that is plugged into it. The applicability of U.S. and Italian constitutional and copyright provisions will also be briefly overviewed alongside the precautionary and innovation principles in Parts II, III, and IV, respectively. Part V offers an analysis of U.S. and Italian constitutional and copyright provisions. This analytical section will also provide the foundation for the comparative, four-pronged solution nestled within a theoretical and descriptive framework of the issue. Finally, Part VI identifies and responds to potential counterarguments.

2. What artificial intelligence is and how it works

What is artificial intelligence? Such a technically difficult question is best answered through a three-part approach. First, the evolution of the machine from a simple algorithm designed to play chess[5] to the increasingly multitudinous applications said machine has today must be explored by establishing a distinction between 'weak' and 'strong' artificial intelligence.[6] Second, it is crucial to juxtapose a definition for intelligence with the lack of adequate definition for artificial intelligence in its current

[4] See D Castro and M McLaughlin, 'Ten Ways the Precautionary Principle Undermines Progress in Artificial Intelligence' (*Info Tech & Innovation Found*, 4 February 2019) <https://itif.org/publications/2019/02/04/ten-ways-precautionary-principle-undermines-progress-artificial-intelligence/> accessed 25 February 2023.

[5] See generally J McCarthy, 'What is Artificial Intelligence?' (*Stanford Formal Reasoning Grp*, 12 November 2007) <http://www-formal.stanford.edu/jmc/whatisai/node1.html> accessed 25 February 2023.

[6] JC Flowers, 'Strong and Weak AI: Deweyan Considerations' [2009] 1-2, <https://ceur-ws.org/Vol-2287/paper34.pdf> accessed 25 February 2023. See generally JR Searle, 'Minds, Brains, and Programs' (1980) Behav & Brain Scis 417, 417-24.

state. Third, the definition for artificial intelligence, or lack thereof, in the U.S. will be explored.

First, there are two types of artificial intelligence: weak and strong.[7] Weak artificial intelligence serves as a problem solving tool.[8] This category of artificial intelligence carries out a particularized set of tasks; its efficiency and capabilities are limited to the specific field of problems it is designed to solve.[9] Examples of weak artificial intelligence include 'intelligent systems that use machine learning, pattern recognition, data mining, or natural language processing'.[10] On the other hand, strong artificial intelligence transcends its counterpart's mere status as a tool by seeking to emulate a mind or, more aptly, an intelligence capable of comprehension.[11] Unlike weak artificial intelligence, strong artificial intelligence is capable of assimilating and modifying information inputs autonomously, much like a human mind can.[12] The concept of 'emergent works', or the 'output produced by an autonomous AI' which 'implies the self-contained and unforeseeable nature of the production process' is more aptly attributed to strong artificial intelligence.[13] Strong artificial intelligence thus implies a self-awareness and cognitive skillset that is attributable to the mind of a natural person.[14] Because a working strong artificial intelligence is not currently within an imminent realm of feasibility, the primary focus of this paper's legal analyses will be applied to weak artificial intelligence (hereinafter referred to simply as 'AI').[15]

[7] See ibid.

[8] See ibid.

[9] See UK-RAS Network, 'Artificial Intelligence and Robotics' [2017] 6 <https://www.ukras.org.uk/wp-content/uploads/2021/01/UKRASWP_ArtificialIntelligence2017_online.pdf> accessed 25 February 2023.

[10] Ibid.

[11] See Flowers (n 6).

[12] See UK-RAS Network (n 9).

[13] Cf TW Dornis, 'Artificial Creativity: Emergent Work and the Void in Current Copyright Doctrine' (2020) 22 Yale JL Tech 1, 9. See AM Turing, *Computing Machinery and Intelligence* (1950) 59 Mind 433, 434.

[14] See UK-RAS Network (n 9).

[15] See, eg, M Lavrichenko, 'Thaler v. Vidal: Artificial Intelligence – Can the Invented Become the Inventor?' (2022) 44 Cardozo L Rev 699, 702 (stating that although strong AI does not yet exist, 'there is no stopping the growth and evolution of AI systems'); DW Opderbeck, 'Artificial Intelligence, Rights and the Virtues' (2021) 60 Washburn LJ

Second, intelligence is defined as 'the computational part of the ability to achieve goals in the world' which occurs in 'varying kinds and degrees … in *people*, many animals, and some machines'.[16] Importantly, there is not yet a solid definition of intelligence that is independent of a relation to human intelligence.[17] More specifically, whereas human intelligence has a definition that exists per se, artificial intelligence lacks a definition that is independent to an understanding of human intelligence. Human intelligence is not wholly applicable to the machine in its current state because human intelligence, unlike the artificial intelligence attributable to AI, 'relates to adaptive learning and experience'.[18] Meaning, that human intelligence is not constrained to a predetermined set of particularized data like AI; human intelligence is instead capable of abstract and critical thinking.[19] Therefore, the definition of human intelligence is concrete and uniform, unlike the many differing, unstable definitions of artificial intelligence.

