

Will robots rule the (artistic) world?

A proposed model for the legal status of creations by artificial intelligence systems¹

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“At all events my own essays and dissertations about love and its endless pain and perpetual pleasure will be known and understood by all of you who read this and talk or sing or chant about it to your worried friends or nervous enemies. Love is the question and the subject of this essay. We will commence with a question: does steak love lettuce? This question is implacably hard and inevitably difficult to answer. Here is a question: does an electron love a proton, or does it love a neutron? Here is a question: does a man love a woman or, to be specific and to be precise, does Bill love Diane? The interesting and critical response to this question is: no! He is obsessed and infatuated with her. He is loony and crazy about her. That is not the love of steak and lettuce, of electron and proton and neutron. This dissertation will show that the love of a man and a woman is not the love of steak and lettuce. Love is interesting to me and fascinating to you but it is painful to Bill and Diane. That is love!”

INTRODUCTION

The excerpt above is taken from the book “The policeman’s beard is half constructed” (1984). Its author is an artificial intelligence (AI) computer program called Racter — short for *Raconteur*. The program was written by William Chamberlain and Thomas Etter, who “fed” it grammar rules and vocabulary, but the prose is randomly generated by the program.² The output - the book — is thus not pre-programmed; rather, Racter can produce its own output based on what it finds in its files. Its files are composed, inter alia, of what the creators of the program called “syntax directive”, which tells the computer how to use words to form a sentence.³

Since Racter, other AI systems (AIs) have been authors of books. A recent example is BRUTUS, developed by Selmer Bringsjord and his collaborators. Apart from grammar rules and general vocabulary, BRUTUS was given a database of information about the world and the language of academia, as well as specific representations (for example, a mathematical representation of betrayal, defined e.g. in terms of actions and goals of the characters).⁴ The stories created by the program are mysterious and have betrayal as their main theme.⁵

¹ This paper benefited from fruitful discussions with Monica Ezsias, as well as from the helpful comments of participants in workshops and guest talks held in the University of Melbourne, the Queensland University of Technology and the University of Western Australia. Any mistakes or inaccuracies remain my own.

² Chamberlain W. *Introduction to “The policeman’s beard is half constructed”*. <http://www.ubu.com/historical/racter/index.html> (5 June 2017, date last accessed); Butler T. “Can a computer be an author? Copyright aspects of artificial intelligence”. 4 *Comm/Ent L.S.* 1981-1982; 707: 715.

³ Chamberlain W, *op. cit.*

⁴ Levy D. *Robots Unlimited. Life in a virtual age* (Taylor & Francis 2005), 160 *et seq.*

⁵ *Ibid.*

Other art-related fields have seen the rise of AI creators. AARON, a program created in the 70s by Harold Cohen – an art professor and an artist himself – generates drawings and paintings (with real paint and canvas, as Cohen has built a painting machine that goes with the AIs). Cohen has since then been refining AARON’s code, and enhancing its knowledge of artistic elements such as colour or form.⁶ AARON creates the works autonomously (though based on the “teachings” of Cohen). Its works have been exhibited in many galleries and museums around the world, and private collectors have paid considerable sums for AARON’s art.⁷

The act of creation is traditionally equated with a human being. As the examples above show, however, developments in the field of AI are challenging this notion. We currently have machines that can create books, music, paintings, and other subject-matter that could eventually come under copyright protection.

This paper concerns AIs as creators (of literary and artistic works), rather than AIs as a mere tool or aid to human creation. The reality of non-human creation raises questions regarding the legal status of AIs creations. The place of AI in copyright law forces us to rethink key concepts in copyright, such as authorship and conditions for protection, but also the dialectic between privatization and public domain, and the rationales underlying copyright protection in the first place.

The next section will explore the role of AIs as creators of literary and artistic works. I will then examine the current legal regime to assess whether it can accommodate AIs as creators. For that purpose, I will look into definitions of authorship in the United States, European Union and Australia, to then analyse specific legal constructions that work around the definition of author as a human being. Following that, I will assess whether copyright protection should be available in view of copyright rationales, and will analyse options for protection beyond granting copyright to AIs. At the end of this paper, I will propose a model for the regime of AIs creations, which amounts to a combination of a public domain status with a neighbouring right-type of protection for disseminators, and offer a conclusion.

1. AIS AS CREATORS

AIs have been defined as machines that imply a human-type of behaviour, in the sense that it is meant to signify actions done by computers that require intelligence when done by humans.⁸ Intelligence, however, is not a monolithic concept, as there is no single or absolute measure of intelligence.⁹ This assumption is reflected on the fact that human actions can take a myriad of forms. Humans can use logic and reasoning to find a

⁶ Bridy A. “The evolution of authorship: works made by code”. 39 *Columbia Journal of Law and the Arts* 2016; 395: 397; Boden M. *The creative mind. Myths and mechanisms* (Routledge 2004), at 159 *et seq.*

⁷ Moss R. *Creative AI: The robots that would be painters*. <http://newatlas.com/creative-ai-algorithmic-art-painting-fool-aaron/36106/> (5 June 2017, date last accessed).

⁸ Copeland J. *What is artificial intelligence?*. http://www.alanturing.net/turing_archive/pages/Reference%20Articles/What%20is%20AI.html (5 June 2017, date last accessed). See however Russell S, Norvig P, *Artificial Intelligence. A modern approach*, 3rd ed (Pearson 2014), at 1-2, holding that the term “artificial intelligence” can be defined following four different approaches: thinking humanly (which measures closeness to human thought processes); thinking rationally (measuring the thought process against an ideal performance as embodied in rationality); acting humanly (measuring fidelity to human behaviour); and acting rationally (where it is considered that a system is rational if it does the “right thing”).

⁹ Câmara F. *Creativity and Artificial Intelligence* (Mouton de Gruyter 2007), at 10.

solution to a problem; but they can also use their creativity to produce artistic works, for instance. What most psychologists agree on is that human intelligence is an ensemble of several components, and that creativity is one of them.¹⁰

As the examples mentioned in the introduction show, AIs are capable of producing seemingly creative works. But of course the main question surrounding the assumption of an AIs being creative – as an aspect of being intelligent – concerns the definition of creativity, which is an ambiguous term.

In psychology, creativity encompasses novelty and appropriateness: the creative product or process must be new and valuable.¹¹ However, these terms are used in a vague way and it is not clear for whom and to which degree a product must be new and valuable to be considered creative.¹² In computational creativity research, for an AIs to be considered creative it needs to aim to produce solutions that are not replications of previous solutions that the AIs knows; and it also needs to aim to produce solutions that are acceptable for the task it proposes.¹³ In this field, creativity is also a matter of scale – for example, the ability to reason at different levels of abstraction or the ability to work in more than one domain without reprogramming would be considered to be at the high end of the creativity spectrum.¹⁴

It has been pointed out that, in order to be creative, the AI computation must involve judgement and minimum randomness; self-criticism should be a trait at all times.¹⁵ The problem here is that AIs can have this only to a certain extent. AARON will create different paintings, but it will not be able to change its style unless it is programmed to do so. It needs to be fed knowledge and experience to be able to produce works. AARON needs to know the things it depicts in its art, which is done through a generative system – a set of abstract rules which specify the anatomy of the human body (two legs, two arms), but also how body parts look like from different points of view (for example, in a painting depicting several people, someone's arm behind someone else's body will be invisible).¹⁶ The program can thus paint people with only one arm visible, but cannot paint one-armed persons, since its model of the human body does not comprise that possibility.¹⁷ The same happens in the field of literary creation. In the words of its creators, BRUTUS does not have the awareness or experience deriving from the senses (like touching or living an adventure) that would allow it to better go into the lives of the characters it creates.¹⁸

¹⁰ Câmara, *op. cit.*, at 10. See also Levy, *op. cit.*, at 149 and Copeland, *op. cit.* (the latter pointing out other examples, such as learning, reasoning, problem-solving, perception, and language-understanding)

¹¹ Kampylis P, Valtanen J. "Redefining creativity – analysing definitions, collocations, and consequences". 44 *Journal of Creative Behaviour* 2010; 191: 203. Boden M. "Computer Models of Creativity", 30 *AI Magazine* 2009; 23: 24.

