UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG | WITS SCHOOL OF LAW

A LEGAL APPROACH TO WHETHER AI GENERATED CONTENT SHOULD BE PROTECTED UNDER COPYRIGHT

By

1839935

Submitted in partial fulfilment of the requirements for the degree of

Master of Laws by Coursework and Research Report

at the University of the Witwatersrand, Johannesburg

Date: 2 October 2023

DECLARATION

I declare that this report is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Laws in the field of Information and Communications Law at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.

I have submitted my final Research Report through Turnitin and have attached the report to my submission.

Word Count: 10,399

1839935

1 October 2023

ABSTRACT

Currently, there is no clear answer for whether AI-generated content should be protected under copyright law in South Africa and if so, who is the author and who owns the copyright. As AI is growing more advanced and widely used, the potential for confusion grows and thus clarity on the law's position is important. In this paper, I will examine how AI generates works and compare this to the purpose of copyright law. I will then determine whether granting AI-generated works copyright protection aligns with the purpose of copyright law.

Further, I will conduct an analysis on how different countries have dealt with the question of whether AI-generated content should be protected under copyright. This will help pinpoint the factors to consider when answering this question such as the requirement of human authorship, legal or juristic person ownership of the copyright and whether the works are copyrightable. It is important to consider how South Africa's legal system should approach issues surrounding AI-generated content and copyright.

In examining the South African legal position on this question, I will conduct an analysis on the approaches taken by the US, the UK, Germany, Australia, China, and South Africa in relation to AI-generated works and copyright. This range of countries will allow for a greater understanding of the issues, complexities, and factors to consider while answering this question.

Table of Contents

I. INTRODUCTION

Artificial Intelligence (AI) can be defined as computer systems performing tasks using pattern recognition to make decisions and learn from experience.[1] AI has many differing definitions as it is ever evolving.[2] The concept of intelligence itself is vague so AI researchers mainly refer to the notion of rationality. Rationality is the ability of AI to choose the best path towards a goal.[3] AI is currently mostly assisted intelligence rather than truly autonomous intelligence as AI works as a tool to aid humans in their tasks.[4]

AI-generated content's constant development and wide usage in our societies has led to questions about whether these works should be protectable under copyright law.[5] In South Africa, our courts have yet to deal with this question. Thus, it is useful to engage in a comparative analysis of the current approaches in the US, UK, Germany, Australia, and China. This can provide a deeper understanding of what factors to consider, the possible issues as well as how best to give effect to the purpose of copyright law.

I will analyse how AI generates content as well as the purpose of copyright. I will then determine if AI-generated works fit within the parameters of copyright protection based on the justifications of copyright. If the purpose of copyright is to incentivise creation through economic and moral rights, then AI would not require copyright protection for its works. AI is not motivated through financial or moral means. It will continue to create as it was coded to do so.

Further, I will examine how different countries approach the question of copyright in AI-generated works.[6] This will provide clarity on the factors South Africa should consider when dealing with AI-generated works and copyright.[7] It may also aid in answering whether there

[1] H Sheikh, C Prins, E Schrijvers 'Artificial Intelligence: Definition and Background' In: Mission AI. Research for Policy (2023) s1.
[2] Ibid at s2.
[3] European Commission's High-Level Expert Group on Artificial Intelligence 'A definition of AI: Main capabilities and scientific disciplines' available at https://ec.europa.eu/futurium/en/system/files/ged/ai_hleg_definition_of_ai_18_december_1.pdf accessed on 20 July 2023 1.
[4] H Hassani, ES Silva, S Unger, M TajMazinani, S Mac Feely 'Artificial Intelligence (AI) or Intelligence Augmentation (IA): What Is the Future?' *AI* (2020) 1(2):143-155.
[5] A Zhuk 'Navigating the legal landscape of AI copyright: a comparative analysis of EU, US, and Chinese approaches' *AI Ethics* (2023) at 1-2.
[6] Section 223 of the Constitution of the Republic of South Africa, 1996.
[7] Ibid.

should be any changes to the Copyright Amendment Bill to make the law clearer and avoid future issues.

II. WHAT ARE AI-GENERATED WORKS?

To answer whether AI-generated works should be protectable under copyright, the nature of how AI generates works must first be ascertained. AI Engineering is an extension of software engineering.[8] AI developers write code setting parameters for the AI. The AI proceeds to generate works through a neural network which performs pattern recognition.[9] Al developers/engineers are hired by companies and paid as an incentive to create AI.

Handcrafted Knowledge Systems ("HKS") were the first "AI". HKS's are AI which use long series of programmer made inputs and outputs in a rule-based software system to function (if 'a' happens then do 'b').[10] This was a codification of human knowledge. The computer was not learning for itself, it was following a script set out by the developers.[11]

Machine learning AI systems of today work differently. Their knowledge is not taken directly from human programmers' hand coded rules.[12] Rather the programmers provide the AI with training data and then the AI must learn what the correct action is through trial and error using pattern recognition.[13] The human programmers aid in the learning process by guiding the AI through the choice of datasets, what algorithms to run and in troubleshooting.[14]

AI-generated images usually use Generative Adversarial Networks (GANs) to produce images with modifiers or improvements to increase realism and originality.[15] GANs use deep learning (three or more neural networks) and a convolutional neural network (CNN) to analyse visual

[8] J Bosch, H.H. Olsson, & I Crnkovic 'Engineering AI Systems: A Research Agenda' (2021) *Artificial Intelligence Paradigms for Smart Cyber-Physical Systems* 1-19.
[9] P Boucher 'Artificial intelligence: How does it work, why does it matter, and what can we do about it?' (2020) *EPRS | European Parliamentary Research Service* 3.
[10] J.G. Hoffer, A.B. Ofner, F.M. Rohrhofer et al. 'Theory-inspired machine learning—towards a synergy between knowledge and data' (2022) *Weld World 66*, 1291–1304; J Launchbury 'A DARPA Perspective on Artificial Intelligence' available at https://www.darpa.mil/attachments/AIFull.pdf accessed on 5 April 2023 5-6.
[11] Ibid at 7.
[12] Boucher op cit note 9 at 3.
[13] Ibid at 3.
[14] G Allen 'Understanding AI Technology' *Joint Artificial Intelligence Center* (2020) at 7-8.
[15] E Cetinic & J She 'Understanding and Creating Art with AI: Review and Outlook' (2022) *ACM Transactions on Multimedia Computing, Communications, and Applications* 10.

images. GANs sort through large data sets, find patterns and then generate a new example to blend in with the original data set.[16]

GANs have two sub-models namely the generator model (trained to generate new realistic images) and the discriminator model which deems the new images as fake (AI-generated) or real (from the original dataset). The aim is for the generator model to produce such realistically original images that the discriminator model as well as humans cannot tell that it was AI-generated.[17]

AI-generated writings are created using Large Language Models (LLMs). LLMs are developed using deep learning models containing a billion parameters. They are trained in natural language processing through large quantities of unlabelled data and human-written text.[18] The number of datasets as well as the fine tuning done by software engineers allows the AI to learn to generate its own writings.[19] This is done using prompts from humans as the AI's instructions. AI is usually a co-creator of content rather than the sole creator.[20] The possible copyright issue which may arise for both GANs and LLM AI-generated works is that the training datasets can contain copyright protected works leading to concerns regarding copyright infringement.

AI generates work using human input to guide it. AI does not generate works without human intervention yet. So, AI-generated works that exist today could be referred to rather as AI-aided works. This is important to note as it becomes apparent in the next sections that human authorship is necessary for copyright protection. However, how much human intervention is needed to meet the authorship and originality requirements within copyright law needs to be interrogated.

III. WHAT IS THE PURPOSE OF COPYRIGHT?

To assess whether AI-generated content should be protected under copyright law I will first examine the purpose of copyright. This will allow me to determine whether having AI-

[16] Ibid at 9-10.
[17] Ibid at 9-10.
[18] I Alberts, L Mercolli, T Pyka et al. 'Large language models (LLM) and ChatGPT: what will the impact on nuclear medicine be?' (2023) *Eur J Nucl Med Mol Imaging* 50, 1549–1552.
[19] Ibid.
[20] D Yang, Y Zhou, Z Zhang, T. J-J Li, & R LC 'AI as an Active Writer: Interaction strategies with generated text in human-AI collaborative fiction writing'. In A. Smith-Renner, & O. Amir (eds.), *Joint Proceedings of the IUI 2022 Workshops: APEx-UI, HAI-GEN, HEALTHI, HUMANIZE, TExSS, SOCIALIZE* (2022) 56-65.

generated content protected under copyright law aligns with the purpose of copyright and thus whether it should be protected.

(a) What are the justifications of copyright law?

