المعهد القومى للملكية الفكرية
The National Institute of Intellectual Property
Helwan University, Egypt

المجلة العلمية للملكية الفكرية وإدارة الابتكار

دورية نصف سنوية محكمة يصدرها

المعهد القومي للملكية الفكرية

جامعة حلوان

العدد الخامس
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تهدف المجلة العلمية للملكية الفكرية وإدارة الابتكار إلى نشر البحوث والدراسات النظرية والتطبيقية فى مجال الملكية الفكرية بشقيها الصناعي والأدبي والفني وعلاقتها بإدارة الابتكار والتنمية المستدامة من كافة النواحي القانونية والاقتصادية والادارية والعلمية والأدبية والفنية.

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Artificial intelligence right to copyright

Rita Adly Wadie

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Abstract

The information age; the computer era and the digital revolution, has changed our universe as it became an essential part of our daily lives. It is amazing how the human mind can be that creative. Almost on a weekly basis, new technologies are being created that hold out potentially transformative and more inclusive ways to communicate, to teach and to learn, to compute and organize data, to conduct business, to promote democratic dialogue and improved governance — and to organize resistance to injustice and oppressive governance. It started with computers with its hardware and software and now we are talking about Artificial intelligence, Machine learning and robotics.

Artificial Intelligence (AI) technologies use tremendous amounts of information to learn and filter data that is then used to generate an output. The process commonly referred to as “machine learning,” allows certain AI to create entirely new content based upon the materials it used to learn.

The ambiguity regarding the stance on AI is not recent, This evolving digital technology and digital age in itself could be described as a third wave to challenge and push the limits of Copyright legislation. Works created by AI must be placed somewhere in the equation of copyright,

whether it is acknowledgment of an AI-author or deeming those works un-copyrightable or something in-between.

The boundaries in deciding when a human is an author of a copyrighted work are not very difficult to distil; this difficulty increases in regards AIS.

1.1 The Introduction

New technologies created an ever-changing landscape that faces copyright experts and professionals. Artificial intelligence (AI) and some innovative technologies challenge our present copyright regimes. Technology gets more and more creative everyday, Moreover, this day and age the process of creating works of art gets more and more technological and vice versa, as It is commonly accepted that computers are in many ways smarter, or at least have a greater capacity to calculate and base decisions on larger amounts of data, than humans and with this can perform cognitive tasks better and faster.

Technologies have already developed from assisting people in the production of art to being able to produce it all by itself. Artificially intelligent systems (AIS) are becoming more and more advanced every day. These systems are not only capable of making art, but also generating it all by themselves.

1.2 The Importance

The 3D- printed painting “ New rembrandt" which was made in public in 2016, is a portrait drawn and painted by AI using Rembrandts’ brushwork after having AI learn 346

works o Rembrandt, who was the artist in the Netherlands in the 17th century. By setting the drawing conditions to Caucasian man in his 30s, with facial hair, in black clothes with a white collar, and a hat, and facing right, AI was able to draw and paint the picture almost identical to that painted by Rembrandt Himself.

The song, " Daddy's car," which was made in public in 2016, is a song whose music is composed by using the AI software called the " Flow machines" developed by sony Computer Science Laboratories, Inc. (SONY CSL) and then musical arrangement and lyric are added to the music by human beings.

As many technologies developed, it is important to know if Artificial intelligence will be granted a copyright or it is just a mere tool.

1.3 The problem:

The problem concerning our research weather it is possible to grand Artificial intelligence the right to have copyrights over its work, as machine learning is a process where putting thousands of data into a machine by human.

So the copyright of the creation of a new art should be granted to whom?

1.4 The Methodology:

In order to successfully tackle the research's issues, the methods that will be used in this research paper are the Inductive method and comparative method.

The Inductive Method called the experimental method understanding and explanation of and this method based on the different phenomena, in order to reach the understanding of the ties that control the variable and principles and general provisions[١] formulate it as

The importance of the inductive method is the transition from the particles to wholes or from private to public, In order to uncover the common denominator between them, and by linking the cause and the cause, and then conclude to develop a general rule or general theory governing these issues.