¹² Boden M. "Computer Models of Creativity", 30 *AI Magazine* 2009; 23: 24.

¹³ Câmara, *op. cit.*, 36-37

¹⁴ *Ibid.*

¹⁵ Boden, *The creative mind. Myths and mechanisms*, at 163. See however Levy, *op. cit.*, 150 *et seq.*, arguing that "every computer operating in a creative field utilizes some form of randomness in its decision making [...] The use of randomness breeds creativity because the very process of creativity requires that some decisions be taken for no particular reason"

¹⁶ Boden M. "Creativity and computers", in T. Dartnall (ed.), *Artificial intelligence and creativity. An interdisciplinary approach* (Springer 1994), at 10-11.

¹⁷ *Ibid.*

¹⁸ Levy, *op. cit.*, at 162.

The inability to change through self-criticism and judgement also means that the program has constraints to its creativity. To be able to transform its style, the program would need to be programmed in a way that would allow it to drop constraints (i.e., programmed to consider 2 limbs as the general default rule, but allowing for 1 or zero limbs, for instance).¹⁹ Unlike a human author, AARON cannot imagine things it has never seen. It is this lack of imagination that can, in my view, be a key difference between human and (at least most) machine creators (whether this matters for purposes of copyright protection is another issue). Connected to this point is also the AIs' lack (at least for now) of certain intention and content states like belief and desire²⁰, which could inform its imagination and/or creativity.

It is interesting to note that in the recent Resolution from the European Parliament (16 February 2017),²¹ the ability to self-learn from experience and by interaction is identified as an optional criterion in the definition of a "smart robot." In any case, however, future AIs may gain such awareness or experience from the senses. For instance, recent experiments with AI painters show that the AI's paintings are influenced by the sounds in its environment, the visuals of its ongoing painting, or even keywords that it autonomously chooses.²² It is also disputed whether awareness and experience should translate into a human-like type of consciousness for the purpose of defining creativity, in the sense of the AIs being aware of its creative ability and experiences in the same way a human would be. Some researchers do not include this type of awareness in the definition of creativity,²³ while others use this lack of awareness to point out that computers can never be really creative.²⁴

Besides intelligence, AIs also presupposes autonomy.²⁵ Autonomy implies that the work produced by the AIs results from it acting alone, independently from the constant input of a human operator.²⁶ Autonomy can be defined as a matter of scale, according to the level of human involvement, and not necessarily in the binary state autonomous-non autonomous.²⁷ In the low end of the spectrum of autonomy, machines are mere tools,

¹⁹ Boden, *The creative mind. Myths and mechanisms*, at 161.

²⁰ McDonough R. "Machine Predictability versus Human Creativity", in T. Dartnall (ed.), *Artificial intelligence and creativity. An interdisciplinary approach* (Springer 1994) at 117.

²¹ European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)). <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2017-0051> (7 June 2017, date last accessed).

²² All described in Moss R. *Creative AI: the robots that would be painters*. <http://newatlas.com/creative-ai-algorithmic-art-painting-fool-aaron/36106/> (5 June 2017, date last accessed)

²³ E.g. Boden, *The creative mind*, at 294-295, holds that the sort of conscience that is essential for creativity is only self-reflective evaluation.

²⁴ McDonough, *op. cit.*, at 118 *et seq.*; Bridy A. "Coding creativity: Copyright and the Artificially Intelligent author". *Stanford Technology Review* 2012; 8: 10, citing Searle J. "Minds, Brains and Programs". *Behavioural & Brain Sciences* 1980.

²⁵ In the Resolution of the European Parliament from 16 February 2017, it is considered that a smart robot will imply "the acquisition of autonomy through sensors and/or by exchanging data with its environment (inter-connectivity) and the trading and analysing of those data." See also de Cock Buning M. "Autonomous Intelligence Systems as creative agents under the EU framework for intellectual property", 7 *European Journal of Risk Regulation* 2016; 310: 312.

²⁶ Boden, *The creative mind. Myths and mechanisms*, at 163.

²⁷ So for instance, systems can range from controlled, implying a high level of human intervention (such as a car); to automatic, which carries out fixed functions (such as an elevator); or to autonomous, at the

whereas at the high end they will be an AIs capable of autonomously creating works, with little to no human input. The middle of the scale blends human and AIs participation, and it is arguably where the grey area and most problems for now lie.²⁸

2. CAN THE CURRENT COPYRIGHT FRAMEWORK ACCOMMODATE AIS AS CREATORS?

2.1. DEFINITION OF AUTHORSHIP

International treaties are silent in their definition of authorship, and on whether it requires a human author. It can however be argued that international copyright norms presuppose a human author, due to the way in which they are crafted (for example, linking the term of protection to the life of the author, or – in the case of the Berne Convention – granting moral rights to the author).²⁹ It can further be defended that a reason to deny authorship to AIs amounts to the internationally accepted idea-expression dichotomy,³⁰ which prescribes that copyright protects expressions (of ideas), not ideas as such. At a fundamental level, if the expression is created by an AIs, it is unclear to what extent we can talk about an “idea” that is being expressed.

In a seminal article published in 2003, Jane Ginsburg argued that the legal systems she analysed (US, UK, Canada, Australia, France, Belgium, and the Netherlands) appear to have in common the fact that the author is “a human being who exercises subjective judgment in composing the work and who controls the execution.”³¹ However, even though the author adds that this may fail to encompass all forms of authorship, she acknowledges that the focus on the human creator informs her analysis.³² It is then worthy to examine whether new case law has shed further light on this question, and to look at it from the perspective of a broader hypothesis: one that is open to non-human authorship. Three main jurisdictions will be covered: the US, EU and Australia.

The United States

In the US, a work will be protected by copyright law if it is original in the sense that it is an independent creation and that it displays a modicum of creativity. This was stated by the US Supreme Court in *Feist*.³³ Creativity is thus a key element in copyright protection. The Court did not define what creativity might amount to, but from the ruling it is apparent that the threshold of creativity for purposes of copyright protection is low.³⁴

low end of human intervention, which are systems that can learn and make their own decisions – see Royal Academy of Engineering. *Autonomous systems: social, legal and ethical issues*. <http://www.raeng.org.uk/publications/reports/autonomous-systems-report> (5 June 2017, date last accessed).

²⁸ McCutcheon J. “The vanishing author in computer-generated works: a critical analysis of recent Australian case law”. 36 *Melbourne University Law Review* 2013; 915: 931-935.

²⁹ For a thorough elaboration of this argument in relation to the Berne Convention, see Ricketson S. “People or Machines”. 16 *Columbia VLA Journal of Law & the Arts* 1991-1992; 11: 21-22.

³⁰ See e.g. article 2 of the WIPO Copyright Treaty.

³¹ Ginsburg J. “The concept of authorship in comparative copyright law”. 52 *DePaul Law Review* 2002-2003; 1063: 1066.

³² *Ibid.*

³³ *Feist v. Rural Telephone*, 499 US 340, 346 (1991).