I will discuss five theories of copyright justification. The appropriation theory which includes the labour-based theory (including the rewards theory) and the personality theory, the utilitarian theory, and finally the economic theory.[21] Appropriation theories are based on the idea that when one takes possession of an idea or a way of material production that they become the lawful owner thereof.[22] This theory has a focus on the creators' authorial contributions. They are creator-centric and use the creator's self-actualization or labour to justify their right to ownership.[23]

Further, the labour theory, as set out by John Locke, says that people have property rights over the creations resulting from their own labour.[24] The Lockean labour theory allows for such works to be available to the commons (the public) as raw material on which to add their own labour.[25] This would support how AI generates creative works as it uses writings and images in the online sphere to generate its own work. Thus, the AI is adding its own labour to raw materials, it would then be the owner of the resultant work. However, the Lockean labour theory is aimed at people as it is based on their individual natural right to property over the products of their labour and AI is not a person.[26]

In addition, the rewards theory posits that copyright awards ownership (exclusive legal rights) over original creative works. This allows for the monetization of creative works. This then incentivises people to keep putting in their labour to create, to benefit society.[27] Copyright rewards creators for creating social utility.[28] AI itself does not need to earn money or be awarded legal rights to incentivize it to continue to generate content. AI does what it is coded to do. The people and companies responsible for the coding of the AI are already incentivised

[21] M Longan 'A System Out of Balance: A Critical Analysis of Philosophical Justifications for Copyright Law through the Lenz of Users' Rights' (2022) *Michigan Journal of Law Reform* 56.
[22] Ibid 4-5.
[23] Ibid 4-5.
[24] T Aplin & J Davis 'Copyright I: history, justifications, sources of law, and subsistence' in *Intellectual Property* (2022) 4-7.
[25] Ibid.
[26] Ibid 5-6.
[27] Longan op cit note 21.
[28] M Du Bois 'Justificatory Theories for Intellectual Property Viewed through the Constitutional Prism' (2018) *PER / PELJ* 21,19-21.

to continue creating and improving the AI as they are paid to do so.[29] Thus, the rewards which come from copyright protection are unnecessary for both AI itself as well as AI creators to continue to produce works. They are already being rewarded for creating social utility.

The second appropriation theory, the Hegelian personality theory, would not support allowing AI-generated works protection under copyright. It posits that creative works are tied to the creator's well-being and sense of self. Hegel saw intellectual property ("IP") as a mechanism for protecting creators' self-expression and dignity.[30] Personality theory supports copyright law as the protection of the creators' moral rights.[31] AI does not create works as a means of self-expression, nor is it able to claim moral rights as it has no legal personality. Machines are not afforded dignity under s10 of the Constitution of the Republic of South Africa as the heading states "human dignity".[32] However, the creators and users of the AI are human beings and are afforded the right to dignity. Thus, personality theory would only allow the creators or users of the AI to claim copyright protection.

The economic theory posits that the high costs for the initial creation and the marginal distribution costs of IP result in a market failure. Where creators cannot recuperate the money spent on production and distribution, they will stop creating resulting in inefficient resource allocation. Copyright law can correct this by creating an economic incentive for creators.[33] IP is non-rivalrous as when one person uses the product, others may still use it without there being a reduction of the product. The creation of a property right through copyright law creates a limited monopoly and provides an incentive for creators to create.[34] AI is not in need of financial or economic incentivisation in the same way as their human counterparts. The AI's human creators do not require further incentives to create as they are already paid to do so within their jobs. Thus, the economic theory would only justify the companies and humans behind the AI to claim for copyright of the AI algorithm itself.

The Utilitarian theory uses the philosophy that the best action results in the greatest net happiness for the most people with the least suffering. When applied to copyright law, this would skew towards the interests of the users/consumers as there will almost always be more

[29] E Bonadio & L McDonagh 'Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity' (2020) *Intellectual Property Quarterly* 6.
[30] Du Bois op cit note 28 at 19-21.
[31] Ibid.
[32] Section 10 of the Constitution of the Republic of South Africa, 1996.
[33] Du Bois op cit note 28 at 27-28.
[34] Ibid at 27-28.

users/consumers than creators for a product.[35] A utilitarian construct may allow for free reign of the public over creative works. However, without any protections through copyright there would be a decrease in creative ideas and works and thus a decrease in the happiness of the majority.[36] Utilitarian theory suggests that there be the least number of protections able to produce the most happiness. This is done by having enough protections to promote creation but not too many to stifle the enjoyment of such creations by the public.[37] The current South African copyright law perhaps offers too wide of a protective net over creative works to produce this result and thus are not currently utilitarian.

For the purposes of this paper, I accept that the purpose of copyright is to work as an incentive to encourage the creation of works by humans.[38] Copyright incentivises creation through the protection of moral rights and the granting of exclusive legal rights which results in financial and economic incentives. None of these incentives are useful when applied to AI as it creates as it is coded to do so. Thus, the copyright justifications do not support AI-generated works receiving copyright protection.

(b) Who are the subjects of copyright law?

The subjects of copyright law are the person or legal entity who owns the copyright and the users of the copyrighted materials. There are also intermediaries such as publishers who can complete a contract with the author to take assignment of the copyright. The contract allows the publisher to gain ownership (partly or wholly) over the copyright protected work.[39] This shows that the author of the copyright may not always be the owner of the copyright. The same is also true with companies. Where employees' author a creation in the course and scope of their employment under a service or apprenticeship contract, the employer maintains ownership over the copyright thereof.[40] The copyright owner of commissioned works is the person who paid for the work to be commissioned.[41] A user-rights approach to copyright considers the permissible uses of copyrighted materials as the user's rights. It emphasises the

[35] Longan op cit note 21 at 20-24.
[36] Ibid at 20-24.
[37] Ibid.
[38] Ibid at 29.
[39] Section 22 of the Copyright Act 98 of 1978.
[40] Ibid at s21(1)(d); *King v SA Weather Service* 2009 (3) SA 13 (SCA).
[41] Ibid s21(1)(c).

user's role as partner to the creators in achieving the objectives of copyright.[42] Users are not just making use of copyrighted material. Users are active participants in the promotion of the creation, dissemination, and use of copyrighted works.[43]

South Africa is party to the Berne Convention for the Protection of Literary and Artistic Works ("the Berne Convention").[44] The Berne Convention seeks to protect the rights of authors and vest in them control over the use of their works.[45] It provides authors with economic and moral rights,[46] neither of which is useful in incentivising AI to create as discussed above. While there is no definition of 'author' within the Berne Convention, the wording suggests that it refers to human authors though the final determination of authorship is left to national law.[47] AI would not be considered an author within the Berne Convention under Art. 2. Berne members then have no obligation to protect purely AI-generated works even where the origin countries have chosen to protect them under copyright.[48]

South Africa is party to the Marrakesh Agreement which established the World Trade Organization ("WTO"). South Africa as a member of WTO is automatically bound by the TRIPS agreement.[49] The goals of the TRIPS Agreement are to reduce impediments to international trade, to promote protection of intellectual property rights ("IPRs") and to ensure enforcement procedures for IPRs do not become barriers to trade.[50] Protection and enforcement of IPRs should contribute to the promotion of technological dissemination and innovation to the users and producers mutual advantage.[51] As AI will continue to be improved upon by technology company employees, technological innovation will be promoted without the need to extend copyright protection to AI-generated works. Furthermore, if AI-generated works were to be unprotectable by copyright then those works would become a part of the public

[42] N Elkin-Koren 'Copyright in a Digital Ecosystem: A User-Rights Approach' in R Okediji (ed) *Copyright in an age of Limitations and Exceptions* (2015) 2-3.
[43] Ibid at 2-3.
[44] WIPO 'WIPO-Administered Treaties: Contracting Parties Berne Convention' available at https://www.wipo.int/wipolex/en/treaties/ShowResults?search_what=C&treaty_id=15 accessed on 15 April 2023.
[45] Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979) at Article 1.
[46] Ibid at Article 6.
[47] JC Ginsburg 'People Not Machines: Authorship and What It Means in the Berne Convention' (2018) *IIC* 49, 131–135 at 135.
[48] Ibid.
[49] TRIPS: Agreement on Trade-Related Aspects of Intellectual Property Rights available at https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm accessed on 10 April 2023.
[50] Ibid at Preamble.
[51] Ibid at Article 7.

domain. This would help balance the rights of users and producers by adding to the information commons and promoting further creation.[52]

(c) What works are eligible for copyright protection in South Africa?