The application of the abovementioned method on this research will be used to define the general rules of copyrights determinants, and ho to apply it on Artificial intelligence.

The Deductive Method starts with the total facts, ending with the partial facts, transition from the general to the specific. This method used to apply general rule on special or individual situations.

As in this research, the general rules of the berne convention to consider an author be applied to the Artificial intelligence.

Moreover, It should be noted that the two abovementioned methods are related to each other, and not opposite to each other, as the Inductive method puts the general rules and in

[١] ٣٤ د. احمد عبد الكريم سلامة : الأصول المنهجية لأعداد البحوث العلمية ، مصر، دار النهضه العربية ، ص

order to test their effectiveness and validity, we shall apply the deductive method on special cases.

The Comparative Method in legal research is the method that compares different legal systems by studying the phenomena, social facts, and the application of the legal principles to these phenomena to reach the ties between the social facts and the legal principles for instance and the reasons behind them and their development.[1]

[1] 43 د. احمد عبد الكريم سلامة : الأصول المنهجية لأعداد البحوث العلمية ، مصر، دار النهضه العربية ، ص

Chapter Two

Artificial intelligence and copyrights

2.1 Introduction

In this chapter we will define Artificial Intelligence and copyrights.

An artificial intelligence system is nothing more than a software algorithm, yet this algorithm is capable of making independent, rational, precise, and unpredictable decisions amongst provided alternatives. When it comes to learning, an AIS follows the same steps as humans. Strong AI, which involves inventive thinking and logical reasoning ability, must be distinguished from weak AI, which merely builds software fitted to a specific role.

As there is no legal definition of copyright in the Egyptian law, United Kingdom law and United States law nor in Berne convention and Rome convention, **the World Intellectual Property Organization (WIPO)** defined Copyright (or author's right) as a legal term used to describe the rights that creators have over their literary and artistic works. Works covered by copyright range from books, music, paintings, sculpture, and films, to computer programs, databases, advertisements, maps, and technical drawings.[1]

[1] https://www.wipo.int/copyright/en/

Therefore, copyright is the exclusive right of the maker of a literary, scientific or artistic work to reproduce and make it public. Copyright protects not only works of literature, music, drama, film, photography and art, but also computer programs, databases, industrial designs and works of applied art. These works will be protected regardless of their merit or purpose: a painting of a toddler is just as eligible for copyright protection as a creation from a famous artist. There is only one threshold in place that must be met in order for a work to receive copyright; the work must be an original expression of the author in the legal sense.

Copyright is an incentive for authors to create new as are all the intellectual property rights.

2.2. Rationale of copyright

In the brief description of the history of copyright the rationale of the protection granted is mentioned. This rationale is not only important for the history and development of copyright, but also for the future of the system. It is vital to know what our current rationale for copyright is to determine whether we can justify granting copyright protection to works created with or by new technologies. The modern copyright regimes we know today are based, roughly, on two different approaches. The first is the copyright approach, which is often used in common law countries, such as the United Kingdom and the United States and the second approach is the droit d'auteur approach which is commonly used in copyright

laws across continental Europe. A[1] good example of a utilitarian rationale used by the copyright approach is the argument mentioned by William Landes' and Richard Posner's. They argue that intellectual creations are characterised by their attribute to be easily replicated and that enjoyment of the creations by one person does not prevent others from enjoying it, and that this leads to a danger for the author to not be able to get a return on his or her investment, time and effort spend, because others can copy their creations by investing no more than the costs of production. This danger, when aware, will discourage authors from making/publishing intellectual creations that are, or at least could be, valuable to society. To avoid this the creators should be allocated the exclusive right to make and profit from the copies of their creations.[2] The means of copyright protection justify the goal of stimulating the creation of works of art, science and literature, according to the utilitarian theory used in the copyright approach. The droit d'auteur approach relies on the argument of natural law, which states the performance of intellectual labour, not other than manual labour, deserves a reward. This argument to justify the granting of copyright has been articulated more specific during the 18th and 19th century. Today there are seven common argumentations used for the legitimation of intellectual property in general, these are:

[1] Kur & Dreier, 2013, p. 242.
[2] Landes & Posner, 1989, p. 325.