³⁴ *Feist*, at 345: the Court mentions that a ‘creative spark’ can be for this purpose “crude, humble or obvious.”

As mentioned above, creativity can to a certain extent be coded (depending on how one defines creativity), and following that argument creativity is not exclusive to the human kind. However, creativity in the realm of US copyright law seems to necessarily imply a human creator. In fact, even though no definition of authorship is found in the law, it can be argued that under US law the author will necessarily be a natural person. Section 101 of Title 17 of the US Code (hereinafter, “Copyright Act”) defines anonymous works as the ones where no natural person is identified as an author, which seems to presume that an author is necessarily a human being. Moreover, in *Feist*, the Court quotes the case *Burrow-Giles* and states that “[A]n author who claims infringement must prove ‘the existence of...intellectual production, of thought, and conception’” – which implies that there must be an intention or a purpose to create.³⁵

This view is reinforced by the Compendium of US Copyright Office practices, an administrative manual of the Register of Copyrights which, while not having the force or effect of law, does nevertheless provide guidance and interpretation of technical requirements and regulations.³⁶ The Compendium clearly states that it is necessary for the work to be created by a human being for it to be registered, as copyright law only protects the product of a creative mind and intellectual labour³⁷ – something that, presumably, is a human prerogative. Section 313.2 further elaborates on this point and emphasizes the intertwinement of authorship with requirements for protection. After quoting Section 102(a) of the Copyright Act, which states that copyright protects original works of authorship, the Compendium expressly declares that “to qualify as a work of ‘authorship’, a work must be created by a human being”. The statement is backed with a reference to the case *Burrow-Giles*, where the Supreme Court expressed the following view:

“We entertain no doubt that the Constitution is broad enough to cover an act authorizing copyright of photographs, *so far as they are representatives of original intellectual conceptions of the author*”³⁸ [emphasis added]

What the Court is implying here is that a given subject-matter may be copyright protected if, and only if, they consist of “original intellectual conceptions” of its author – meaning, authorship is embedded by its own nature in the requirements for copyright protection.

Further on under the same section, the Compendium adds that the Copyright Office will not register works produced by nature animals, plants, and neither by “machines or mere mechanical processes that operate randomly or automatically without any creative input or intervention from a human author.” Therefore, while it is arguable that the current drafting does not seem to contemplate a future where machines will create works non-randomly or automatically, the requirement of a human author is clear and unescapable.

Moreover, in the case *Naruto v Slater (Monkey Selfie)*, decided on 28 January 2016 by the Northern District Court of California, the court denied authorship to an animal (a

³⁵ Bridy, “Coding creativity: Copyright and the Artificially Intelligent author”, at 8.

³⁶ U.S. Copyright Office. *Compendium of U.S. Copyright Office Practices* (3rd edition, 2014). Introduction. <https://www.copyright.gov/comp3/docs/introduction.pdf> (5 June 2017, date last accessed).

³⁶ *Burrow-Giles Litographic Co. v Napoleon Sarony*, [1884] 111 US.

³⁷ U.S. Copyright Office. *Compendium of U.S. Copyright Office Practices* (3rd edition, 2014). Section 306. <https://www.copyright.gov/comp3/comp-index.html> (5 June 2017, date last accessed).

³⁸ *Burrow-Giles Litographic Co. v Napoleon Sarony*, [1884] 111 US 53, 58.

monkey), adding that “the Supreme Court and Ninth Circuit have repeatedly referred to “persons” or “human beings” when analyzing authorship under the Act.”³⁹

The European Union

In the EU, authorship is only addressed in the Software Directive, the Database Directive, and the Rental and Lending Rights Directive (the latter in relation to cinematographic works, with the corresponding rule repeated in the Satellite and Cable Directive and the Term of Protection Directive).⁴⁰ The Software and the Database Directives take a deregulatory approach and leave a great amount of leeway to Member States, allowing them to define the author of a computer program or of a database as either the natural person or group of natural persons that created it, or the legal person defined as a right holder under national law (Article 2(1) Software Directive and Article 4(1) Database Directive).

The Explanatory Memorandum to the Proposal for a Database Directive clarifies that the objective was to restate the “fundamental principle of the Berne Convention[...] that the human author who creates the work is the first owner of the rights in that work”, even though it is then made clear that national arrangements that allow for the exercise of rights by legal persons will be allowed.⁴¹ This seems to convey the view that the author will by default be a natural person, while deviations to that rule are merely tolerated.⁴²

Interestingly, the original Proposal for a Software Directive did not contain the possibility of a legal person being the author. The Explanatory Memorandum to the Software Proposal mentioned that “[i]n common with all literary works, the question of authorship of the program is to be resolved in favour of the natural person or group of persons who have created the work. Although the right to exercise exclusive rights may be assigned to another, the author will retain at least the unalienable rights to claim paternity of his work.”⁴³ The reference to natural persons and to moral rights clearly shows that authorship was seen as necessarily implying a human being. The Proposal also contained a provision on computer generated works, which did not make it to the final draft (it was then Article 2(5)). According to it, the natural or legal person who caused the generation of subsequent programs would be entitled to exercise all rights in respect of the programs, unless otherwise provided by contract. There was no mention of authorship proper, although the Explanatory Memorandum did raise the question of whether authorship of the generated programs should reside with the creator of the first program, or with the user that causes it to generate other works.⁴⁴ No consideration is given to any other solution – again showing that authorship is a human trait – as

³⁹ *Naruto v. Slater*, 15-cv-04324-WHO, 2016, 5. <http://cases.justia.com/federal/district-courts/california/candce/3:2015cv04324/291324/45/0.pdf?ts=1454149106> (5 June 2017, date last accessed)

⁴⁰ Directive 2009/24/EC (Software Directive); Directive 96/9/EC (Database Directive); Directive 2006/115/EC (Rental and Lending Rights Directive); Directive 93/83/EEC (Satellite and Cable Directive); Directive 2006/116/EC (Term Directive).

⁴¹ Explanatory Memorandum to the proposal for a Database Directive, COM(92) 24 final, 13 May 1992.

⁴² Quaedvlieg A. “Authorship and Ownership: Authors, Entrepreneurs and Rights”, in T.E. Synodinou (ed.), *Codification of European Copyright Law. Challenges and Perspectives* (Kluwer Law International, 2012), 197-239 at 207.

⁴³ Explanatory Memorandum to the proposal for a Software Directive, COM (88) 816 final, 17 March 1989, at 20.

⁴⁴ Explanatory Memorandum, at 21.

revealed by the following passage: “The human input as regards the creation of machine generated programs may be relatively modest, and will be increasingly modest in the future. Nevertheless, a human ‘author’ in the widest sense is always present, and must have the right to claim ‘authorship’ of the program.”⁴⁵ Article 2(5) was judged too premature and was deleted following a vote by the European Parliament.⁴⁶

It is also possible to look at the requirements for protection and assess whether they imply a human author. In Europe, the notion of originality for purposes of copyright protection is statutorily defined in relation to software, databases and photos as the “author’s own intellectual creation.”⁴⁷ The CJEU has however extended this notion of originality to all types of subject-matter, through its *Infopaq* decision.⁴⁸

A work will be its author’s own intellectual creation where it reflects her or his personality, according to Recital 16 of the Term of Protection Directive. The CJEU has further interpreted the expression “author’s own intellectual creation” to mean that the author was able to make free and creative choices⁴⁹ and that the work bore her or his personal touch stamp.⁵⁰

The references to personality and “personal touch stamp” of the author seem to highlight the need for a human author of the work, in so far as personality can be described as a human attribute only. With regard to free and creative choices, even though in practice humans themselves suffer from social, technical and/or institutional constraints, at least some of them are internal or self-imposed.⁵¹ By contrast, the limitations of (current) AIs are unsurmountable and do not allow them to make such choices outside of the framework of their program. This is supported by the CJEU case *Football Dataco*, where the Court stated that there would be no room for free and creative choices where the work was dictated by “technical considerations, rules or constraints”⁵² – much like it is the case of a creative AIs, whose “autonomous creations” still depend on technical rules and programming by a human being.