The Copyright Act 98 of 1978 provides protection for nine categories of works namely literary works, artistic works, musical works, cinematograph films, broadcasts, sound recordings and programme-carrying signals as well as computer programs and published editions.[53] Electronic databases are included in literary works and underlying code is included in computer programs. Thus, the code underlying an AI program would be protected under copyright law.[54]

There are four requirements that creative works within the categories must meet to enjoy copyright protection. These are: originality, existence in a material form, the author must be a 'qualified person' as defined under s3(1) of the Copyright Act and publication.[55] Originality requires that the creator or author used skill and labour in the creation process. South African courts do not look for inventiveness or creativity. They consider the degree or amount of labour, judgement and skill applied during creation.[56] The skill, labour and judgement must be substantial rather than minimal.[57] How much skill or labour is necessary for originality is decided on the facts of each individual case.[58] Time and effort are not enough.[59]

There is no copyright in ideas, existence in a material form is required.[60] A qualified person is either a South African citizen or a person who is resident or domiciled[61] in South Africa.[62] Further, a qualified juristic person is a company incorporated under South African laws.[63] AI is not a natural person nor a juristic person, AI does not have legal personality and cannot be

---

[52] AJ van der Walt & M du Bois 'The importance of the commons in the context of intellectual property' (2013) 1 Stell LR 32, 44-46.
[53] Copyright Act op cit note 39 at s2(1).
[54] Ibid at s2(1).
[55] Ibid at s2(2).
[56] *Kalamazoo Division (Pty) Ltd v Gay* 1978 (2) SA 184 (C) para 192.
[57] *Haupt t/a Softcopy v Brewers Marketing Intelligence (Pty) Ltd* 2006 (4) SA 458 (SCA) para 35.
[58] *Klep Valves (Pty) Ltd v Saunders Valve Co Ltd* 1987 (2) SA 1 (A) at 22H – 23A.
[59] *Moneyweb (Pty) Ltd v Media 24 Ltd & another* 2016 3 All SA 193 (GJ); 2016 (4) SA 591 (GJ).
[60] W Alberts "Copyright in ideas: A lesson from the ivory tower" (2008) *Juta's Business Law* 48.
[61] LexisNexis & Squire Sanders 'International aspects of copyright' available at https://www.squirepattonboggs.com/~/media/files/insights/publications/2012/10/international-aspects-of-copyright/files/international-aspects-of-copyright-practice%20note/fileattachment/international-aspects-of-copyright-practice-note.pdf accessed on 8 April 2023: The Berne Convention provides a system of reciprocity allowing foreign copyright owners to be treated as a national of the place where an infringement took place so they can claim copyright protection there. This is known as the principle of national treatment.
[62] Copyright Act op cit note 39 at s3(1).
[63] Ibid at s3(1).

considered a qualified person. Finally, publication involves copies of the relevant work being issued to the public with the copyright owners' permission in a quantity that can meet the needs of the public.[64]

A qualified person is necessarily a human or a juristic person, there is no mention of machines or computer systems being qualified people.[65] Further, originality requires the author to have used a substantial degree of skill, labour, and judgement in the creation of the works. This does not lend itself to providing AI-generated works created without a qualified persons labour and skill with copyright protection. AI works generated with enough human skill and labour involved would be able to be protected through copyright. What 'enough human skill and labour' means is determined by the court in a fact-based enquiry on a case-by-case basis. It has yet to be decided which prompts amount to having been written with substantial skill and labour. The Act states the author of an artistic, dramatic, literary work or computer program that is computer-generated would be the person who made the necessary arrangements for the creation.[66] The extent of human intervention needed to meet the necessary arrangement requirement has yet to be interrogated.

(i) Payen v Bovic

In analysing how the Copyright Act and our court system should deal with the question of copyright protection of AI-generated works the *Payen v Bovic* case is useful. In *Payen v Bovic*, both parties were juristic persons. Payen's code catalogue was used without permission by Bovic to identify different types of gaskets. Payen claimed that Bovic had infringed their copyright.[67] Payen developed this catalogue through a long process involving manual effort and skill on the part of Payen's human employees. The Court decided that there was a significant amount of skill, labour and knowledge which went into the code catalogue and as it was in a material form, it counted as an original literary work.[68]

However, Bovic argued that the computer system itself was the thing which authored the code catalogue. They argued that a human author is required for copyright protection. Thus, there can be no copyright protecting an AI-generated catalogue. While the computer program used

[64] Copyright Act op cit note 39 at s42.
[65] Ibid at s3(1).
[66] Ibid at s1.
[67] *Payen Components SA Ltd v Bovic Gaskets CC* 1995 (4) SA 441 (A) 4-12.
[68] Ibid 9-13.

by Payen is protectable by copyright as a literary work, the catalogue it produces is a different work entirely.[69]

Further, the Court considered the *Express Newspapers*[70] case from the UK. In that case, Mr Erthel who was contracted by Express Newspapers to work on a system of numbers using a computer system for a random number newspaper competition. It was shown that he had used considerable skill and labour in the creation of the system.[71] The judge stated that arguing the computer was the author would be akin to arguing a pen is the author rather than the man who wielded the pen. The computer system was being used as a tool.[72] It was acknowledged that giving the programmer of the computer the authorship of the computers work would be misleading and inconvenient.[73]

The court defined the differences between computer-aided and computer-generated works. Computer-aided work is where the computer is used as a tool to assist the human author in creation and thus the usual authorship considerations apply. In computer-generated works there is minimal human involvement, and the creation process is mostly autonomous.[74] This was a case of computer-aided work not computer-generated work and thus there was a human author and copyright protection could be granted.[75]

Moreover, in the *Payen* case the court decided that the human workers at Payen had put enough skill and labour into the development of the code catalogue program (human authors). It was a case of computer-assisted literary works rather than computer-generated and thus it was afforded copyright protection. Payen had copyright ownership over the works.[76] The South African court in this case followed the UK's approach to the copyright protection of AI-generated works.

(d) AI and the Copyright Amendment Bill

The Copyright Amendment Bill (B13-2017) ("CAB") aims to amend the Copyright Act, 1978 to promote balanced accessibility for users, producers, and consumers; including digital

[69] Ibid.
[70] *Express Newspapers PLC v Liverpool Daily Post & Echo PLC and others* 1985 1 WLR 1089 (Ch): 1985 FSR 306.
[71] Ibid.
[72] Ibid.
[73] Ibid.
[74] Payen supra note 67 at 450D-G.
[75] Ibid at 14.
[76] Ibid 18-19.

advancements to empower citizens.[77] It also aims to address licensing of copyrighted works for commissions to facilitate commercial exploits by the licensee.[78]

Copyright was developed as an incentivising system to encourage human creation. It does so by allowing authors to earn money from their works and to protect their personal expression. AI is not human and does not need these incentives.[79] It will create so long as human input is given.[80] Humans will continue to provide the AI inputs as some are paid to do so and others use AI as a creative tool without requiring ownership over the works produced. Humans then do not need copyright protection over the works AI produces. Thus, it is not necessary to extend the definition of 'author' to include the person who made the necessary arrangements for a work generated by a computer.

Further, there are concerns regarding the training of AI using copyright protected material.[81] AI mimics (imitates) or amalgamates (combines) protected works which then could jeopardise human artists ability to earn, put their livelihoods at risk and infringe their self-expression.[82] The CAB allows for fair use for purposes including parody, homage, and pastiche.[83] A pastiche is an imitation of the style of another work or a collage of different works. AI-generated works are all imitations of styles of existing works or amalgamations thereof and thus pastiches. Fair use of works for the purpose of pastiche is a general exception from copyright protection. To determine whether AI-generated works of pastiche amount to fair use many factors would be considered, such as the amount of work copied and the nature of the work.[84] AI-generated works will not amount to infringements of the copyrighted works that the AI learns from and imitates where it is determined to be fair use.

Scholars in South Africa have stated that the CAB should be redrafted to include explicitly that AI-generated works cannot be protected under copyright. It should explicitly include that human skill and effort (human authorship) are required for copyright protection. This would protect human artists interests and continue to incentivise human creation. A further policy

[77] Copyright Amendment Bill ("CAB") (B13-2017).
[78] Ibid at s2.2.
[79] A Rens & H Hlomani 'AI and the Copyright Amendment Bill – Research ICT Africa' available at https://pmg.org.za/committee-meeting/36546/ accessed on 20 April 2023.
[80] Hanani Hlomani & Andrew Rens 'AI and the Law Op-Ed - Artificial intelligence, copyright infringement and protection – a legal quagmire?' available at https://www.dailymaverick.co.za/article/2023-03-24-artificial-intelligence-and-copyright-a-legal-quagmire/ accessed on 20 April 2023.
[81] Ibid.
[82] Alberts op cit note 18.
[83] CAB op cit note 77 at s12A(a)(v).
[84] Ibid at s12A(b).

recommendation includes a flexible provision enabling the use of copyrighted works within AI research, including an opt-out mechanism, transparency requirements and a balancing test to reduce harm to creators.[85]

IV. DOES COPYRIGHT LAW EXTEND TO AI-GENERATED WORKS? – A COMPARATIVE LAW EXERCISE.

(a) Existing precedents around the world

In South Africa there is no precedent regarding whether AI-generated works are eligible for copyright protection nor who would be considered the authors and owners of such works. I must analyse other countries approaches and case law to guide me. By considering the practice regarding copyright protection, authorship, and ownership of AI-generated works in other countries, I can flag possible problem areas as well as solutions which may be useful within the South African context. South African courts may consider foreign law when interpreting the Bill of Rights. The Constitution allows the courts to use comparative law.[86]

(i) The US

The purpose of copyright in the United States is to incentivise progress in the sciences and arts by granting creators exclusive rights over their works for a set time.[87]

a) Laws around copyrighting works

Under s102 of the Copyright Act of 1976[88] it is set out that copyright is granted to "original works of authorship" which are in a fixed tangible medium.[89] Originality within the US context includes skill, labour, judgement as well as creativity.[90] The US Code does not contain explicit provisions regarding AI generated works and copyright.