Third, there is no uniform legal definition for AI in the U.S. Rather, there exists a multitude of diverse definitions. In fact, 'American law has been far from agreeing on a definition of [artificial intelligence]'.[20] A number of definitions for AI exist across multiple jurisdictions and federal agencies, but none of them are consistent.[21] This begs the question, how can the U.S. legislative branch, both on the state and federal level, begin

445, 473 (concluding that a conversation about the rights for strong AI cannot occur 'unless, and until, a strong AI emerges'); H Surden, 'Artificial Intelligence and Law: Overview' (2019) 35 Ga St L Rev 1305, 1309 (describes strong artificial intelligence as a merely aspirational vision); A Ng, 'AI for Everyone: Introduction' (*Coursera*, 2019) ('[strong artificial intelligence] … may be decades or hundreds of years or even thousands of years away') <https://www.coursera.org/learn/ai-for-everyone/lecture/SRwLN/week-1-introduction> accessed 25 February 2023.

[16] McCarthy (n 5) (emphasis added).

[17] See ibid.

[18] S Gupta, 'Artificial Intelligence vs. Human Intelligence: Who Will Build the Future?' (*Springboard*, 11 October 2021) <https://www.springboard.com/blog/data-science/artificial-intelligence-vs-human-intelligence/> accessed 25 February 2023.

[19] See ibid; see also UK-RAS Network (n 9).

[20] 1 Modern Privacy & Surveillance Law 11.07 [1] (2022).

[21] See, eg, VT Stat Ann T 3, § 5021; National Artificial Intelligence Initiative Act of 2020, 116 Pub L 283, 134 Stat 3388 (1 January 2021), *codified at* 15 USC §§ 9401–62, § 9401(3); John S McCain National Defense Authorization Act for Fiscal Year 2019, 115 Pub L 232, 132 Stat 163 (13 August 2018), § 238(g).

to regulate AI without knowing what exactly AI even is? The lack of a coherent definition lends itself to a cacophony of issues concerning legislation and, subsequently, regulation.[22]

3. U.S. Constitution and Copyright Law protections as related to AI

A look toward both the U.S. Constitution and the applicable copyright laws that come out of the relevant constitutional grant is an important bedrock to attaining a deeper understanding of how provisions from both sources relate to AI. The following provides an explanation of how U.S. Constitution and copyright provisions apply to AI, if at all. First, the constitutional framework which provides for copyright protections pursuant to the Copyright Act of 1976 (hereinafter 'Copyright Act') will be described. Second, the Copyright Act and its structure as related to AI and authorship will be considered. Relevant case law which contains elements of constitutional and copyright law protections will be discussed as well.

First, U.S. copyright laws protects the economic interests of creators. More aptly, 'Article I of the Constitution authorizes Congress "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries"'.[23] Pursuant to this constitutional grant, Congress has codified copyright protections in federal statutes such as the Copyright Act.[24] In *Harper*, the Court noted that the dichotomy between an idea and an expression '[strikes] a definitional balance between the First Amendment and the Copyright Act by permitting free communication of facts while still protecting an author's expression'.[25] Based on the foregoing, the extent of 'who or what can be an author for purposes of the Copyright Act is ultimately a constitutional question'.[26]

[22] See B Casey and M Lemley, 'You Might Be a Robot' (2020) 105 Cornell L Rev. 287, 326-27 (noting the lack of a legal definition for AI and describing the disastrous attempts at legal definition which inadvertently affect broad categories of entities despite having one target entity in mind).

[23] *Kelley v Chicago Park Dist*, 635 F3d 290, 296 (7th Cir 2011) (quoting US Const Art 1).

[24] See 17 USCS 101 ff.

[25] *Harper & Row, Publrs v Nation Enters*, 471 US 539, 556 (1985).

[26] A Bridy, 'The Evolution of Authorship: Work Made by Code' (2016) 39 Colum J L & Arts 395, 398.

The question on point thus becomes: can AI be considered an author of its outputs pursuant to the Copyright Act? This question is considered below.

Second, copyright in a protected work 'vests initially in the [author(s)] of the work'.[27] The U.S. Supreme Court itself has recognized that 'as a general rule, the author is the party who actually creates the work, that is the person who translates an idea into a fixed, tangible expression entitled to copyright protection'.[28] The 'person' indubitably refers to the human person.[29] More recent case law establishes that an author is human; an author can neither be a computer program, animal, nor plant.[30] Just last year, the U.S. Copyright Office refused to register an AI generated artwork, titled 'A Recent Entrance to Paradise,' because it did not possess the requisite human authorship for a copyright claim to be sustained.[31] In other words, 'if a work's traditional elements of authorship were produced by a machine, the work lacks human authorship' and the work cannot be registered by the Copyright Office.[32] So, copyright law protections are afforded to human authors; the law only protects '"the fruits of intellectual labor" that "are founded in the

[27] 17 USCS 201(a).

[28] *Community for Creative Non-Violence v Reid*, 490 US 730, 737 (1989).

[29] Ibid.