Other case law of the CJEU confirms the human nature of authorship and its connection to protection requirements. In the *Luksan* case,⁵³ for instance, the CJEU has made a clear link between Article 17(2) of the Charter of Fundamental Rights of the EU (which states that “intellectual property shall be protected”) and the protection of the author of a copyright protected work (in that case, the principal director of a cinematographic work, thus a natural person). The Court reasoned that the principal director of a cinematographic work was, as an author, entitled to exploitation rights to that work.⁵⁴ Because the national law at stake did not allocate such exploitation rights to the

⁴⁵ *Ibid.*

⁴⁶ Dreier T. “The Council Directive of 14 May 1991 on the Legal Protection of Computer Programs”. 13 *EIPR* 1991; 319: 321.

⁴⁷ See respectively article 1(3) Software Directive, article 3(1) Database Directive and article 6 Term of Protection Directive.

⁴⁸ Case C-05/08 *Infopaq International*, ECLI:EU:C:2009:465.

⁴⁹ Case C-604/10 *Football Dataco*, at 39 and case law cited therein.

⁵⁰ Case C-145/10 *Painer*, ECLI:EU:C:2011:798.

⁵¹ van Gompel, S. “Creativity, Autonomy and Personal Touch”, in M. van Eechoud (ed.), *The Work of Authorship* (Amsterdam University Press, 2014), at 97, 108 *et seq.*

⁵² Case C-604/10 *Football Dataco*, at 39 and case law cited therein.

⁵³ Case C-277/10 *Luksan*.

⁵⁴ *Luksan* at 44-53.

principal director, the Court considered that it was in breach of Article 17(2) of the Charter.⁵⁵

In *Phil Collins/EMI Electrola*,⁵⁶ the Court established that the specific subject matter of copyright and related rights is “to ensure the protection of the moral and economic rights of their holders.”⁵⁷ It is true that the Court refers to “holders” rather than individual creators; however, the fact that moral and economic rights are grouped together hints that it is really the creator, as the original copyright holder, who is mostly at stake here. The goal of protecting authors and their interests in their works is thus at the core of the notion of “specific subject matter.”⁵⁸ Moreover, the General Court also put the emphasis of copyright on the individual creator by stating that the “essential function” of copyright is to “protect the moral rights in the work and ensure a reward for creative effort.”⁵⁹ This definition presupposes the existence of a natural person and clearly reports back to the concept of original creator.

Australia

In Australia, the Australian Copyright Act distinguishes between original literary, dramatic, musical and artistic works (Part III), and “copyright in subject-matter other than works” (Part IV), such as broadcasts or films. Regarding the former, the Act establishes that the author shall be a qualified person (Section 32(1)), which means that s/he will be an Australian citizen or a person resident in Australia (Section 32(4)) – and seemingly a human being.⁶⁰ By contrast, initial ownership of copyright in subject-matter other than works may vest in either a person or a corporation (section 84 *et seq.*). Cautiously, in this part of the Act, the word “author” is avoided.

Case law confirms the need for a human author of the work, and links this to availability of copyright protection. The rulings in *Ice TV*,⁶¹ *Phone Directories* (both first instance and appeal)⁶² and *Acohs*⁶³ all underline that authorship is a key element when assessing whether a work is protected by copyright, and all refuse to grant copyright to products that were computer generated and lacked (completely or a great part of) human input.⁶⁴ Previous decisions to those go as far as to assert that “the word ‘original’ connotes the ‘authorship’”, emphasizing the dependency of copyright protection on (human) authorship.⁶⁵ Originality thus requires that an author has personally put some mental/intellectual effort in the work, and that such mental effort, even if it is low, is directed to the particular form of expression of that work.⁶⁶

⁵⁵ *Luksan* at 68-70.

⁵⁶ Joined cases C-92/92 and C-326/92, *Phil Collins/EMI Electrola*, ECLI:EU:C:1993:847.

⁵⁷ See *Phil Collins/EMI Electrola* at 20.

⁵⁸ See also Loewenheim U. “Intellectual Property Before the European Court of Justice”. 26 *IIC* 1995; 829: 841.

⁵⁹ Case T-76/89 *ITP*, ECLI:EU:T:1991:41, at 56.

⁶⁰ Ricketson A. “The need for human authorship – Australian developments: Telstra Corp Ltd v Phone Directories Co Pty Ltd. 34 *EIPR* 2012; 54.

⁶¹ *IceTV Pty Ltd v Nine Network Australia Pty Ltd* (2009) 239 CLR 458.

⁶² *Telstra Corporation Ltd v Phone Directories Co Pty* (2010) FCAFC 149.

⁶³ *Acohs Pty Ltd v Ucorp Pty* (2012) FCAFC 16.

⁶⁴ All cases thoroughly analysed in McCutcheon, *op. cit.*

⁶⁵ *Sands & McDougall Pty Ltd v Robinson* (1917) 23 CLR 49, as explained in McCutcheon, *op. cit.*, at 935.

⁶⁶ McCutcheon, *op. cit.*, 936-942; Ricketson, *op. cit.* at 57, quoting Perram J in the *Phone Directories* case: “So long as the person controlling the program can be seen as directing or fashioning the material form of the work there is no particular danger in viewing that person as the work’s author. But there will

Interim conclusion

All the jurisdictions examined – EU, US, Australia – have two things in common. First, they still equate the author with a human being.⁶⁷ That makes sense if nothing else because rights need to have a subject – rights arising from authorship need to be ascribed to human beings, as machines are not subjects of rights. Second, they intertwine authorship with requirements for protection in a way that the former appears to be embedded in the latter.⁶⁸ There are however some legal constructions that have worked around this ‘humanization’ of authorship. The next subsection will examine them.

2.2. CURRENT POSSIBLE CONSTRUCTIONS

The previous section has shown that, at the international level and in the three jurisdictions concerned, the author in copyright law is necessarily a human being. This section will look into current legal constructions that work around this premise in cases where it is difficult to identify the original (human) author, or where there was a will to protect an investment in the production of the work.⁶⁹ It will be examined whether (and if so to what extent) these legal fictions could accommodate the protection of AI creations.

Computer-generated works

A few common law jurisdictions – New Zealand, United Kingdom, Ireland, Hong Kong, South Africa and India – have a special regime for computer-generated works, i.e., a work that is generated by a computer “such that there is no human author,”⁷⁰ or in relation to which the author “is not an individual.”⁷¹ Authorship in computer-generated works is given to the person by whom the arrangements necessary for the creation of the work are undertaken,⁷² or to the person who causes the work to be created,⁷³ depending on the jurisdiction. The term of protection for computer-generated works is computed from the date of production (in the UK, for instance, it is set at 50 years from the date the work was made – see CDPA, section 12(7)).

The rule on authorship for computer-generated works is a legal fiction that derogates from the general rule that defines the author as the one who creates the work.⁷⁴ As such,

be cases where the person operating the program is not controlling the nature of the material form produced by it and in those cases that person will not contribute sufficient independent intellectual effort [...] to constitute that person as its author.”