[85] A Rens, H Hlomani & S Msipa 'Clarifying copyright to enable AI research in Africa' available at https://researchictafrica.net/publication/ai-and-intellectual-property-brief-1/ accessed on 29 April 2023.
[86] The Constitution op cit note 32 at s39(1)(c).
[87] The Constitution of the United States,1789 Article I, Section 8, Clause 8.
[88] United States Code: Copyright Office, 17 U.S.C. §§ 201-216 (1958).
[89] The Copyright Act of 1976 at s102.
[90] D Oriakhogba 'The scope and standard of originality and fixation in Nigerian and South African copyright law' (2018) *African Journal of Intellectual property* 2(2) 119-135, 123.

b) How Naruto v Slater may inform the AI copyright debate.

Naruto v Slater[91] was a copyright case involving Naruto (a monkey) who used Slater's (a photographer) camera to take images of himself. These images were used by Slater in a book which stated that the images were taken by Naruto without outside help.[92] People for the Ethical Treatment of Animals ("PETA") sued on behalf of Naruto for copyright infringement.[93] The United States Court of Appeals for the Ninth Circuit dismissed the case stating that Naruto as an animal (a non-human) did not have legal personality or standing and cannot sue or pursue claims for copyright. It was decided that animals (non-humans) may not be considered authors of creative works, nor could they own copyright to the same.[94] This view has been reinforced.[95]

Human authorship is required for copyright protection and autonomously AI-generated works would not meet this requirement. The court's ruling in *Naruto* resulted in the images being released into the public domain as Slater also did not meet the authorship requirements.[96]

c) US approach to whether copyright applies to AI-generated works.

The Compendium of Best Practices by the U.S. Copyright Office (USCO) has stated that human authorship is required for copyright protection.[97] In USCO's guide to registering content containing AI-generated material they state that in the US Constitution and Copyright Act the term "author" fundamentally excludes non-humans.[98] AI is a machine, non-human, and thus under the current precedents set in US copyright law AI-generated works will not meet the authorship requirement and may not be granted copyright. USCO has been denying copyright protection requests for AI-generated works.[99]

For example, Stephen Thaler's "creativity machine" algorithm generated an image titled 'A Recent Entrance to Paradise' which he sought to register for copyright protection. He was denied as the work was produced by the AI without any creative intervention on his part. The

[91] *Naruto v. Slater*, No. 16-15469 (9th Cir. 2018).
[92] CB Ncube & DO Oriakhogba 'Monkey Selfie and Authorship in Copyright Law: The Nigerian and South African Perspectives' (2018) *PER / PELJ* 2.
[93] Ibid at 2.
[94] A Guadamuz 'The monkey selfie: copyright lessons for originality in photographs and internet jurisdiction' (2016) *Internet Policy Review*, 5(1).
[95] *Naruto v. Slater* supra note 91; *People v. Frazier*, 173 Cal. App. 4th 613 (2009); *Urantia Found v. Kristen Maaherra*, 114 F.3d 955, 957-59 (9th Cir. 1997); *Kelley v. Chicago Park Dist*., 635 F.3d 290, 304 (7th Cir. 2011).
[96] K Hristov 'Artificial Intelligence and the Copyright Dilemma' (2016) *IDEA: The IP Law Review* 448-449.
[97] U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 101 available at https://www.copyright.gov/comp3/docs/compendium.pdf accessed on 16 April 2023.
[98] United States Copyright Office 'Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence' (2023) *Federal Register*, Vol. 88, No. 51 Rules and Regulations 37 CFR Part 202.
[99] Congressional Research Service 'Generative Artificial Intelligence and Copyright Law' available at https://crsreports.congress.gov/product/pdf/LSB/LSB10922 accessed on 11 April 2023.

AI is a non-human, so it did not meet the threshold for authorship. Thaler argued that non-human generated works could be protected under copyright using the work-for-hire doctrine. However, this doctrine applies only to employees or those with a work-for-hire agreement. It is based on contracts and AI cannot enter legally binding contracts.[100] The Review Board of USCO decided the work could not be registered for copyright protection.[101]

Another application involved Kris Kashtanova's graphic novel. Kashtanova used an AI to produce the images (giving prompts) while she provided the storyline and layout of the AI-generated images. USCO decided that the individual AI-generated images could not be afforded copyright protection as they were not authored by a human. However, the graphic novels storyline and arrangement could be afforded copyright protection as the text, the storyline and the arrangement were human authored.[102]

USCO's registration of AI-generated policy as of March 2023 is as follows. Their criteria includes whether the work is mainly human authored with the tool-like assistance of AI/computers. They further include whether the AI executed the traditionally human authored elements of the work such as the literary or artistic expression, arrangement, and selection. Where the traditional authorship elements were produced by AI the resultant works may not receive copyright protection.[103] An example would be where the AI receives only a prompt from the human and creates a complex image. Where an AI has the ultimate creative control there may be no copyright protection.[104]

However, where the human has taken AI-generated content and rearranged it in a creative manner, the human-authored aspects will be afforded copyright protection to the extent that it will not affect the original works copyright status. In essence, the Office will examine if the human had enough creative control over the expression of the work and completed the traditional authorship elements themselves.[105]

[100] U.S. Copyright Office Review Board 'Re: Second Request for Reconsideration for Refusal to Register '*A Recent Entrance to Paradise*' available at https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf accessed on 16 April 2023.
[101] Ibid.
[102] Congressional Research Service op cit note 99 at 2.
[103] United States Copyright Office op cit note 97.
[104] Ibid.
[105] Ibid.

Further, there are cases surrounding AI's alleged copyright infringement such as the OpenAI case[106] and the Stability AI case.[107] These pending cases address issues concerning the training datasets containing copyright protected materials which the AI uses to generate "new" content. AI has the tendency to replicate parts of copyrighted content without providing credit, plagiarizing from datasets.[108] AI-generated works which amount to copyright infringement would not be protectable under copyright law. The ethical issues here are important but are outside of the scope of this paper and so will not be discussed further.

(ii) The UK

a) Does copyright law recognise AI generated works?

In the UK, as with South Africa, copyright automatically vests when work is created by its author in a fixed material form if the work is "original". Computer software/programs are included under literary, dramatic, and musical works in s3 of Copyright Designs and Patents Act 1988 (CDPA).[109] The originality threshold is that the work must be the authors own intellectual idea/creation.[110] Originality requires the creator have used sufficient skill, labour or industry while creating the works ('sweat of the brow').[111] Authorship requires a human author, as the CDPA refers to the author as a 'person'.[112] Computer-generated literary, dramatic, musical, or artistic works are deemed to have been authored by the person who made the necessary arrangements for the computer to create the works.[113] The South African Copyright Act has adopted this same approach.

b) Who, if anyone, owns the copyright to AI generated works?

The author of AI-generated works is whoever made the arrangements necessary for the AI to generate the works such as the user providing the prompt/instructions. The owner of the AI-generated works would also usually be the human user of the AI.[114] Where the AI created the works independently of human intervention, arrangements, or creativity then there would be

[106] *Silverman v. OpenAI Inc*., N.D. Cal., No. 3:23-cv-03416; *P.M. et al v. Openai LP et al*., No. 3:23-cv-03199.
[107] *Andersen et al v. Stability AI Ltd. et al* No. 3:23-cv-00201-WHO.
[108] Ibid; *Silverman* supra note 106; Kyle Wiggers 'The current legal cases against generative AI are just the beginning' available at https://techcrunch.com/2023/01/27/the-current-legal-cases-against-generative-ai-are-just-the-beginning/ accessed on 20 April 2023.
[109] Copyright Designs and Patents Act 1988 s3(1)(b).
[110] A Rahmatian 'Originality in UK Copyright Law: The Old "Skill and Labour" Doctrine Under Pressure' (2013) *IIC* 44, 4–34.1-3.
[111] Oriakhogba op cit note 90 at 3-4.
[112] Copyright Designs and Patents Act op cit note 109 at s9(1).
[113] Ibid at s9(3).
[114] Ibid.

no author. The AI developers are authors of the AI algorithm. However, where they are not directly creatively involved in the subsequent AI-generated works, they would not be considered authors of such works. Where there is no human skill or labour involved, the AI-generated work would not meet the originality requirement and would not be protected by copyright.[115]

Section 9(3) of the CDPA was applied in the case of *Nova Productions v Mazooma Games and Others* wherein the court had to decide who owned the copyright over screenshots of a computer game. They were computer-generated composite frames, where all creative decisions were made by the developer. The player who took the screenshots did not make the necessary arrangements for their creation, the developers of the game did and thus the developers owned the copyright.[116]

Further, the court in *Express Newspapers* stated the difference between computer-generated and computer-assisted/aided works as previously discussed under *Payen v Bovic*. This case set out that where a human has used their own labour and skill as well as a computer to develop a work, the computer is seen as a tool. While the human is seen as the author and thus the owner of the copyright.[117]

Thus far the UK has not dealt with any specific cases in court regarding AI-generated works and who owns the copyright therein.

c) Proposed AI Strategy

The UK's National AI Strategy contains a ten-year plan which aims to achieve three key actions.[118] These actions are to invest in and plan for the long-term AI ecosystem needs to continue their leadership as an "AI superpower".[119] They aim to support and encourage the transition to an AI-enabled economy and to make sure that the UK governs AI technologies correctly nationally and internationally.[120] The UK government has committed to consult through the IPO (Intellectual Property Office) on whether and to what extent AI-generated

[115] Ibid at s2.
[116] *Nova Productions Ltd v Mazooma Games Ltd* [2007] EWCA Civ 219.
[117] *Express Newspapers* supra note 70.
[118] HM Government 'National AI Strategy' available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1020402/National_AI_Strategy_-_PDF_version.pdf accessed on 3 July 2023 1.
[119] Ibid at 7.
[120] Ibid at 7-9.

works should be protected under copyright law. They will also outline measures to ensure easier use of copyright protected works for AI development.[121]

(iii) Germany

a) Copyright protected creative works.