1. Personality argumentation: the intellectual achievement carries a personal imprint that provides the right to an exclusive right.

2. Fairness argumentation: the person that provides society with an intellectual achievement has the right to the exploitation of that performance.

3. Economical argumentation: rewarding intellectual achievements will foster the economy.

4. Social argumentation: the person that provides an intellectual achievement will be incentivized to do it again when rewarded.

5. Cultural argumentation: without rewarding intellectual achievements, culture would grow poorer because of the decrease in intellectual achievements.

6. Freedom of expression argumentation: by rewarding intellectual achievements, it becomes possible for the producers to make a living from these achievements.

7. Pragmatic argumentation: when the legal system protects intellectual achievements, it pays to invest in the cultural and technological sectors of society.23

Author's right copyright regimes are far less likely than common law copyright regimes to allocate authorship in other authors than a natural person.24

2.3 Legal instruments of copyright

2.3.1. Berne Convention

In order to reduce the confusion that existed between states regarding international copyright law, ten European states signed the Berne Convention for the Protection of Literary and Artistic Works in 1886. The Convention was the first international instrument for copyright protection. Since the establishment 165 more countries have joined, however there have been several revisions of the Convention and not all contracting parties ratified the most recent version. With the creation of the Convention three fundamental principles of copyright law were established. The first one is the principle of national treatment; which provides that contracting parties to the Convention must give the inhabitants of other contracting parties the same rights under their national copyright laws as they would their own. The second principle is the principle of independence of protection; this principle provides for contracting parties to give the same protection they give domestic works to foreign works, even when no protection is granted under the laws of the contracting party where the work originated. The third and last principle is the principle of automatic protection; this principle prohibits contracting parties to require formalities from creators of foreign works in order to receive copyright protection.[1]Next to these basic principles the Convention provides for a minimum term during which contracting parties should grant copyright

[1] https://cyber.harvard.edu/cx/The_International_Framework_of_Copyright_Law

protection and it also requires the recognition and enforcement of some moral rights.[1] It is however possible for the contracting parties to adopt some exceptions to the copyright protections required by the Convention and next to this provisions give the contracting parties discretion in the creation of more specific exceptions.[2]

3.5.2. EU Copyright law

Copyright in the EU is firmly based on the principle of territoriality and this remains the status quo to this day, even though Article 118 TFEU expressly empowers the EU legislator to create IP Rights for the community. Copyright within the EU is a bundle of the national laws of the member states and any harmonisation that does occur is mostly from case law provided by the Court of Justice of the EU (CJEU) by way of interpreting the Directives that do exist.30 There are seven Directives regarding copyright adopted by the EU, the InfoSoc Directive is the main Directive for copyright protection within the framework of the internal market.[3]

2.4. Anatomy of artificial intelligence that creates art

Fjeld and Kortz have identified four key elements in AI that create art: Input, Learning Algorithm, Trained Algorithm and Output.7 They all will be discussed shortly in the following.

2.3.1. Input

[1] 28 Berne Convention 1886, article 6bis and 7.
[2] Berne Convention 1886, article 9(2).
[3] Directive 2001/29/EC.

The input consists of the existing works of art and other relevant data that are made accessible to the algorithm in order to train it. What the input will be, how diverse or monotonous, extensive or limited, is decided by the humans involved in the development of the algorithm. One example of a monotonous input is the Next Rembrandt project, in which only paintings from the master-painter Rembrandt were analysed by the learning algorithm.8

2.3.2. Learning Algorithm

The learning algorithm is the algorithm that operates on the inputs that are given. This algorithm identifies the main characteristics and common factors of the input and transfers this into rules, which result in the trained algorithm. It is possible that the learning algorithm includes human feedback about the learning process, referred to as “active learning”.9

2.3.3. Trained Algorithm

The trained algorithm is the rules that the learning algorithm has generated from the input. The trained algorithm is unique, in contrast to the learning algorithm, to the individual project. The trained algorithm generates the output by running the data generated about the input in reverse.10

2.3.4. Output

The output is the work of art that is generated by running the trained algorithm. The output is recognizable as the work of “art”. The output can be created from a so-called

"seed", which basically means a given starting point. The seed material could be handpicked by a human or selected by the AI itself.11

2.4 4. Eligibility of copyright protection

the aim will be to provide an answer to the question whether works created by AIS are eligible for copyright protection. The requirements that will be applied on to works created by AIS are the requirement of reflecting an original expression and the carrying of a personal imprint.