[30] See 17 USCS 102 (b) ('in no case does copyright protection … extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery regardless of the form in which it is described, explained, illustrated, or embodied in such work'). See, eg, *Naruto v Slater* 888 F3d 418, 426 (9th Cir 2018) (holding that a monkey lacks the requisite statutory standing under the Copyright Act to sue for copyright infringement related to pictures it took of itself); *Kelley*, 635 F3d at 303 (holding that a 'living garden lacks the kind of authorship and stable fixation normally required to support copyright').

[31] See U.S. Copyright Office Review Board, 'Second Request for Reconsideration for Refusal to Register A Recent Entrance to Paradise' (14 February 2022) US Copyright Office, 2 (stating that an artwork 'autonomously created by a computer algorithm running on a machine' is not eligible for copyright protection because a non-human cannot be an author and because there is 'no evidence on sufficient creative input or intervention by a human author in the [w]ork') <https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf> accessed 25 February 2023.

[32] U.S. Copyright Office, 'Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence' (16 March 2023) 88 Fed Reg 16190, 16192 (clarifying that works generated by AI may be eligible for copyright registration if there is sufficient human authorship but noting that 'while some prompts may be sufficiently creative to be protected by copyright, that does not mean that material generated from a copyrightable prompt is itself copyrightable') <https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence#footnote-28-p16192> accessed 16 March 2023.

creative powers of the [human] mind"'.[33] As a constitutional matter, such protections are extended only to 'those constituent elements of a work that possess more than a *de minimis* quantum of creativity'.[34] Copyright protections thus extend to the creativity of an autonomous, human mind and not to AI.[35] However, it has been suggested that 'the copyright protection afforded [to] a computer program may extend to the program's output if the program "does the lion's share of the work" in creating the output and the human user's role is so "marginal" that the outputs reflects the program's contents'.[36]

Figure 1. A Recent Entrance to Paradise

[33] U.S. Copyright Office Review Board (n 31) (citing U.S. Copyright Office, Compendium of US Copyright Office Practices § 306 (3d edn, 2021)) (quoting *Trade-Mark Cases*, 100 US 82, 94 (1879)).

[34] *Feist Publs, Inc v Rural Tel Serv Co*, 499 US 340, 363 (1991).

[35] See ibid 345 (stating that many creative works meet the low level of creativity required for copyright protections and that a work may be original 'even though it closely resembles other works so long as the similarity is fortuitous, not the result of copying'); see also U.S. Copyright Office Review Board (n 31).

[36] *Design Data Corp v Unigate Enter, Inc*, 847 F3d 1169, 1173 (9th Cir 2017) (quoting *Torah Soft Ltd v Drosnin*, 136 F Supp 2d 276, 283 (SDNY 2001)); see *Rearden LLC v Walt Disney Co*, 293 F Supp 3d 963, 969 (ND Cal 2018) (applying the lion's share of the work standard). See generally 4 Nimmer on Copyright §13.03[F].

In *Design Data*, the court reinforces that the 'human contribution to the expressive components' of a computer program's output is a substantial consideration in determining whether or not a copyright is infringed.[37] Plaintiff in *Design Data* alleged defendant infringed its copyright by downloading an unauthorized copy of its computer program and using the downloaded copy of the program to generate output, which was then imported and distributed within the U.S.[38] The facts of this case did not establish that the computer program's output were meritorious of copyright protection because the evidence failed to show that the program did the 'lion's share' of the work in generating outputs.[39] Although *Design Data* does not directly deal with AI, the 'lion's share of the work' standard is relevant for a comparison to the Italian case law standard, described in the following section.

4. Italian Constitution and copyright protections as related to AI

Italian Constitution and copyright provisions apply to AI in a similar manner to U.S. Constitution and copyright provisions. However, there is an important distinction in the standard used in Italian and U.S. case law as compared below. First, a brief overview of both the Italian constitutional and statutory framework as related to AI will be established for a comparative analysis to be effectuated. Second, a summary of one recent case decided in the Italian courts provides a clear understanding of how the constitutional and statutory legal frameworks apply to AI.

First, although a specific provision relating to AI does not currently exist in any Italian legislative provisions, the Italian Constitution contains various applicable principles and provisions which can affect AI and vice versa.[40] Article 2 of the Italian

[37] 4 Nimmer on Copyright § 13.03[F][1][e]; see *Design Data* (n 36); see also *Rearden* (n 36).

[38] See *Design Data* (n 36) 1171.

[39] Ibid 1173.

[40] See generally E Fabrizi and others, 'Artificial Intelligence – Italy' (*The Global Legal Post*, 2023) <https://www.globallegalpost.com/lawoverborders/artificial-intelligence-1272919708/italy-1602230361#1> accessed 25 February 2023.

Constitution turns on human dignity as a guaranteed right.[41] It states that 'the Republic [recognizes] and guarantees the inviolable rights of the person, both as an individual and in the social groups where *human personality* is expressed'.[42] Furthermore, Article 3 of the Italian Constitution states:

All citizens have equal social dignity and are equal before the law … [i]t is the duty of the Republic to remove those obstacles of an economic or social nature which constrain the freedom and equality of citizens, thereby impeding the full development of the human person and the effective participation of all workers in the political, economic and social [organization] of the country.[43]

A special emphasis must be placed on the use of the word 'human person' in the Italian Constitution. The use of the word 'human' supports the inference that protection is afforded to the human person, not the legal person or otherwise.