⁶⁷ See however Bridy, “Coding creativity”, at 20, in relation to the US: “because copyright law does not expressly require human authorship, artificially intelligent computer programs that autonomously generate art need not be relegated for copyright purposes to scare-quoted authorship; their works can be regarded as proper ‘works of authorship’ [...] by virtue of their nexus to human creativity”

⁶⁸ See Ginsburg *op. cit.* at 1077, contending that “originality is the overarching standard of authorship”. See also Jaszi P. “Toward a theory of copyright: the metamorphoses of ‘authorship’”. *Duke Law Journal* 1991; 455: 480, pointing out a further connection between the two by giving the example that authorship has been used to extend copyright protection to new kinds of subject-matter, such as photographs.

⁶⁹ These are the reasons put forth by Ricketson in relation to films, *op. cit.* 27-28.

⁷⁰ Section 178 of the UK Copyright Designs and Patents Act (CDPA).

⁷¹ Section 2(1) Irish Copyright and Related Rights Act 2000.

⁷² S. 9(3) CDPA.

⁷³ Indian Copyright Act S. 2(d)(vi).

⁷⁴ S. 9(1) CDPA

the link between authorship and conditions for protection is rekindled, as the originality requirement will have to be self-standing and independent of authorship— not linked to the person responsible for the arrangements (as s/he is the author only due to the legal fiction and has no direct connection to the work), but also not linked to the computer.⁷⁵

It is however unclear if and how the regime of authorship for computer-generated works could be applicable transversally to all AIs creations. Central to this is the interpretation of the term “arrangements”, and the person responsible for them, who might include the user, the programmer, the person who sells or produces the software, or an investor;⁷⁶ but also, more broadly, the person instructing or training the programmer or the person customizing the software;⁷⁷ or even a combination of them, depending on the specific work at issue (and on whether the interpreter agrees that the word “person”[by whom arrangements are undertaken] can include more than one person, which is debatable). All these options are possible, because the term “arrangements” amounts to preparing or organizing something so that the work may be created (considering that, without such preparation or organization, the work could not have been produced, which is indicated by the expression “*necessary arrangements*”).⁷⁸ The person responsible for the arrangements will depend on the factors weighed in, which can include inter alia the initiative to create the work, the proximity to the final act of creation (the closer to the final creation, the more likely to be in charge of the arrangements to create the work), or the extent to which the arrangements are responsible for the creation of the work (which would put the emphasis on the operation of the software).⁷⁹

In a British case concerning the frame images generated when the user plays the game, the person by whom arrangements were undertaken was considered to be the person who programmed and designed the game.⁸⁰ The Court expressly refused to confer that status to the user, as the latter’s input was not artistic in nature, nor had he undertaken the arrangements necessary to create the frame images.⁸¹ However, other situations might not be as straightforward, especially taking into account the increasingly relevant role of users in computer games. In short, the uncertainty regarding the person by whom arrangements are undertaken, who will have to be identified on a case-by-case basis, does not favour legal certainty and constitutes a reason to not extend the applicability of this legal fiction. Interestingly, similar cases in the US concerning (copyright protected) displays in videogames have had the same outcome, with the courts ruling that it is immaterial whether the displays are generated autonomously by the machine or through the actions of the player – copyright belongs, in both cases, to the owner of the

⁷⁵ McCutcheon J. “Curing the authorless void: protecting computer generated works following Ice TV and Phone Directories”. 37 *Melbourne University Law Review* 2013; 46: 51, holds that “it seems that the criterion of originality would be applied on a hypothetical basis: if the work had been authored by a human, or if that human could be identified, would it be original?”

⁷⁶ See Bently L & Sherman B. *Intellectual Property Law*, 3rd ed. (OUP 2009), at 122.

⁷⁷ McCutcheon, “Curing the authorless void”, at 54.

⁷⁸ McCutcheon, “Curing the authorless void”, at 53.

⁷⁹ McCutcheon, “Curing the authorless void”, at 55-56.

⁸⁰ *Nova Productions Ltd v Mazooma Games Ltd* (2006) RPC 379.

⁸¹ *Nova Productions Ltd v Mazooma Games Ltd* at 399.

copyright in the game code.⁸² This raises legitimate doubts as to the usefulness of the regime for computer-generated works and their quest for authorship.

Moreover, “the person by whom arrangements are undertaken” presupposes human intervention at some point. Current legal regimes that recognise computer-generated programs as such still trace back authorship to human intervention (the person that makes the arrangements and that therefore is considered to ultimately have produced the work) – so, to a certain extent, computers are still tools in this construction.

By contrast, in AIs creations that are completely autonomous from any human input, it might be hard to discern a human being who would be responsible for the arrangements further up the chain. In fact, the scale of autonomy of AIs seems to work in inversely proportionate terms to the applicability of the regime of computer generated works: the more autonomous the AIs, the less likely the applicability of the regime would be, due to the lack of human intervention. The provisions on computer generated works do not therefore seem to be a solution for (increasingly autonomous) AIs, and even where they are a solution to less autonomous AIs, it is unclear who the person responsible for the arrangements is.

Other cases of authorship as a legal fiction

Several countries include in their copyright laws legal fictions according to which an entity, rather than a natural person, is deemed to be the author of a work. It is the case, for instance, of the regime of works made for hire in the US, where the employer or another person for whom the work was prepared is considered to be both the author and the owner.⁸³ This legal fiction finds its roots in the notion of control and agency.⁸⁴ It is the aspect of controlling the production of the work (be it through an employment link or in certain cases of commissioned works) that affords the status of “author” to an employer or a commissioning party; in other words, where the creator is a mere agent of someone else, the latter should be given authorship.⁸⁵ Another reason for attributing authorship to the employer is a practical one: it is easier for purposes of exploitation, and it facilitates investment.⁸⁶ However, the regime of works made for hire cannot accommodate AIs creations: they do not necessarily fall under the exhaustive list of categories of commissioned works (for the case of works not done in the course of employment),⁸⁷ and in addition the relationship between the creator of the AIs and the AIs does not fit the characterization as commissioner-creator or employer-employee (not least because the employee or agent has legal rights and duties by agreement with the employer/commissioner).⁸⁸

⁸² Bridy, “Coding creativity”, at 24, citing *Stern Elec. v Kaufman, ‘Scramble’* (2nd Circ. 1982), *Atari, Inc v North American Philips Consumer Elec. Corp., ‘Pacman’* (7th Circ. 1982) and *Williams Elec. Inc. v Artic Int’l, Inc, ‘Defender’* (D.N.J. 1981).

⁸³ US Copyright act, Title 17, § 101 and §201.

⁸⁴ Seignette J. *Challenges to the Creator Doctrine. Authorship, copyright ownership and the exploitation of creative works in the Netherlands, Germany and the United States* (Kluwer, 1994), at 136 et seq.

⁸⁵ Jaszi, *op. cit.* at 489-490 and decisions cited therein.

⁸⁶ Ginsburg, *op. cit.*, 1088-1089.

⁸⁷ U.S. Code § 101(2): contribution to a collective work, part of a motion picture or other audiovisual work, translation, supplementary work, compilation, instructional text, test, answer material for a test, atlas.

⁸⁸ Bridy, “Coding creativity”, at 26-27; Butler *op. cit.* at 741.