2.4.4.1 Original expression

Can an AI system create a work that reflects an original expression? The requirement of an original expression, as is previously mentioned, is fulfilled fairly easy, seeing as in first glance it is not imaginable that another AIS would create the exact same work. And even if it is theoretically possible that an exact copy of the learning algorithm gets the exact same input and generates the same trained algorithm, independent of one another, and results in the same output, it is not very probable. It is not very probable, because the learning algorithm and the input are factors that are provided for by humans.

Another argument why an AI system is able to create a work that reflects an original expression is that the original reflection does not have to be based on the personal interference of the author in all the parts of the work. [1]This

[1] Spoor, Verkade, & Visser, 2005, p. 74.

prevents that works created by automatic means are deemed to do not reflect an original expression by default.

2.4.4.2. Personal imprint

the Endstra-case of the Dutch Supreme Court, in which the Supreme Court formulated a requirement that can result in an ambiguous interpretation. The Dutch Supreme Court stated that the work must be a result of creative human labour, this could be interpreted to mean that no work created by an AIS will ever be granted copyright protection even if all the other requirements previously formulated are met. However AI is involved in the creation of the work and how much human interference has taken place. The first situation is the use of AI by a human author as a mere tool, the second is co-authorship between a human author and an AI author, the third is human selection of autonomously created work by AI, the fourth is creation by use of brute force and the last situation is autonomously created work by an AIS.

2.4.4.3. AI as a tool

If AI has been used as a tool by a human-author it stands to reason that the personal imprint of the human-author can be carried by the work, just as it would when the author uses other tools. Copyright laws should not treat the author differently in this case, just because of a more advanced tool.[1] However is it possible for AI to be defined as a mere tool? There are many technologies that are seen as just that,

[1] Grimmelman, 2016, p. 408.

for example a text-editor on a computer, but also a photo camera. These technologies are seen as something that is only used to translate the idea of an author into an expression.[1] The text-editor does not change the structure of words or storyline of the novel, it is a more convenient and slightly different manner of writing the story. The photo camera does not only translate the idea of the author into an expression; the photo camera has created a new art form.[2] Without the photo camera as a tool, a photograph – the expression – would not exist as a copyrightable work. However it is still seen as a mere tool, because the author makes free and creative choices by choosing the object, the lighting, the angle etc. However the work created by a digital camera is nearly automatic these days and it is surely possible to compare the creation of a photograph with the creation of a work of art using an AIS. Some argue that, just like a camera, AI is a mere tool used by an author to express an idea in a tangible form.[3] Grimmelman comes to the same conclusion by reasoning that the creativity of the author is expressed in the selection of rules that need to be followed by the AIS.. The selection of a certain learning algorithm, the restriction of certain input and choosing the seed-material could still be seen as free and creative choices of the author and as the creation of the work under the authority of the author. Although the author cannot exactly predict the final version of the generated work, the author has some expectations of what it will look like and has directly contributed to the creation of the work

[1] Schafer, Zatarain, Komuves & Diver, 2015, p. 223.
[2] Grimmelman, 2016, p. 408.

[3] Hristov, 2017, p. 436.

by setting the rules the AIS has to adhere to.[1] If an author decides to automate a part of the creative process for his convenience, this does not take away the free and creative choices he is able to make in the creation of a work.

Important to note is that to use AI as a tool, the author of the work must have had influence on the development of the AIS itself. In case the author buys an AI system and uses this, without having had any influence on the developing of the trained algorithm this cannot be defined as using a tool and creating a work under the authority of the author.