The scope of copyright protection afforded to human persons under Italian law is iterated in Articles 1 and 2 of the Italian copyright law. Articles 1 and 2 of the Italian copyright law provide a list of creative works including but not limited to literature, music, figurative art, architecture, and computer programs which are protected.[44] Although Article 2 extends protection to some 'computer programs', the totality of the Italian copyright laws only protects such software if it is both creative *and* original.[45] Under Article 6 of the Italian Copyright Law, entitlement to copyright for an author consists of the creation of the work as a particular intellectual expression of an author.[46]

[41] See Art 2 Costituzione (Cost) (It), translated and published in English by the Italian Parliamentary Information, see *Constitution of the Italian Republic*, Archives & Publications Off Senate Serv for Official Reps & Commc'n, <https://www.senato.it/documenti/repository/istituzione/costituzione_inglese.pdf> accessed 25 February 2023.

[42] Ibid (emphasis added).

[43] Ibid Art 3.

[44] See Art 1-2 L 633/1941 (explaining that computer programs are protected 'provided that they are original and result from the author's own intellectual creation') <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1941-04-22;633> accessed 25 February 2023.

[45] See ibid.

[46] See ibid Art 6

The creative character imbued into the work is crucial for determining whether or not copyright protection may be afforded to it.[47] For a creative work to be protected, there must be a degree of creative character imbued within it.[48] The concept of 'creative character' is traditionally understood as an extrinsic expression of the author's personality.[49] Because AI does not possess the capability to form a personality since it is a tool rather than an autonomous being, AI cannot be described as having the creative character required for copyright protection under Italian laws.[50] Through this background, it is clear that AI does not per se have the creative character required for Italian copyright protection.

Second, the Italian Court of Cassation, Italy's highest court of appeal, recently released a decision that directly relates to the applicability of copyright principles and provisions to AI. In *Rai*, plaintiff designer claimed copyright violation against defendant because defendant used an AI output based on plaintiff designer's original creation as a fixed scenography for the 2016 Sanremo Music Festival.[51] The Court held that fact finding is necessary to ascertain whether, and to what extent, defendant's use of AI software had absorbed the creative expression of the plaintiff designer.[52] Unfortunately, this was not ascertained in *Rai* because the plea was incorrectly raised and thus deemed inadmissible.[53] *Rai* is still relevant to this discussion because it is crucial to an understanding of Italian law as applicable to AI which is in turn useful for enhancing the standard, or lack thereof, for U.S. courts to apply to AI. This is because *Rai* establishes that use of AI software per se is not sufficient to deny the creative character

[47] See ibid; see also G Meoli, 'Opere in cerca (di diritto) d'autore' (*Italy Intellectual Property Blog (L'IP in Italia)*, 7 February 2023) <https://www.ipinitalia.com/diritto-dautore/opere-in-cerca-di-diritto-dautore/#> accessed 25 February 2023.

[48] See ibid.

[49] Ibid.

[50] See generally Flowers (n 6).

[51] See *Rai Radiotelevisione Italiana SpA v Biancheri Chiara*, No. 1107/2023, 1 <https://www.italgiure.giustizia.it/xway/application/nif/clean/hc.dll?verbo=attach&db=snciv&id=./20230116/snciv@s10@a2023@n01107@tO.clean.pdf> accessed 26 June 2023.

[52] See ibid 5.3.

[53] See ibid.

of plaintiff designer, whose creativity was arguably absorbed by AI in its tool-like capacity for the generation of an output. Therefore, a finding of fact is necessary for determining how much creativity is absorbed by the AI software used.[54]