Germany is part of the European Union ("EU"). The European Union's Court of Justice (CJEU) has followed a human centred approach to copyright law. The CJEU determined the factors for assessing whether a work should be protectable under copyright as being "free creative choices", "the author's intellectual inventiveness", "personal touch of the creator" or "personality of the creator".[122]

The German Copyright Act provides that a work may only be protected under copyright law where it is original (the authors intellectual creation).[123] As a human must have been responsible for the intellectual creation, AI as well as corporations lack the ability to be authors in copyright law in Germany.[124] Further, the work must have been in a form which allows for it to be objectively identifiable, even where the form is not permanent.[125]

b) How this translates to copyrightability of AI generated works

The programmers who train the AI and create the algorithms have a creative hand in making the AI. However, they do not necessarily have the intellectual creative control over the works that the AI generates. The programmer would only be considered the author where they had sufficient creative input into the works appearance.[126] Thus, under the existing German laws the AI-generated works would need to be assessed separately to the original programming of the AI.[127]

Preparatory acts are not protected under copyright law. The programmer selecting training data inputs will not amount to them being declared an author of the AI-generated works. However,

---

[121] Ibid at 42.
[122] *Eva-Maria Painer v Standard Verlags* GmbH C-145/10 2011 at §§ 87-92; *Football Dataco and Others v. Yahoo! UK Ltd and Others* C-604/2010 2012 at §38; Shuruq Aref Alshammari 'The Copyright Protection of AI-Created works by the European Union Copyright Legislation' (PhD thesis, Aljouf University, 2021) 11-12.
[123] Gesetz über Urheberrecht und verwandte Schutzrechte ("UrhG") (The German Copyright Act).
[124] J Freialdenhoven, N Maamar, S Mroß, Prof. Dr. JB Nordemann 'Do AI generated works qualify for copyright? Summary of the German report to the AIPPI 2019 Study Question on copyright in artificially generated works' (2020) *IntellectualProperty*.
[125] *Levola Hengelo BV/Smilde Foods BV* C-310/17 2018 at §36.
[126] Court of Appeal (Oberlandesgericht) Karlsruhe, dec. of 14-04-2010, docket-no. 6 U 46/09, GRUR-RR 2010, 234.
[127] Freialdenhoven op cit note 124.

the data selected for the training can be protected under copyright as a database.[128] Where a person is involved in the selection and arrangement of AI-generated works as part of the creative process then the resultant work would be copyrightable. The AI would be a 'tool' towards human creative achievements. Where the AI is responsible for all steps of the creative process no copyright may vest in the work.[129]

German legal scholars have suggested that there should be incentives (new related rights) to promote the creation of AI and the efforts of programmers. The legal scholars also warned that people may lie about how much human creative control was involved in AI-generated works to be granted copyright protection. Thus, measures should be arranged to counteract this.[130]

c) EU Approach and The AI Act

One of the highlighted issues within the EU concerns the training of AI systems using copyrighted works. AI training using datasets is regulated in the Directive of Copyright in the Digital Single Market (CDSM). Through two text and data mining (TDM) exceptions for scientific purposes in Article 3 and commercial purposes in Article 4.[131] For AI learning models copyright infringement concerns the commercial TDM exception is applicable. Article 4 provides an exception for reproductions and extractions of works accessed lawfully for text and data mining.[132] The commercial TDM exception also provides for right holders to be able to opt-out, so their work is not included within the data mining.[133] This is already being used within AI systems such as with Stable Diffusions AI tool company allowing creators to opt-out of the datasets.[134]

The European Parliament is in the process of legislating an AI Act which seeks to implement transparency requirements. These will require that AI-generated content be disclosed, to design models to prevent them from generating illegal content. In addition, they will require for AI

[128] UrhG op cit note 122 at s4, s87a.
[129] Freialdenhoven op cit note 124.
[130] Ibid.
[131] JP Quintais 'Generative AI, Copyright and the AI Act' Institute for Information Law, Wolters Klewer (2023) available at https://copyrightblog.kluweriplaw.com/2023/05/09/generative-ai-copyright-and-the-ai-act/ accessed on 20 April 2023.
[132] Ibid.
[133] Ibid.
[134] Ibid.

and AI training tool companies to publish summaries of all copyrighted data to be used for training.[135]

(iv) Australia

a) Copyright Law in Australia

Copyright in Australia is regulated by the Copyright Act 1968. It provides an avenue for creators to gain economic benefits from their work by protecting their creations as their own personal property.[136] It is aimed at rewarding and incentivising human creativity.[137] Copyright protection vests automatically in works which are in a material form and are original whether the work has been published or not. Originality requires human authorship and creativity.[138]

b) Acohs Pty Ltd v Ucorp Pty Ltd

In the case of *Acohs Pty Ltd v Ucorp Pty Ltd* there was a claim by Acohs that the Material Safety Data Sheets (MSDS) that it provided to companies were protected under copyright.[139] Acohs maintained the necessary information for the creation of the MSDSs in a database. The MSDSs were generated by a computer software system based on data provided by the employees. Sometimes the data fed to the system was transcribed from existing MSDSs produced by the software system. A customer would request an MSDS, and the employee would send the request to the software system. The software system would then sort through the database and compile source codes to create the correct MSDS.[140]

The Federal Court held that where the Acohs employees wrote the MSDSs (selected and compiled the material) that the MSDSs were original literary works and could be protected

[135] European Parliament News 'EU AI Act: first regulation on artificial intelligence' available at https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence#:~:text=Parliament's%20priority%20is%20to%20make,automation%2C%20to%20prevent%20harmful%20outcomes accessed on 20 April 2023.
[136] Copyright Act 1968 s196(1).
[137] Australian Copyright Council 'Submission to the UN Special Rapporteur on the International Covenant on Economic, Social and Cultural Rights on the Impact of Intellectual Property Regimes on the Enjoyment of Rights to Science and Culture' available at https://www.ohchr.org/sites/default/files/Documents/Issues/CulturalRights/ConsultationIntelectualproperty/Australian_copyrights_council.pdf accessed on 20 April 2023.
[138] A Christie 'Simplifying Australian Copyright Law - the Why and the How' (2000) *Australian Intellectual Property Journal*.
[139] *Acohs Pty Ltd v Ucorp Pty Ltd* [2012] FCAFC 16.
[140] Ibid.

under copyright. However, where the employees transcribed past MSDSs and did not make any original contributions then there was no originality and no copyright protection.[141]

In addition, on appeal the Full Federal Court agreed. The Court stated that the software programmers were not involved in the creation of the MSDSs. The programmers did not author the MSDSs. The HTML source codes which underly the MSDSs were the creation of the program itself in a routine using data from the database. The routine was coded by the programmers, but this does not equate to the programmers authoring the source codes.[142]

Therefore, it was shown that where a computer program is responsible for the work without human creativity involved there cannot be said to have been originality in the work. Thus, the computer-generated work cannot be protected under Australian Copyright Law which requires human authorship.[143]

(v) China

a) Copyright Law in China

The Copyright Law of People's Republic of China was enacted to protect the rights of authors to encourage further creation, to better their socialist society through promoting the growth of their cultures and sciences.[144] Chinese citizens, unincorporated organisations and legal entities may own the copyright over their works.[145] Works are defined as being intellectual achievements in fixed certain forms such as writing, art and computer software which have originality.[146] Copyright holders may be authors (natural persons) or otherwise legal persons or unincorporated organisations where the works were made on behalf of them or where they bear the responsibility or preside over the works.[147]

b) Shenzhen Tencent v. Shanghai Yingxun

In the case of *Shenzhen Tencent v Shanghai Yingxun,* an AI writing aid called "Dreamwriter" was licenced to Shenzhen Tencent. Shenzhen Tencent posted an article by Dreamwriter to Tencent Securities website with a notice to explain that it was written by their AI, Dreamwriter.

[141] A Fitzgerald & N Dwyer 'Copyright in databases in Australia' available at https://eprints.qut.edu.au/50425/4/50425.pdf accessed on 10 April 2023 3-4.
[142] *Acohs* supra note 139.
[143] Fitzgerald op cit note 141.
[144] Copyright Law of People's Republic of China 1990 (as amended 2002) (中华人民共和国著作权**法**) Art 1.
[145] Ibid at art 2.
[146] Ibid at art 3.
[147] Ibid at art 11.