Derivative works

The notion of derivative works is not harmonized internationally. In the US, for example, it is understood broadly, as a work “based upon one or more pre-existing works.”⁸⁹ But, as pointed out by Bridy, courts have interpreted the provision as meaning that the derivative work must contain material taken from the pre-existing work, which is not the case in AIs creations (since the AI-created work does not incorporate the code that produces it).⁹⁰ And, in any case, treating AIs creations as derivative works would not solve the ownership problem; the owner of the software/AI would not automatically be the owner of the AIs creation, since even though the right to produce a derivative work belongs to the original copyright owner, derivative works can be independently copyrightable.⁹¹

3. SHOULD COPYRIGHT PROTECT AIS AS AUTHORS?

3.1. COPYRIGHT RATIONALES

The idea of romantic authorship – the author as a single individual – has changed through time. It has accommodated joint authorship and entrepreneurial works, for instance. But the current framework cannot accommodate non-human authors, as demonstrated in the previous chapter. This begs the question of whether copyright law should be stretched to accommodate AIs as creators –always bearing in mind that, if that is the case, copyright would be only a piece in the constellation of legal standing of AIs,⁹² and that the question brings about serious reflections on the broader consequences of affording legal personhood to machines.

In other words, the AIs is the author in factual terms, but should it be the author in legal terms? In this regard, it may be problematic to assess the degree of autonomy of the AIs, and to what extent there is (copyright protected) human input in the act of creation in the case of works with contributions from both human and machine.⁹³ Programmers and users can be seen as contributors to the work (depending on the AIs), but should they be considered as authors? It all depends, of course, on the level of involvement. Where the computer program is a tool employed by the user to produce a work, the user is the creator; there is a high level of creativity input on his part. Likewise, programmers will be authors where the final product results from their intellectual endeavours: for example, where the program displays an animation of fireworks whenever a button is pushed, the creative input is from the programmer that created the animation, rather than from the user who pushes the button.⁹⁴ But this is no different than assessing the degree of originality for purposes of protection of a fully human-produced work – if there is enough of a human input in creating an original work, then copyright protection will be available at least for the human-created part of the work (even though, admittedly, there may be cases where human and machine contributions are not easy to separate or evaluate). Also in the cases of works which are partly human, partly

⁸⁹ U.S. Code § 101.

⁹⁰ Bridy, “Coding creativity”, at 25-26.

⁹¹ Ibid.

⁹² Grimmelmann J, “There’s no such thing as a computer-authored work – and it’s a good thing, too”. 39 *Columbia Journal of Law & Arts* 2015-2016; 403:414

⁹³ See e.g. a software that introduces arrangements such as bass, guitar or strings into a melody created by the user through choosing standard chord symbols, as explained in McCutcheon, “The vanishing author”, at 931-934.

⁹⁴ Grimmelmann, *op. cit.*, at 409-410.

machine authored, however, the question remains the same: should copyright protection be available for works (or parts thereof) that are created by AIs?

This question calls for a consideration of copyright rationales. By analysing the justifications for copyright protection in the first place, a conclusion on whether new subjects and/or subject-matter should come under copyright protection becomes more grounded. The number and classification of copyright rationales differs greatly in the literature.⁹⁵ One option is to distinguish two major lines of argument: the natural rights justification and the utilitarian justification.⁹⁶ The natural rights argument equates copyright to a natural right, which implies that laws do not create the right, but merely recognize its existence. From this premise, two main theories of copyright rationales flow: the labour theory and the personality theory.

The labour theory, formulated by the British philosopher John Locke in the 17th century, implies that every man should be the proprietor of the product of his labour. Even though Locke never applied his theory to intellectual property, his thought is relevant in that field to the extent that the underlying material of an intellectual property right – an idea or a concept – belongs to the commons. Consequently, if one's intellectual labour contributes to shaping an idea or concept so that it turns into an intellectual good, then one should be entitled to have some kind of proprietary right over the result.⁹⁷ This suggests the idea of “reward”: the intellectual labour invested in creation should be rewarded, creators should be compensated for their intellectual effort.⁹⁸ In other words, under this theory, there is a reason why creative expressions are protected – they are the result of intellectual labour, and the latter should be protected, even if the underlying idea is not. This premise is expressed in case law from several jurisdictions that determine that it is the mind behind the creative process, not the executant, that ultimately is deserving of authorship status.⁹⁹ This is significant, as it recognizes the mind as an important element of authorship.

The personality rights theory, for which mainly the philosophers Kant and Hegel are responsible, holds that an intellectual work embodies its creator's personality or will. Therefore, the work is worthy of protection because it is an expression of the personality or self of its creator.¹⁰⁰ According to this conception, property is an extension of personality, providing a means for self-actualization and personal expression.¹⁰¹

⁹⁵ See, for example, Yen A. “Restoring the Natural Law: Copyright as Labor and Possession”. 51 *Ohio State Law Journal* 1990; 517; Fisher W. *Theories of Intellectual Property*. <http://www.law.harvard.edu/faculty/ffisher/iptheory.html> (6 June 2017, date last accessed); Bently & Sherman, *op. cit.*, at 34-39; Guibault L. *Copyright Limitations and Contracts. An Analysis of the Contractual Overridability of Limitations on Copyright* (Kluwer Law International, 2002) at 7 *et seq.*

⁹⁶ Ramalho A. *The competence of the European Union in Copyright Lawmaking. A Normative Perspective of EU Powers for Copyright Harmonization* (Springer, 2016), at 3.

⁹⁷ Fisher *op. cit.* at 170.

⁹⁸ Guibault *op. cit.* at 8-11; Hughes J. “The Philosophy of Intellectual Property”. 77 *Georgetown Law Journal*; 287: 296 *et seq.*, discussing the several interpretations of “reward” in the context of the labour theory.

⁹⁹ Ginsburg, *op. cit.*, 1072-1074, and case law cited therein.

¹⁰⁰ Hughes *op. cit.* at 330 and Fisher *op. cit.*

¹⁰¹ Hughes *op. cit.* at 330.

Both natural rights theories focus on the relation between the author and his work, and not on the link between such relation and society.¹⁰² Many authors consider copyright to be a mix of property and personality interests, being therefore based on both theories.¹⁰³ Here a main obstacle of using natural rights justifications for granting copyright protection to AIs: it is doubtful that, at least for now, AIs can engage in any type of relation with their work, for that entails deeper emotional connections. The labour theory implies a reward for effort, which is something foreign to machines (at least at the current time, where there is no such thing as machine consciousness and emotions). Although it can be argued that humans don't always make a conscious effort to create, it is a fact that at least sometimes they can articulate their creative process and explain their creative choices; machines, on the other hand, are unaware of its processes.¹⁰⁴ They are deprived of intention states (such as desire, for example), and therefore the reward mechanism speaks little to them. The personality theory as a justification for the grant of copyright seems even less applicable, as "personality" implies a person, with intention states that, as observed, are for now absent in AIs.

In contrast to the natural rights theory, the utilitarian justification considers that the main goal of copyright is to promote social welfare, which is achieved by granting incentives to creation and supporting the dissemination of intellectual goods to the public.¹⁰⁵ This "incentive" element is not to be confused with the "reward" argument presented by the natural rights theory: here, copyright is granted having society's interests in mind (see e.g. the US example, where grant of copyright is constitutionally linked to the progress of the science and useful arts¹⁰⁶). Utilitarianism views copyright as a positive (as opposed to natural) right, which is granted with the aim of furthering societal goals. As a result, the rights granted to creators are instrumental to society's interests, causing them to be carefully delineated; the limitation to those rights, conversely, is much less restrained, due to the socially desirable outcome of access to creative works.¹⁰⁷

Granting copyright to AIs does not comply with the utilitarian justification for protection either. AIs do not need an incentive to create (again, at least not for now, as they lack consciousness), not to mention that they have no means of reaping the economic benefits deriving from copyright protection (which dictated that protection in the first place).¹⁰⁸

Absent any justification for copyright protection, and even if AIs could be given legal personhood for purposes of holding rights, there is no argument to support the grant of

¹⁰² Lacey L. "Of Bread and Roses and Copyrights". 6 *Duke Law Journal* 1989; 1532: 1564 and Guibault *op. cit.* at 8.