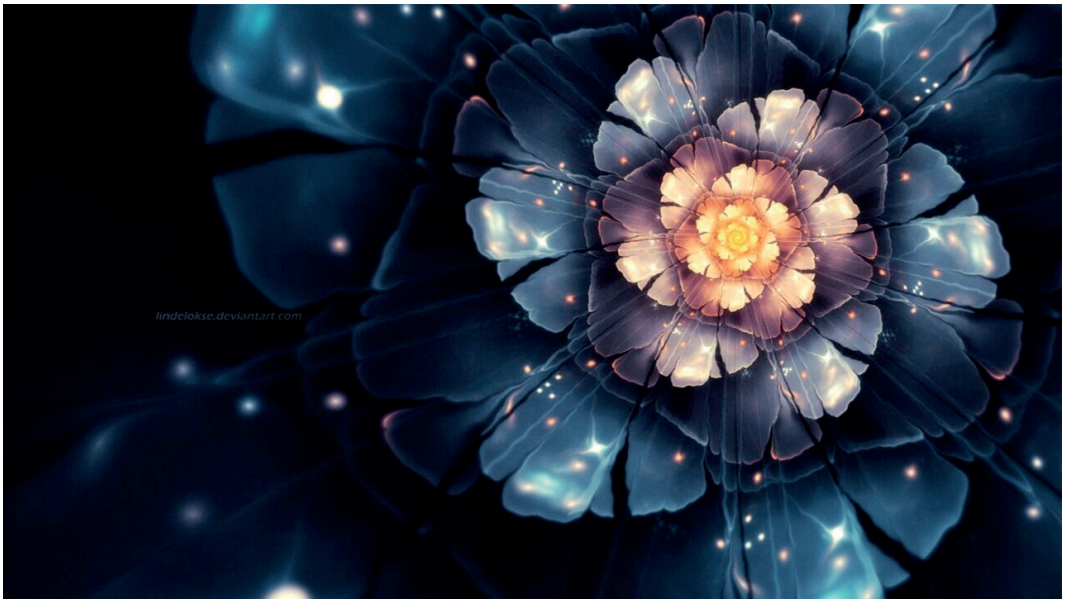

Figure 2. The image at issue in *Rai Radiotelevisione Italiana SpA v Biancheri Chiara*

5. The precautionary and innovation principles

The following provides a brief overview of the precautionary and innovation principles, respectively. The 1998 Wingspread Statement regarding the precautionary principle states that 'when an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically'.[55] This Statement concluded that

[54] See ibid.

[55] The Wingspread Conference was a three-day conference in which its 32 participants from the United States, Canada, and Europe devised the Wingspread Statement on the precautionary principle. 'Wingspread Conference

'corporations, government entities, organizations, communities, scientists, and other individuals must adopt a precautionary approach to *all* human endeavors'.[56] The European Risk Forum states that the innovation principle 'was introduced in October 2013 to ensure that[,] whenever policy or regulatory decisions are under consideration[,] the impact on innovation as a driver for jobs and growth should be assessed and addressed'.[57] As related to the evolving nature of AI, the threats involved are not yet fully established. However, the impact of AI on innovation across a multitude of disciplines creates a dire need for regulation to preemptively address threats on the distant horizon of strong AI. The innovation principle thus complements the precautionary principle because 'precaution and innovation are equally important' catalysts for regulation of AI by U.S. legislators.[58]

6. Comparative analysis of U.S. and Italian laws and the solution derived thereof

Domestic and international lawmakers are obligated to regulate the transnational consequences of increasingly prevalent AI practices in both the commercial and personal realms. A comparison of U.S. constitutional and copyright provisions to respective Italian laws illuminates structural similarities which deviate in application with respect to the different approaches iterated in U.S. and Italian case law. Ultimately, the approach described in Italian case law is most helpful for legislators in the U.S. due to its focus on the creative character of the human person as opposed to the work processed and generated by the machine.

First, neither the U.S. Constitution nor the Copyright Act afford protection to AI outputs – the end product generated as a result of AI's tool-like processing function

on the Precautionary Principle' (*Sci & Envtl Health Network*, 5 August 2013) <https://www.sehn.org/sehn/wingspread-conference-on-the-precautionary-principle> accessed 25 February 2023.

[56] Ibid (emphasis added).

[57] The European Risk Forum aims to 'promote awareness and adoption' of innovation in a coordinated fashion. 'The Innovation Principle – Overview' (*Eur Risk Forum*, 5 March 2015) <https://www.eriforum.eu/uploads/2/5/7/1/25710097/innovation_principle_one_pager_5_march_2015.pdf> accessed 25 February 2023.

[58] Ibid.

– per se because AI cannot be considered an 'author' in its current state. The Italian Constitution and statutory provisions suggest much the same.[59] Second, while there are many similarities between U.S. and Italian copyright law, there are some crucial differences in the countries' respective case law which produce two different analytical frameworks for resolving copyright protection issues as related to AI. Similarities in the copyright laws of both the US and Italy indicate that copyright infringement involves usurpation of a protected work during the creative process and when a final product or output is reached.[60] Both the U.S. and Italian legal frameworks revolve around a human-centric notion that works eligible for copyright protection possess some degree of autonomous human participation. The main difference lies in the approaches used by U.S. and Italian case law with respect to AI.

Relevant U.S. case law suggests that copyright protection depends on whether AI did the lion's share of the creative expression whereas Italian case law focuses on the degree to which the artist's creative expression was absorbed by the machine.[61] Although *Design Data* is not centered on AI, the implications of the case holding render it more than merely tangentially related to this discussion. If there is enough human contribution to the expressive component of a computer program's output, then the program cannot be said to have done the 'lion's share of the work'.[62] Conversely, if a computer program itself does the 'lion's share of the work' and the human contribution behind the program is de minimis, then the output is more aptly seen to reflect the program's contents.[63] However, given the limited function of AI, it would be relatively improbable for an AI to autonomously do the lion's share of the work in generating an output.[64] In sum, the U.S. approach is more focused on the degree of work performed by the machine whereas the Italian approach proves to be a more workable foundation for U.S. based regulation since it is more aptly centered on the artistic expression that

[59] See generally subsections II and III and the Background section of this paper.

[60] See generally 17 USCS 101 ff. See Art. 1-2 L 633/1941 (n 44).