Shanghai Yingxun reprinted this article without permission. Shenzhen Tencent then sued for copyright infringement and unfair competition.[148]

There were two relevant issues, namely whether AI-generated works may be protected under copyright and if so, who would own this copyright? The Court noted that the Dreamwriter article constituted a written work under copyright law. The reasoning was that the creative team at Tencent had a lot of control. They selected and arranged data inputs, provided the style choice, template and the trigger conditions. These intellectual creative decisions were expressed in the final article.[149]

Furthermore, the final presentation was determined by the creative team and Tencent. Thus, they were the authors of the article and Dreamwriter was a tool to assist them. The work had sufficient originality. As copyright law allows for protection of AI-assisted works and not autonomously AI-generated works, this article was deemed to be protectable. Autonomously AI-generated works have not yet been discussed in China's courts, as existing AI is usually not free from human intervention. They are mostly prompt based, and the data provided to the AI is given by humans.[150]

The Copyright Law stipulates in Article 11 that a legal entity or unincorporated organisation shall be deemed the author of any works where the works were created in accordance with their will, under their sponsorship and where they have responsibility.[151] The work was created by Tencent teams (the authors) working under Shenzhen Tencent's will, who presided over the work and bore responsibility for the article. The owner of the copyright was deemed to be Shenzhen Tencent.[152]

c) Gao Yang v. Youku

In *Gao Yang v Youku* case the Plaintiff used a camera containing software programmed to take certain shots for him once it was on the hot air balloon. Although while airborne there was no human intervention, it was not acting without human creative intervention. The Plaintiff had previously selected factors such as the sensitivity and camera angles. Despite the camera

[148] *Shenzhen Tencent Computer System Co., Ltd. ("Shenzhen Tencent") v Shanghai Yingxun Technology Co., Ltd. ("Shanghai Yingxun")*, Nanshan District People's Court, Shenzhen, Guangdong Province on December 24, 2019.
[149] Ibid.
[150] Zhou Bo 'Artificial Intelligence and Copyright Protection -- Judicial Practice in Chinese Courts' available at https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/conversation_ip_ai/pdf/ms_china_1_en.pdf accessed on 30 April 2023.
[151] Copyright Law op cit note 144 art 11.
[152] *Shenzhen Tencent* supra note 148.

software picking out screenshots from the video footage, the human Plaintiff had enough control and human intelligent creative intervention to satisfy the originality requirement. The Plaintiff was considered the author of the work and awarded copyright ownership.[153]

According to a World Intellectual Property Organization (WIPO) report, AI is meant to embody the idea that machines can create things and perform tasks which previously required human intervention, without or with limited human intervention.[154] Zhou Bo, a senior judge in China, states that only when AI is evolved enough to require no human intervention, the law will need to be adjusted. As far as current legal practice in China is concerned, AI-generated works are the result of humans creative and intellectual activities which are performed by the AI as the human's assistant for AI outcomes. Thus, the current copyright laws being human author centred is not an issue and the law can continue to apply without needing any changes.[155]

V. SHOULD AI-GENERATED WORKS BE PROTECTABLE UNDER COPYRIGHT LAW IN SOUTH AFRICA?

It can be seen from the analysis of the different countries approaches to AI-generated works under copyright law that copyright is generally accepted as being human-centred. All five require human authorship for copyright protection to be granted and so have determined that autonomous AI-generated works may not be protected under copyright law. It is also clear that where an AI-generated work infringes on the copyright of works within the training dataset it would not be protected under copyright law if it is not sufficiently original. AI was regarded as unable to be a copyright owner as it has no legal personality. AI is neither a natural nor juristic person. It is also clear that the author of a work is not necessarily also the copyright owner especially where the author is an employee of a juristic person.

There are different approaches as to how much human intervention, creativity or control is required in AI-generated works before the authorship and originality requirements are met. In the US, the traditional authorship elements must have been completed by the human involved. These elements include artistic or literary expression, compositions, arrangements, and

[153] *Gao Yang v Youku* Beijing Intellectual Property Court (2017) Jing 73 Min Zhong No. 797 Civil Judgment. April 2, 2020.
[154] WIPO/IP/AI/2/GE/20/1 REV available at https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_ip_ai_2_ge_20/wipo_ip_ai_2_ge_20_1_rev.pdf accessed on 30 April 2023 para 11.
[155] Zhou Bo op cit note 150.

selection.[156] Where these elements are completed by AI, there is no copyright protection over the works produced. In using this, they determined that a simple prompt is not enough. The work created by AI is more complex and so the AI completed the authorship elements rather than the human prompter.[157] In Australia, where the human prompt is a transcription of work already completed by the AI there is not enough human creativity involved for originality and human authorship and therefore there is no copyright protection.[158]

However, in the UK and China a simple prompt/instruction by a human to the AI is enough for human authorship. The prompter or their employer would be granted the copyright ownership over the resultant works.[159] China's legal approach is based on the idea that there are currently no AI-generated works which are truly autonomous and that there is usually human involvement (human author).[160] Thus, the humans involved or the company they work for would be given ownership over the copyright protected works.[161] In all five countries (even where the AI-generated work itself is declared unprotectable) compositions, selections or arrangements of AI-generated works are protectable under copyright.

In South Africa, copyright is also human-centred and human authorship is required.[162] The difference between purely computer-generated versus computer-aided/assisted works has been acknowledged by South African courts.[163] This suggests that AI-assisted works would be copyrightable as the AI is used as a tool by the human creator. Whereas autonomously AI-generated works would not be copyrightable.[164]

However, there are no set factors or clear amount of human intervention needed to determine whether copyright ownership may be granted to the human or juristic person involved. Should South Africa follow the US and Australian approach where certain prompts/instructions are not sufficient and thus the AI-generated works are not protectable under copyright? Otherwise, should South Africa follow the approach taken by the UK and China where there is a lower threshold for the level of human intervention needed for copyright protection?

[156] United States Copyright Office op cit note 97.
[157] Ibid.
[158] *Acohs* supra note 139.
[159] *Express Newspapers* supra note 70; Zhou Bo op cit note 150.
[160] Zhou Bo op cit note 150.
[161] *Shenzhen Tencent* supra note 148.
[162] Copyright Act op cit note 39 at s3(1).
[163] *Payen Components* supra note 67.
[164] Ibid.

South Africa mirrors the UK's copyright laws in so far as the added provision within the definition of 'author'.[165] This set out that the person who made the necessary arrangements for the AI-generated works is the author.[166] However, the meaning and scope of 'necessary arrangements' has yet to be interrogated within South Africa. I posit that a multi-factor test should be produced to decide whether there has been sufficient human involvement such as the US using the authorship elements. A useful factor to consider would include the extent of the human's contribution, skill, judgement, or labour involved in the creation of the work.

Otherwise, a test similar to the causation test within the law of delict could be useful in this regard to determine who the author is. It can be asked but-for the human's involvement would this work have been generated by the AI. Thereafter, one could ask whether this link is sufficient for copyright protection to be granted.[167] If two people put the same prompt into the same AI they will get different AI-generated works. This suggests that the humans are not the proximate cause of the AI-generated works as the AI itself makes the bulk of the creative decisions. If this is the case the link between the human intervention and the AI-generated work is not sufficient for copyright protection to be granted.

The justifications for copyright law include that copyright provides exclusive legal rights over creations from one's own labour[168] and creativity as a reward to incentivize creation thus rewarding social utility.[169] Copyright also protects creator's moral rights, dignity, and self-expression.[170] It creates a limited monopoly to incentivise creation and avoid a market failure.[171] As previously discussed, there is no need to provide copyright protection as an incentive for AI-generated works as AI will create regardless of moral and economic incentives if it is prompted. AI is a machine and does not have moral rights nor does it require financial incentives. AI will continue to be developed without copyright protection over the works it generates being granted to the AI creators. They have enough of an incentive as they get paid to develop the AI while the company that they work for is granted ownership over the copyright of the AI algorithm itself.

[165] Copyright Designs and Patents Act op cit note 109 at s9(3).
[166] Copyright Act op cit note 39 at s1.
[167] A Fagan 'Causation in the Constitutional Court: Lee v Minister of Correctional Services' (2013) *Constitutional Court Review* 108, 123
[168] Aplin & Davis op cit note 24 at 4-7.
[169] Longan op cit note 21.
[170] Du Bois op cit note 28 at 27-28.
[171] Ibid.

Further, copyright must result in the greatest net happiness by balancing the least amount of copyright protection necessary to promote creation without stifling the publics use and enjoyment of IP. I argue that the best way to achieve the purposes set out within the justifications is to only grant copyright protection to AI-generated works where there is sufficient human skill, labour, and judgement involved.

The term 'necessary arrangements' within the South African Copyright Act should be determined to be a higher threshold than providing a short simple prompt. If small unoriginal human interventions within AI-generated works allow those humans to gain copyright protection over the works, this would unnecessarily stifle public use and enjoyment over these works. Copyright should not be unnecessarily extended to works which were not originally intended to be protectable as this can cause a diminishment of the commons.[172] The CAB could be expanded to include regulations for AI like those within the CDSM in the EU.[173] This would help to reduce instances of copyright infringement on the part of AI through transparency requirements and added opt-out mechanisms for copyright protected works within training datasets.[174]

In South African copyright law, time and effort is not enough for originality. Skill and labour must be involved. The skill, judgement or labour must have been substantial so not all prompts should amount to skill and labour.[175] If all prompts were accepted as such then every AI-generated work would become the IP of the user regardless of whether there was sufficient skill or labour. The effect of this would be that the number of raw materials within the commons would be greatly diminished and human creation would be negatively affected.[176]

Thus, the suggested multi-factor test would aid in protecting the spirit and purpose of copyright law in South Africa. AI-generated works should not be protectable where the AI was responsible for the majority of the skill, labour and judgement involved in the creation of the work. This would not be in line with the authorship and originality requirements set forth.