¹⁰³ See, e.g., Hughes *op. cit.* at 329-330, 365-366; van Gompel S. *Formalities in Copyright Law. An Analysis of their History, Rationales and Possible Future* (Kluwer Law International, 2011) at 218 and references cited therein.

¹⁰⁴ Dartnall T. "Introduction: on having a mind of your own", in T. Dartnall (ed.), *Artificial Intelligence and Creativity* (Springer, 1994), at 36.

¹⁰⁵ Guibault *op. cit.* at 10; Derclaye E. *The Legal Protection of Databases. A Comparative Analysis* (Edward Elgar, 2008), at 12; Fisher, *op. cit.*

¹⁰⁶ Clifford R. "Intellectual Property in the Era of the Creative Computer Program: Will the True Creator Please Stand Up?". 71 *Tulane Law Review* 1996-1997;1675: 1700-1702.

¹⁰⁷ Ramalho *op. cit.* and references cited therein.

¹⁰⁸ Samuelson P. "Allocating Ownership Rights in Computer Generated Works". 47 *U.Pitt.L.Rev.* 1985; 1185: 1199.

copyright. However, it can still be explored whether someone else should be granted copyright protection in the cases where the output is AI-created. The link to the programmer might be too tenuous for a claim of copyright authorship; since s/he was not directly involved in the creation of the work, the work does not reflect her/his personality, nor should s/he be rewarded for something that s/he has not created. Likewise, s/he cannot receive any incentive to create a work that s/he will not produce. The reward and/or incentive s/he receives, and her/his personality, will be reflected on the AIs itself, not on the secondary products that it creates. The programmer should thus be entitled to the benefits deriving from the creation of the AIs; but not to “meta benefits” that derive from AIs creations. Such solution would lead to a double reward of the author of the AIs (who would then be able to derive income not only from the creation of the AI but for all its output).¹⁰⁹ Some of these arguments also apply to the user that operates the AIs – s/he is not the creator of the works, and therefore the works do not reflect her/his personality, and any benefits deriving from it do not serve as either an incentive or reward for her/his creations, as the user hasn’t created anything.

3.2. OTHER OPTIONS

Another possibility to protect AIs creations would be to establish a regime akin to the protection of producers or broadcasters, whose protection has a commercial or technical nature. This could be achieved through e.g. the grant of a neighbouring right (for civil law countries), by enlarging existing categories such as those of entrepreneurial works (such as the one existing in the UK) or the regime of initial ownership of subject-matter other than works (which exists in Australia).¹¹⁰ It is also possible to consider the grant of a sui generis right in AI-created works, much like the EU legislature decided to do for makers of databases.¹¹¹ The common rationale here is protection of investment.¹¹²

The introduction of a new sui generis right in the legal order should however be carefully reflected upon. The Evaluation Report of the Database Directive has admitted that the economic impact of the sui generis right on database protection is unproven, and that the sui generis provisions have caused “considerable legal uncertainty.”¹¹³ The European Parliament followed-up and called for the Commission to abolish the Database Directive.¹¹⁴

The grant of a neighbouring right or the enlargement of existing categories (depending on the jurisdiction), on the other hand, has been used in several legislations to protect different kinds of investment (it is the case, for instance, of the protection of producers or broadcasters). However, again, the introduction of a right in the legal order is not free

¹⁰⁹ *Ibid.*

¹¹⁰ Sections 84 et seq. of the Australian Copyright Act. This particular solution was one of the options advocated by McCutcheon, “Curing the authorless void.”

¹¹¹ See Database Directive.

¹¹² van Eechoud M et al. *Harmonizing European Copyright Law. The Challenges of Better Lawmaking* (Kluwer Law International, 2009), at 191; Torremans P. *Holyoak & Torremans Intellectual Property Law* 5th ed (OUP, 2008) at 192-193 (in relation to entrepreneurial works); Derclaye, *op. cit.*, at 45 (in relation to databases)

¹¹³ First evaluation of Directive 96/9/EC on the legal protection of databases. http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf (6 June 2017, date last accessed).

¹¹⁴ European Parliament resolution of 19 January 2016 on Towards a Digital Single Market Act (2015/2147(INI)), paragraph 108. <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+TA+P8-TA-2016-0009+0+DOC+PDF+V0//EN> (6 June 2017, date last accessed).

of negative consequences and impact in other policy areas, and its creation should be the object of in-depth studies in any case. A solution may then be either a complete absence of rights (as an opposite solution to privatisation), or the combination of such absence with weak or contained neighbouring rights. The next section will examine this in more detail.

4. A PROPOSAL: PUBLIC DOMAIN + DISSEMINATOR'S RIGHT

Last 16 February 2017, the European Parliament adopted a resolution with recommendations to the Commission on Civil Law Rules on Robotics.¹¹⁵ There, the importance for the legislature to consider the legal and ethical implications and effects of AI without stifling innovation is stressed. The Resolution admits the possibility that in the long run AIs could surpass human intellectual capacities, and recognizes that some aspects of robotics might require specific consideration. It thus calls on the Commission to “support a horizontal and technologically neutral approach to intellectual property applicable to the various sectors in which robotics could be employed.”¹¹⁶ The explanatory statement accompanying the Resolution clarifies in that context that “the elaboration of criteria for “own intellectual creation” for copyrightable works produced by computers or robots is demanded.” It seems that the European Parliament is calling for a dissociation of the requirement of protection from the concept of (human) authorship. A further hint is given in the section of the Resolution that concerns liability. While not related to copyright, there is a call there for the Commission to create a specific legal status for robots, “so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to causes where robots make autonomous decisions or otherwise interact with third parties independently.” It is possible that such “electronic personality”, if created for purposes of liability rules, may spill over to the field of intellectual property.

Proponents of attributing legal personality to AIs frequently use the argument that companies have separate legal personality,¹¹⁷ thus creating a precedent of attribution of legal personality (and consequently authorship) to AIs. This is not, in my view, sound. Companies still have a direct link to human influence; they do not make autonomous decisions by themselves, nor do they learn skills by themselves as a separate entity from the human beings that compose it. By contrast, at least some AIs can function without that human link. Attributing legal personality to companies should not therefore constitute a basis for attributing legal personality to AIs, as the two situations completely differ from one another. If considering the attribution of legal personality to AIs, that should be done on its own merits.

¹¹⁵ European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)). <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2017-0051> (7 June 2017, date last accessed).

¹¹⁶ *Ibid.* at 18

¹¹⁷ In the UK, this argument is based on the case *Salomon v Salomon* [1897 AC 22], which established the principle of separate legal personality for companies. Proponents of the analogy of AIs with companies for purposes of recognition of legal personality include Davies C. “An evolutionary step in intellectual property rights – Artificial Intelligence and intellectual property”. 27 *Computer Law and Security Review* 2011; 601: 602.

At the present time, as has been demonstrated, authorship is intrinsically linked to requirements for protection. Where there is no human author, a work cannot be original; and without originality, a work cannot be protected by copyright.¹¹⁸ Such work belongs, thus, to the public domain, which is traditionally defined as encompassing intellectual elements not protected by copyright or whose protection has elapsed.¹¹⁹ However, even if society comes to a point where AIs have legal personality, it is doubtful whether copyright protection should at all be available. Legal personality or personhood is not confined to human beings, as the example of corporations demonstrates.¹²⁰ The cases where corporations are *considered as* authors (not authors per se) are limited and operate by way of legal fiction. “Real” authorship seems to be linked to the quality of being human, rather than that of having legal personality (although the latter is necessary to enjoy rights).