[61] See *Design Data* (n 36); see also *Rai* (n 51).

[62] *Rearden* (n 36) 970.

[63] *Design Data* (n 36) 1173.

[64] See Flowers (n 6).

is absorbed by the use of a machine.

The Italian approach is a more viable one because it better recognizes the limitations of AI. AI in its current state cannot do the 'lion's share of the work' because it is not capable of autonomous function.[65] Because AI is managed by autonomous humans like a tool and because AI is currently incapable of individual freedom of thought and the subsequent spontaneity that is inherent in such conscious freedom, it cannot be described as doing work per se since such a notion reasonably and erroneously conveys that AI is able to be autonomous. Therefore, the Italian approach is a better catalyst for formulating a solution toward the regulation of AI in the U.S. precisely because it is more concerned with the artistic expression involved or absorbed in the creative process preceding an AI's output.

In order to supervise the machine and ensure that it does not become a danger to society, a solution separated into four main pillars is necessary.[66] The four pillars of the solution geared toward U.S. legislators are as follows; (1) legislators should create a uniform legal definition for AI that is not wholly relied on the legal definition for human intelligence; (2) it is important to establish the requisite degree of human participation and supervision both sufficient and necessary for copyright protections to apply to the use and outputs of AI; (3) a fact intensive, ad hoc approach to future litigation should be applied to cases and/or arbitration involving the use of AI; (4) the precautionary and innovation principles should be seen as overarching guidance in the regulation of AI. These pillars are described in depth below.

6.1. Creating a uniform legal definition for AI

First, and to reiterate, what is not properly understood cannot be properly regulated. Faulty definitions regarding the capabilities of AI lend themselves to a veritable minefield of false positives relating to what AI is actually capable of. Definitions that misconstrue AI as the 'capability of a functional unit to perform functions that are generally associated with human intelligence such as reasoning and learning' are

[65] See ibid. See generally *Design Data* (n 36).

[66] See generally Shelley (n 1).

speculative at best and erroneously misinformed at worst.[67] So, for a proper regulatory framework of AI to exist, there must first be a proper, *legislative* definition for AI in its current state. The emphasis on legislative is because legislative definitions constitute language that is authoritative and indelible unless provided otherwise in the text of a particular legislation.[68] For example, the dictionary definition of 'apple' does not have any authoritative power.[69] A person can elect to use the word 'apple' to mean something else in a conversation and there is no authority that can stop that individual from doing so.[70] This example is illustrative of how the word 'apple' can be used to refer to the dictionary definition of the fruit or even to the well-known tech company, Apple. By contrast and through the imposition of a legislative definition, the U.S. legislature 'has the authority to determine how we understand a legislative term that appears in a statute, if not in the real world[,] then in the word [sic.] of norms'.[71]

A legislative definition is not open to interpretation; it is, in most circumstances, a '[coercive determination of] the sole way by which a term should be used in certain factual circumstances'.[72] Without a proper legislative definition of AI that provides authoritative language identifying and describing AI's relatively nascent state, the term 'artificial intelligence' is left open to interpretation. A proper legislative definition of AI in its current state would recognize that the term refers to what is currently understood as AI rather than strong artificial intelligence.[73] As such, the limitations of AI require explicit specification so that it may not be conflated with strong artificial intelligence. The computational nature of AI is inherently limited in that the machine cannot autonomously create an output without a human input beforehand; such a fact must

[67] See Int'l Org for Standardization & Int'l Electrotechnical Comm (2015) ISO/IEC 2382:2015, Information Technology – Vocabulary <https://www.iso.org/obp/ui/#iso:std:iso-iec:2382:ed-1:v2:en> accessed 5 March 2023. See generally n 21.

[68] See Y Roznai, 'A Bird is Known by its Feathers – On the Importance and Complexities of Definitions in Legislation' (2014) 2 Theory & Prac Legis 145, 145.

[69] See generally ibid.

[70] See generally ibid.

[71] Ibid 147.

[72] Ibid 145.

[73] See Flowers (n 6).

be incorporated into any legislative definition of AI.[74]

Therefore, an authoritative definition for AI should be precise and comprehensive but it should not be so over-inclusive that it confuses the functional limitations of AI with strong artificial intelligence. One way policy makers may circumvent the issue of an over-inclusive definition for AI is to distinguish between supervised and unsupervised use of AI by a human. Supervised use would adequately encapsulate the tool-like nature of AI whereas unsupervised use would better articulate the more autonomous qualities of strong artificial intelligence.[75] Incorporating a definition of AI with reference to supervised learning would represent the responsibility of a creator in regulating the actions, or outputs, of their creations.[76]

6.2. Human participation necessary and sufficient for legal protection of AI outputs

Second, just as AI should be given a uniform definition, the degree of human participation that is both sufficient and necessary for copyright law protection to be afforded or denied to the use and output of an AI should be defined. U.S. case law incorporates an approach centered on a computer program doing the 'lion's share of the work' whereas Italian case law focuses on how much of the human author's creativity was absorbed by the machine in generating its output.[77] Because the Italian approach is more workable, creating a threshold for the degree of human participation should focus on the amount of creativity absorbed rather than the amount of work the AI did. If, for example, an AI absorbs more than a majority (>51%) of a participating human author's creativity, the AI output may be considered eligible for copyright protection so long as the source material is not subject to copyright.[78]

[74] See UK-RAS Network (n 9).