[172] van der Walt & du Bois op cit note 52 at 44-46.
[173] Quintais op cit note 131.
[174] Ibid.
[175] *Haupt t/a Softcopy* supra note 57 para 35.
[176] van der Walt & du Bois op cit note 52 at 44-46.

VI. CONCLUSION

The main aim in this paper was to examine whether AI-generated works should be protected through copyright law. This issue was explored using justificatory theories of the purpose of copyright law. Some theories posit that copyright law exists to incentivise humans to create works. Copyright does so by giving people exclusive rights over their works, protecting their moral rights, and allowing them to monetize their works to earn a living. I argued that AI has no need for these incentives nor any other incentives to promote creation. AI is not human and has no need for money nor does it have any moral rights. AI creators are already incentivized by their employers to continue creating AI itself. Thus, neither AI creators nor AI require further incentives such as copyright over the AI-generated works.

I analysed the approaches of different countries to the question of whether AI-generated works should be protectable under copyright and if so, who owns the copyright and who is the author. In most of the countries the courts and the legislatures maintained that copyright law is a specific protection afforded to works completed through the skill, labour, and intellect/creativity of humans. Thus, there can be no copyright protection afforded to AI-generated content created without any human intervention/authorship. This is in line with the purpose of copyright being to incentivise human creation. AI as a machine cannot be said to require copyright protection over works in which no human skill, labour or judgement was involved as this does not meet the originality requirement.

However, China posits that truly autonomous AI-generated content without any human intervention within the creation process does not exist. Thus, they believe there is no reason to update copyright laws to handle questions of AI-generated content and copyright protection yet. The UK and China draw a distinction between solely AI-generated content and AI-assisted content. AI-assisted content is copyrightable as there is human authorship.

South Africa's current legal approach seems to be aligned with the UK's approach to AI-generated content. However, I believe that there should be a multi-factor test similar to in the US to determine whether the human intervention was sufficient to meet the authorship and originality requirements under copyright law. It is unnecessary and against the purpose of copyright law to protect works where the AI itself completed majority of the creative elements

while the human provided a broad simple prompt. It would be preferable for the public for such works to become a part of the commons to encourage further human creation.

There is an opportunity within the CAB for South Africa to set out when AI-generated content may be protected under copyright. It should exclude copyright protection for autonomously AI-generated content and legislate clearly that copyright protection should only vest in works where there has been sufficient human skill, judgement, and labour.

In essence, works created by AI without sufficient human input to meet the human authorship and originality requirements should not be protectable under copyright. AI-generated works should only be protectable where there was sufficient human judgement, skill, or labour involved. Where this protection is granted the owner of such copyright would be the human who used the AI as a tool within the creative process or their employer. AI itself cannot be considered an author within copyright law as this would not align with the purpose of copyright.

BIBLIOGRAPHY

LEGISLATION

Constitution of the Republic of South Africa, 1996.

The Constitution of the United States, 1789 Article I, Section 8, Clause 8.

The Copyright Act of 1976.

Copyright Act 98 of 1978.

Copyright Act 1968.

Copyright Amendment Bill B13B-2017.

Copyright Designs and Patents Act 1988.

Copyright Law of People's Republic of China 1990 (as amended 2002) (中华人民共和国著作权**法**).

Gesetz über Urheberrecht und verwandte Schutzrechte ("UrhG") (The German Copyright Act).

CASES

Acohs Pty Ltd v Ucorp Pty Ltd [2012] FCAFC 16.

Andersen et al v. Stability AI Ltd. et al No. 3:23-cv-00201-WHO.

Eva-Maria Painer v Standard Verlags C-145/10 GmbH 1 December 2011.

Express Newspapers PLC v Liverpool Daily Post & Echo PLC and others [1985] 1 WLR 1089 (Ch): [1985] FSR 306.

Football Dataco and Others v. Yahoo! UK Ltd and Others C-604/2010 1 March 2012.

Gao Yang v Youku Beijing Intellectual Property Court (2017) Jing 73 Min Zhong No. 797 Civil Judgment. April 2, 2020.

Haupt t/a Softcopy v Brewers Marketing Intelligence (Pty) Ltd 2006 4 SA 458 (SCA).

Kalamazoo Division (Pty) Ltd v Gay 1978 (2) SA 184 (C) p 192.

Kelley v. Chicago Park Dist., 635 F.3d 290, 304 (7th Cir. 2011).

King v SA Weather Service (716/2007) [2008] ZASCA 143.

Klep Valves (Pty) Ltd v Saunders Valve Co Ltd [1987] (2) SA 1 (A).

Levola Hengelo BV/Smilde Foods BV Cf. CJEU, dec. of 13-11-2018, docket-no. C-310/17.

Moneyweb (Pty) Ltd v Media 24 Ltd & another [2016] 3 All SA 193 (GJ); 2016 (4) SA 591 (GJ).

Naruto v. Slater, 2016 U.S. Dist. Lexis 11041 (N. D. Cal. Jan. 23, 2016).

Nova Productions Ltd v Mazooma Games Ltd [2007] EWCA Civ 219.

Payen Components SA Ltd v Bovic Gaskets CC 1995 (4) SA 441 (A).

People v. Frazier, 173 Cal. App. 4th 613 (2009).

P.M. et al v. Openai LP et al., No. 3:23-cv-03199.

Shenzhen Tencent Computer System Co., Ltd. ("Shenzhen Tencent") v Shanghai Yingxun Technology Co., Ltd. ("Shanghai Yingxun"), Nanshan District People's Court, Shenzhen, Guangdong Province on December 24, 2019.

Silverman v. OpenAI Inc., N.D. Cal., No. 3:23-cv-03416.

Urantia Found v. Kristen Maaherra, 114 F.3d 955, 957-59 (9th Cir. 1997).

JOURNAL ARTICLES

Allen G 'Understanding AI Technology' Joint Artificial Intelligence Center 2020.

Alberts, I., Mercolli, L., Pyka, T. et al. Large language models (LLM) and ChatGPT: what will the impact on nuclear medicine be?. Eur J Nucl Med Mol Imaging 50, 1549–1552 (2023). https://doi.org/10.1007/s00259-023-06172-w.

Alberts W "Copyright in ideas: A lesson from the ivory tower" Juta's Business Law 2008 Vol 16 part 2.

Alshammari SA 'The Copyright Protection of AI-Created works by the European Union Copyright Legislation' (2021) *Aljouf University*.

Bhardwaj A, Khanna P, Kumar S, Pragya, 'Generative Model for NLP Applications based on Component Extraction' (2020) *Procedia Computer Science.*

Bonadio E and McDonagh L 'Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity' (2020) *Intellectual Property Quarterly*.

Bosch J, Olsson HH, and Crnkovic I 'Engineering AI Systems: A Research Agenda' Artificial Intelligence Paradigms for Smart Cyber-Physical Systems 2021 DOI: 10.4018/978-1-7998-5101-1.ch001.

Boucher P 'Artificial intelligence: How does it work, why does it matter, and what can we do about it?' (2020) EPRS | European Parliamentary Research Service.

Cetinic E and She J. 2022. Understanding and Creating Art with AI: Review and Outlook. ACM Trans. Multimedia Comput. Commun. Appl. 18, 2, Article 66 (February 2022). https://doi.org/10.1145/3475799.

Christie A, 'Simplifying Australian Copyright Law - the Why and the How' Australian Intellectual Property Journal - Volume 11 2000.

Du Bois M "Justificatory Theories for Intellectual Property Viewed through the Constitutional Prism" PER / PELJ 2018(21) - DOI http://dx.doi.org/10.17159/1727- 3781/2018/v21i0a2004 p 19-21.

Fagan A 'Causation in the Constitutional Court: Lee v Minister of Correctional Services' (2013) *Constitutional Court Review.*

Freialdenhoven J, Maamar N, Mroß S, Dr. Nordemann JB 'Do AI generated works qualify for copyright?' IntellectualProperty Summary of the German report to the AIPPI 2019 Study Question on copyright in artificially generated works 2020.

Ginsburg JC 'People Not Machines: Authorship and What It Means in the Berne Convention' (2018) *IIC* 49.

Guadamuz A 'The monkey selfie: copyright lessons for originality in photographs and internet jurisdiction' (2016) Internet Policy Review.

Hassani H, Silva ES, Unger S, TajMazinani M, Mac Feely S. 'Artificial Intelligence (AI) or Intelligence Augmentation (IA): What Is the Future?' *AI* (2020) 1(2).

Hristov, K, Artificial Intelligence and the Copyright Dilemma (September 1, 2016). IDEA: The IP Law Review, Vol. 57, No. 3, 2017, Available at SSRN: https://ssrn.com/abstract=2976428.