Perhaps more importantly, the absence of a justification for privatization should cause the subject-matter (AIs creations) to be part of the public domain. The legal basis for the existence of a public domain stems from the principle of equal negative liberty, which frames the public domain as an equal negative liberty to use certain information.¹²¹ This implies the complete lack of subjective rights and a universal possibility of access to the information (i.e., in this case, the AIs creations).¹²² The consequence of AIs creations being in the public domain is that they are free for everyone to use them, as no exclusive right exists. Advantages of the public domain include, thus, the unencumbered creation of new knowledge, free or low cost access to information, competitive imitation, or public access to cultural heritage.¹²³

A possible objection is the disparate (and consequently unfair) treatment of works depending on whether they are authored by an AIs or by a human being: if a copyright protected work (authored by a human being) would be created by an AIs instead, protection would not be available.¹²⁴ But this argument is overcome if one bears in mind the rationales of copyright, for these two works are not the same when it comes to the reasons to protect them. Authorship is, indeed, a central element for protection, not only de facto but also in terms of justification for protection in the first place. The point here

¹¹⁸ Dussolier S. *Scoping Study on Copyright and Related Rights and the Public Domain*. http://www.wipo.int/edocs/mdocs/mdocs/en/cdip_7/cdip_7_inf_2.pdf (7 June 2017, date last accessed) at 24: “the entrance to the copyright building is conditioned of finding of some degree of originality in the work.”; Erickson K et al. *Copyright and the Value of the Public Domain. An Empirical Assessment*.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/561543/Copyright-and-the-public-domain.pdf (7 June 2017, date last accessed), at 9.

¹¹⁹¹¹⁹ Definition advanced by Dussolier S, *op. cit.*, at 6-7. See also WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. *Note on the Meanings of the Term ‘Public Domain’ in the Intellectual Property System with Special Reference to the Protection of Traditional Knowledge and Traditional Cultural Expressions/Expressions of Folklore*. http://www.wipo.int/edocs/mdocs/tk/en/wipo_grtkf_ic_17/wipo_grtkf_ic_17_inf_8.pdf (7 June 2017, date last accessed), Annex paras. 4 and 22.

¹²⁰ See also Solaiman S. “Legal Personality of Robots, Corporations, Idols and Chimpanzees: A Quest for Legitimacy”. *Artificial Intelligence and Law* 2016, DOI: 10.1007/s10506-016-9192-3, at 3.

¹²¹ Peukert A. *A Doctrine of the Public Domain*. https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2713757 (7 June 2017, date last accessed), para. 16 *et seq.*

¹²² *Ibid.*

¹²³ WIPO, *op. cit.* para. 29.

¹²⁴ Argument adduced by e.g. McCutcheon, “The vanishing author.”

is that works created by AIs are not original because requirements for protection are linked to human authorship; and non-original works are not protected by copyright.

It is also worth noting that broadly stating that AIs creations are in the public domain is not enough, since, as pointed out above, there are works that have human and AI input. A preliminary consideration should thus be the level of involvement of humans. This can be hard to assess, and it is doubtful whether the substantiality test used in copyright – i.e., assessing whether the original input (from a human being) is substantial enough to deserve copyright protection – will provide a straightforward answer at all times. Moreover, assessing whether a creation by an AIs and a human being is original for purposes of copyright protection will entail tracing the human contribution (if at all possible), and evaluating whether such contribution is enough to merit copyright protection. This will inevitably mean that the connection between the work and the human author will have to be judged. However, not all jurisdictions follow this practice, i.e., not all courts look at the work and trace back the process of creation to its origin; in some jurisdictions, courts tend to focus on the work and not on who created it for purposes of assessing originality.¹²⁵ Different court practices, grouped with the fact that some works merge indistinctly human and machine contributions, may prove to be a hurdle.

With regard to AIs creations that are deemed to be (fully or partially) part of the public domain, a further distinction needs to be drawn. “Public domain” does not mean that free access is ensured; free access and free use are not interchangeable notions.¹²⁶ A distinction must be made here between creation and dissemination. The creator of the work – the AIs – does not need an incentive to create, nor does it make sense to protect works as an extension of its (non-existing) personality, or to award it a reward for its (non-existing) effort to create. It is however possible that someone who disseminates AIs creations (thus bringing them to the public) needs to be incentivized or rewarded for doing so, much like e.g. the publishers of books in the public domain expect users to pay for copies of the book. In other words, the public domain status of AIs creations does not mean that every contribution relating to such creations should go unremunerated – either through copyright or related rights–, but that is a different question from authorship (and rights derived from authorship alone).

A “disseminator’s right”, bearing a similar regime to the publisher’s right in the publication of previously unpublished works as prescribed by the EU Term of Protection Directive, could be a solution. Article 4 of the Term of Protection Directive gives publishers a 25-year protection equivalent to the economic rights of the author for the first lawful publication or communication of a previously unpublished work after the expiry of copyright protection. The sentence “after the expiry of copyright protection” does not mean that the work must have been protected by copyright some time in the past; some Member States, such as Spain, have explicitly extended the right

¹²⁵ See for example S. van Gompel, “Creativity, Autonomy and Personal Touch”, at 128, referring to the Netherlands; Goldstein P & Hugenholtz B. *International Copyright Law. Principles, Law and Practice* (OUP, 2010), at 193-194, referring to Switzerland.

¹²⁶ Dussolier, *op. cit.*, 7-9.

to works that were never protected by copyright.¹²⁷ This right is exactly intended to stimulate publication of works.¹²⁸

5. CONCLUSION

At the present time, it is uncertain how AIs will technically evolve, and how law- and policy-makers will react to increasingly autonomous machines. In the field of copyright, we should take this uncertainty as an opportunity to rethink rationales for privatization in general, and where to place AIs creations in that equation specifically. Justifications for granting copyright protection do not fit AIs creations, and privatization through the grant of (exclusive) rights should not be readily chosen without further thought.

Rather, legislators should consider a public domain model for AIs creations. Indeed, that stems from the fact that the public domain is the natural alternative path to privatization. But more than that, placing AIs creations in the public domain allows for creation of new knowledge and easier access to information, to name only a few advantages. The attribution of AIs creations to the public domain should be coupled with the establishment of a “disseminator right” as a tool to ensure that AI creations reach the public. The design of such right should however not endanger the public domain nature of AIs creations, and should therefore be limited in scope.

This solution is not without flaws, and may prove complex in cases where the creation merges human and AI input, especially for jurisdictions where courts are not in the habit of tracing works back to its authors. Moreover, jurisdictions that have the regime of computer-generated works may be resistant to the idea of a public domain model grouped with a disseminator right, and choose instead to extend the regime of computer-generated works to every type of AIs creations. However, the eventual obstacles should not distract from the consideration of privatization versus public domain rationales; and from the fact that, independently of the specific regime of privatization, the latter seems to stand on a thin basis in the realm of AIs creations.

¹²⁷ Angelopoulos C. “The Myth of European Term Harmonisation – 27 Public Domains for 27 Member States”. 43 *International Review of Intellectual Property and Competition Law* 2012; 567: 592

¹²⁸ Bradshaw D. “The EC Copyright Duration Directive: Its Main Highlights and some of its ramifications for businesses in the UK entertainment industry” 6 *Entertainment Law Review* 1995; 171: 174.