[75] See generally Flowers (n 6). See also ibid.

[76] See generally Shelley (n 1) 181.

[77] Compare *Design Data* (n 36), with *Rai* (n 51).

[78] See US Copyright Office (n 32).

6.3. Ad-hoc approach to AI litigation

Third, the evolving nature of AI is best addressed on a case-by-case basis by courts. The human-centric approach to copyrightable works in both constitutional and copyright encompasses precedent that is decades old, and such precedent must be adhered to for *stare decisis* purposes. Legislators are unable to foresee every situation that may arise under a particular statute or law.[79] It is the duty of courts to say what the law is on an ad hoc basis.[80] Therefore, although a uniform legislative definition of AI would be unable to foresee every possible issue that may arise in a vast plethora of possible controversies, the courts would be able to consider precedential copyright law holdings in tandem with such a definition in any future litigation on an ad hoc basis.

6.4. The precautionary and innovation principles as guiding frameworks for legislators

Fourth, the precautionary and innovation principles are equally important considerations in the creation of effective regulation for AI. This is because '[b]oth the [innovative] and precautionary approaches attempt to reconcile the normative goals of promoting innovation, managing risk, and regulating efficiently in the face' of legal uncertainty in speedy technological innovation related to AI.[81] Both principles must be considered during the creation of a legislative definition for AI. With regard to the formulation of a legislative definition of AI, the precautionary approach would serve to encourage information gathering pertinent to achieving an understanding of AI in its current state.[82] The innovative principle encompasses the view that the majority of technological innovations do not pose an irreversible risk or threat of harm to society.[83] Under the innovation principle, technological innovation should be encouraged, and

[79] See HJ Friendly, 'Reactions of a Lawyer – Newly Become Judge' (1961) 71 Yale LJ 218, 220.

[80]See generally ibid 222.

[81] R Crootof and BJ Ard, 'Structuring Techlaw' (2021) 34 Harv J Law & Tec 347, 379.

[82] See ibid 385-86 (asserting that 'equipped with a clearer understanding of the differences and tradeoffs between [the precautionary and innovative] approaches, legal actors attempting to resolve a legal uncertainty will be better prepared to consciously identify and publicly justify their regulatory orientation').

[83] See Castro and McLaughlin (n 4).

any resulting harms should be addressed as they become readily apparent.[84]

The most appropriate view is to consider both approaches as if they exist in a gray area rather than as strictly black and white.[85] Therefore, the path to a legislative definition for AI should be guided by both the precautionary and innovation principles. The resulting definition would not be either strictly precautionary or innovative. Rather, it would either be more precautionary or more innovative depending on the U.S. legislature's analysis of the evolving threats involved to both individuals and large corporations in their unregulated use of AI.

7. Responses to counterarguments

Proponents of artificial intelligence machines may contend that Frankenstein's monster only killed because it was rejected by humanity and that declining to afford constitutional copyright protections to AI is tantamount to such a consequential rejection.[86] This is certainly not the case for several reasons. First, none of the constitutional and copyright law provisions discussed above provide adequate regulation for AI at its current, relatively nascent, state. Second, the process that goes into using AI and generating an output is sufficiently different from the process that goes into using other machines, like cameras; such an important difference warrants an ad-hoc approach in AI related litigation and/or arbitration. Third, proponents of the innovation principle who call for the total or partial abandonment of the precautionary principle misunderstand the co-dependent nature of the two principles; both principles are necessary for a comprehensive regulation of AI as it continues to evolve.

First, the available constitutional and copyright provisions provided for in U.S. law cannot be the catalyst for artificial intelligence regulation because they are inapplicable to machines such as AI which serve a tool-like purpose. Arguments

[84] See ibid; see also Crootof and Ard (n 81).

[85] See Crootof and Ard (n 81).

[86] See generally Shelley (n 1).

stipulating that such a human centric approach is outdated fail for two reasons – first, because of precedent and, second, because, at its current state, AI is unable to possess the autonomy necessary to distinguish itself from the human participation required to make its tool like capabilities function.[87] In other words, AI that operates free from prerequisite human input is still far from becoming a cognizable feat.[88] An AI output that is based on the human input of commands or source material cannot be categorized as emergent or autonomous behavior of the machine.[89] Importantly, proponents of the view that AI is getting closer to the point of autonomy through the production of emergent works rely, to at least some extent, on a 'result-oriented' approach to creativity rather than a 'process-oriented' one.[90] The existence of both approaches as applied to the question of whether or not AI is capable of autonomous creation illustrates a sharply contested point in this field of scholarship. This only further iterates the need for a concrete legislative definition of AI that differentiates the limitations and capacities of weak and strong artificial intelligence, respectively.