Hoffer J.G., Ofner A.B., Rohrhofer F.M. et al. 'Theory-inspired machine learning—towards a synergy between knowledge and data' (2022) Weld World 66.

Huston J, "Artificial Intelligence as a Content Creator in the Publishing Industry" (2022). Book Publishing Final Research Paper. 65. https://pdxscholar.library.pdx.edu/eng_bookpubpaper/65.

Longan M (2022) 'A System Out of Balance: A Critical Analysis of Philosophical Justifications for Copyright Law through the Lenz of Users' Rights'. Michigan Journal of Law Reform, 56. ISSN 0363-602X (In Press).

Matthews B 'The Evolution of Copyright' Political Science Quarterly, Vol. 5, No. 4 (Dec.,1890), pp. 583-602 Oxford University Press https://www.jstor.org/stable/2139530.

Ncube CB and Oriakhogba DO 'Monkey Selfie and Authorship in Copyright Law: The Nigerian and South African Perspectives' (2018) PER / PELJ.

Oriakhogba, D 'The scope and standard of originality and fixation in Nigerian and South African copyright law' African Journal of Intellectual property (2018) 2(2).

Onyeagbako V, 'Justifications for Copyright and Patents Protection' (January 20, 2020). Available at SSRN: https://ssrn.com/abstract=3596193 or http://dx.doi.org/10.2139/ssrn.3596193.

Rens A and Hlomani H, 'AI and the Copyright Amendment Bill – Research ICT Africa' Copyright Amendment Bill & Performers Protection Amendment Bill: public hearings 2023.

Rens, A., Hlomani, H, & Msipa, S. (2023). Clarifying copyright to enable AI research in Africa. Generative AI and Intellectual Property Brief no. 1. Research ICT Africa. https://researchictafrica.net/publication/ai-and-intellectual-property-brief-1/

Sheikh, H., Prins, C., Schrijvers, E. (2023). Artificial Intelligence: Definition and Background. In: Mission AI. Research for Policy. Springer, Cham. https://doi.org/10.1007/978-3-031-21448-6_2

United States Copyright Office 'Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence' 2023 16190 Federal Register, Vol. 88, No. 51 Rules and Regulations 37 CFR Part 202.

van der Walt, AJ & du Bois, M 'The importance of the commons in the context of intellectual property' (2013) 1 Stell LR.

Yang, D., Zhou, Y., Zhang, Z., Li, T. J-J., & LC, R. (2022). AI as an Active Writer: Interaction strategies with generated text in human-AI collaborative fiction writing. In A. Smith-Renner, & O. Amir (Eds.), Joint Proceedings of the IUI 2022 Workshops: APEx-UI, HAI-GEN, HEALTHI, HUMANIZE, TExSS, SOCIALIZE (pp. 56-65). (CEUR Workshop Proceedings; Vol. 3124). CEUR-WS Team. http://ceur-ws.org/Vol-3124/.

Yu, KP 'The Objectives and Principles of the TRIPS Agreement', 46 Hous. L. Rev. 979 (2009). Available at: https://scholarship.law.tamu.edu/facscholar/457.

Zhuk A 'Navigating the legal landscape of AI copyright: a comparative analysis of EU, US, and Chinese approaches' (2023) *AI Ethics.*

BOOKS

Aplin T & Davis J 'Copyright I: history, justifications, sources of law, and subsistence' in *Intellectual Property* (2022).

Dean T; Allen, J.; Aloimonos, Y. Artificial Intelligence: Theory and Practice; Benjamin/Cummings: New York, NY, USA, (1995).

Elkin-Koren, N 'Copyright in a Digital Ecosystem: A User-Rights Approach' in Okediji R (ed) Copyright in an age of Limitations and Exceptions (2015).

Spence M, 'The Justification of Intellectual Property' in *Intellectual Property*, Clarendon Law Series (2007).

INTERNET SOURCES (OTHER)

Australian Copyright Council 'Submission to the UN Special Rapporteur on the International Covenant on Economic, Social and Cultural Rights on the Impact of Intellectual Property Regimes on the Enjoyment of Rights to Science and Culture' available at https://www.ohchr.org/sites/default/files/Documents/Issues/CulturalRights/ConsultationIntelectualproperty/Australian_copyrights_council.pdf accessed on 20 April 2023.

Anne Fitzgerald & Natasha Dwyer 'Copyright in databases in Australia' available at https://eprints.qut.edu.au/50425/4/50425.pdf accessed on 10 April 2023.

Banoula M 'How to Become an Artificial Intelligence (AI) Engineer in 2023?' available at https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/how-to-become-an-ai-engineer, accessed on 23 April 2023.

Bo Z 'Artificial Intelligence and Copyright Protection -- Judicial Practice in Chinese Courts' IPR Division of the Supreme People's Court of China available at https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/conversation_ip_ai/pdf/ms_china_1_en.pdf accessed on 30 April 2023.

Congressional Research Service 'Generative Artificial Intelligence and Copyright Law' available at https://crsreports.congress.gov/product/pdf/LSB/LSB10922 accessed on 11 April 2023.

Davenport TH & Mittal N 'How Generative AI Is Changing Creative Work' Harvard Business Review 2022 available at https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work, accessed on 10 July 2023.

Duggan W 'Artificial Intelligence Stocks: The 10 Best AI Companies' available at https://money.usnews.com/investing/stock-market-news/slideshows/artificial-intelligence-stocks-the-10-best-ai-companies accessed on 1 July 2023.

European Commission's High-Level Expert Group on Artificial Intelligence 'A definition of AI: Main capabilities and scientific disciplines' available at https://ec.europa.eu/futurium/en/system/files/ged/ai_hleg_definition_of_ai_18_december_1.pdf accessed on 20 July 2023.

European Parliament News 'EU AI Act: first regulation on artificial intelligence' available at https://www.europarl.europa.eu/news/en/headlines/society/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence#:~:text=Parliament's%20priority%20is%20to%20make,automation%2C%20to%20prevent%20harmful%20outcomes accessed on 20 April 2023.

Hlomani H & Rens A 'AI and the Law Op-Ed - Artificial intelligence, copyright infringement and protection – a legal quagmire?' available at https://www.dailymaverick.co.za/article/2023-03-24-artificial-intelligence-and-copyright-a-legal-quagmire/ accessed on 20 April 2023.

HM Government 'National AI Strategy' available at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1020402/National_AI_Strategy_-_PDF_version.pdf accessed on 3 April 2023.

Korf RE 'Does Deep-Blue use AI?' available at https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CAIQw7AJahcKEwjwyvfplMuBAxUAAAAAHQAAAAAQAg&url=https%3A%2F%2Faaai-22.aaai.org%2FPapers%2FWorkshops%2F1997%2FWS-97-04%2FWS97-04-001.pdf&psig=AOvVaw3z_78NpiJr8-RCp2b9nI8s&ust=1695916848782607&opi=89978449 accessed on 3 April 2023.

Launchbury J 'A DARPA Perspective on Artificial Intelligence' available at https://www.darpa.mil/attachments/AIFull.pdf accessed on 5 April 2023.

LexisNexis & Squire Sanders 'International aspects of copyright' available at https://www.squirepattonboggs.com/~/media/files/insights/publications/2012/10/international-aspects-of-copyright/files/international-aspects-of-copyright-practice%20note/fileattachment/international-aspects-of-copyright-practice-note.pdf accessed on 8 April 2023.

Quintais JP 'Generative AI, Copyright and the AI Act' Institute for Information Law, Wolters Klewer (2023) available at https://copyrightblog.kluweriplaw.com/2023/05/09/generative-ai-copyright-and-the-ai-act/ accessed on 20 April 2023.

Tiernan J 'Is AI Really an Art and Design Killer?' available at https://www.vectornator.io/blog/will-ai-replace-artists/#what-dangers-might-ai-present-for-designers-and-illustrators, accessed on 28 April 2023.

TRIPS: Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 available at https://www.wto.org/english/docs_e/legal_e/27-trips_01_e.htm accessed on 10 April 2023.

U.S. Copyright Office, Compendium of U.S. Copyright Office Practices § 101 available at https://www.copyright.gov/comp3/docs/compendium.pdf accessed on 16 April 2023.

U.S. Copyright Office Review Board 'Re: Second Request for Reconsideration for Refusal to Register A Recent Entrance to Paradise' available at https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf accessed on 16 April 2023.

Wiggers K 'The current legal cases against generative AI are just the beginning' available at https://techcrunch.com/2023/01/27/the-current-legal-cases-against-generative-ai-are-just-the-beginning/ accessed on 20 April 2023.

WIPO/IP/AI/2/GE/20/1 REV available at https://www.wipo.int/edocs/mdocs/mdocs/en/wipo_ip_ai_2_ge_20/wipo_ip_ai_2_ge_20_1_rev.pdf accessed on 30 April 2023

WIPO 'Summary of the Berne Convention for the Protection of Literary and Artistic Works (1886)' available at https://www.wipo.int/treaties/en/ip/berne/summary_berne.html#_ftn2 accessed on 25 April 2023.

WIPO 'WIPO-Administered Treaties: Contracting Parties Berne Convention' available at https://www.wipo.int/wipolex/en/treaties/ShowResults?search_what=C&treaty_id=15 accessed 15 April 2023.