Second, AI is sufficiently different from other pre-programmed software installed in a tool, such as a camera, so as to warrant an increased need for regulation. Some of the most prevalent arguments regarding the function of AI is that increased regulation is unnecessary since using AI is no different from a camera in the hands of a user.[91] Although the use of AI is nearly functionally identical to the use of a camera insofar that the direction of a human user is required to make a tool such as AI or a camera function properly, AI's broad applicability in various fields necessitates regulation in the shape of a concrete legal definition for AI applied to disputes on an ad hoc basis.[92]

[87] See Flowers (n 6); see also Searle (n 6).

[88] See ibid; see also n 15.

[89] See Dornis (n 13) 13 (stating that 'a finding of creativity … of an artificially intelligent actor is often described as requiring autonomy and independence form the influence of human intelligence').

[90] Ibid 13-14. Compare Turing (n 13), with Searle (n 6).

[91] See Nat'l Comm'n on New Tech 'Uses of Copyrighted Works' (1978) Final Report of the National Commission on New Technological Uses of Copyrighted Works 4, 44 (stating that 'the computer, like a camera or typewriter, is an inert instrument capable of functioning only when activated either directly or indirectly by a human') <https://www.tech-insider.org/intellectual-property/research/acrobat/780731.pdf> accessed 4 March 2023.

[92] See JC Ginsburg and LA Budiardjo, 'Authors and Machines' (2019) 34 Berkeley Tech. LJ 343, 393 (referring to

Furthermore and unlike the static nature of a camera, AI generates and will continue to generate more legal quandaries in its capacity as an evolving technological innovation. Because of this, a legislative definition and guided regulatory framework are needed.[93] Here, like when demarcating AI from strong artificial intelligence for the purposes of establishing lack of autonomy in AI, it is the lack of a legislative definition for AI that remains a prevalent roadblock toward a principally guided regulation of AI.

Third, arguments favoring a total reliance on the innovation principle without regard to the precautionary principle are misguided. The following position encapsulates a fundamental misunderstanding of the complementary relationship which exists as between the precautionary and innovation principles.[94] For instance,

When it comes to AI, policymakers should rely on the innovation principle, not the precautionary principle … we should proceed on the assumption that AI will be fundamentally good, and while it will present some risks, as every technology does, we should focus on addressing these risks, rather than slowing or stopping the technology.[95]

By focusing on the benefits or disadvantages of one approach over the other, the benefits of applying either principle are curtailed. For example, if a certain technology contains components which poses a 'significant or irreversible' threat, the precautionary principle would likely be a better guide for legislators.[96] Therefore,

the prevalent use of AI in homes, businesses, governments, and social media uses) (citing 'OK, House, Get Smart: Make the Most of Your AI Home Minions' (*Wired*, 16 May 2017) <https://www.wired.com/2017/06/guide-to-ai-artificial-intelligence-at-home/> accessed 5 March 2023; E Brynjolfsson and A McAfee, 'The Business of Artificial Intelligence' [2017] Harv Bus Rev <https://hbr.org/cover-story/2017/07/the-business-of-artificial-intelligence> accessed 5 March 2023; C Conglianese and D Lehr, 'Regulating by Robot: Administrative Decision Making in the Machine-Learning Era' (2017) 105 Georgetown LJ 1147, 1151-53; 'How Artificial Intelligence Is Edging Its Way Into Our Lives' *NY Times* (New York, 12 February 2018) <https://www.nytimes.com/2018/02/12/technology/artificial-intelligence-new-work-summit.html> accessed 5 March 2023.

[93] See Crootof and Ard (n 81).

[94] See ibid.

[95] Cf RD Atkinson, '"It's Going to Kills Us!" and Other Myths About the Future of Artificial Intelligence' (*Info Tech & Innovation Found*, June 2016) 38 <https://www2.itif.org/2016-myths-machine-learning.pdf> accessed 25 February 2023.

[96] See Crootof and Ard (n 81) 382, 386 (exemplifying concerns with 'the growing threats to privacy and civil rights

legislators should consider both principles instead of rejecting one principle entirely when determining which is better suited to guide a regulatory scheme for AI.

In conclusion, current constitutional and copyright provisions are incompatible with AI and thus ill-suited to 'supervise' the man made and operated machine.[97] The inherent limitations of AI and the machine's reliance on a human actor render it ineligible for copyright protections. A comparative review of U.S. and Italian laws sheds light on the need for regulation centered on a four-part approach which defines AI, establishes the requisite human participation necessary to either foreclose or allow for copyright protections to outputs, advocates for an ad hoc approach to future litigation, and considers the precautionary and innovation principles as overarching guidance for U.S. The 'discovery and wonder' inherent in technological innovation as related to AI should not be abridged or hampered.[98] Rather, AI should be appropriately supervised so that its legal implications do not run wild.[99]

raised by facial recognition technologies').

[97] See Shelley (n 1).

[98] Ibid 51-52 (consider, '[n]one but those who have experienced them can conceive of the enticements of science … in scientific pursuit there is continual food for discovery and wonder').

[99] See ibid 81.