An interesting case of using AI as a tool is the project 'The Next Rembrandt'; the AIS that by analysing all the works of the old master can create a new painting in the exact manner Rembrandt would have painted it. Many would say this AIS cannot possibly be called a mere tool. However when we use the same line of reasoning as above and start with the question who made the free and creative choices in a work and who set the rules to which the creation of a work of art must adhere to, the conclusion must be drawn that Rembrandt was the one to do this, especially when those choices do not have to be made deliberately and intentionally. This creates a strange reality in which the author of a work is long gone and can still create copyrightable works. However when looking at the old practice of apprentices who paint under the authority of a master painter, the question of assignment of the copyright is never even uttered. In the case of master-apprentice the authorship would lie firmly with the master and the work

[1] Hristov, 2017, p. 435.

would be as able to be granted copyright protection as if he would have painted it himself. In my opinion this should be the same in the case of using an AIS as a tool in the creation of a work of art.

2.4.4.4 Co-authors

How about the personal imprint in a work when an AIS is not used as a mere tool, but fits more in the role of a co-author to the human-author? A well-known example of co-authorship between a human-author and an AI-author is the robot Asibot that co-wrote a story with the bestselling author Ronald Giphart. In this case Giphart had to enter in some words in order to get a couple of optional sentences from Asibot, than Giphart chose the best of those suggestions and could make some alterations, if he would deem this desirable.[1] The requirement for a work to carry a personal imprint of the author that can be found in the Endstra-case, can be applied in this situation. The finished work is a result of the creative labour of Giphart and the free and creative choices that are a product of his mind. The fact that Asibot has co-authored does not take away from this, just as working together with a human co-author would not take away from the personal imprint of Giphart in the resulting work. It seems that a work created by a human author in collaboration with an AI-author can be protected by copyright. the AI could for example be responsible for giving the outline of a painting and the human author for the further adapting and finishing of the work.

[1]http://www.bibliotheekblad.nl/nieuws/nieuwsarchief/bericht/1000007985/ronald_giphart_schrijft_samen_met_robot_verhaal_voor_nederland_leest

2.4.4.5. Human selection

Different then the example of Asibot is when a human does not contribute to the creation of the work itself, but contributes by selecting which work is valuable and worthy of preserving. The question in this situation is whether the mere selection by a human is enough to give a personal imprint to the work. For the informed citizen the case of Naruto v Slater, better know as the "Monkey Selfie", probably comes to mind immediately.[1] In this case from 2011 a crested macaque monkey in Indonesia made some pictures, including self-portraits, with the camera belonging to British photographer David Slater. One of the self-portraits made by the macaque was uploaded to Wikipedia without the permission of Slater, who consequently send a request to take down the photo to Wikimedia Commons. Wikimedia refused to do so, claiming that the photo was in the public domain because the photographer was an animal, which – in the opinion of Wikimedia - cannot own the copyright to the work. Slater was of the opinion that while the monkey pressed the button, Slater made the selection and created the circumstances for the picture and therefor is entitled to the copyright of the photo. The facts established were that Naruto was highly intelligent, capable of advanced reasoning and learning from experience. Naruto also has stereoscopic colour vision with depth perception and he uses his hands intentional and in a concentrated action, not by mere happenstance. Furthermore was Naruto prior to the creation of the Monkey Selfie, already used to seeing

[1] Naturo v Slater, Dkt. Nos. 24, 28. (2016).

cameras and experiencing cameras being used by humans. Lastly Slater did not assist Naruto in the authorship of the Monkey Selfie. Both the judge and the defendant decided to regard these facts of the case as true. The judge however dismisses the complaint because animals cannot sue for copyright, as they do not have standing in a court of law. Parallels can be drawn from this case to the situation where robots create works and subsequently from those works a couple are selected by a human for distribution.

2.4.4.6 Creation by use of brute force

Another interesting manner of creating works with AI can be illustrated by a claim of a Russian company, called Qentis. This company claimed to have invented software that was able to create every possible text of ten to 400 words and consequently was able to generate 97,42% of all texts of the given length. This approach can result, by using "brute force" computing power, in the production of every meaningful text there could be within the given range of words. Allegedly the business model behind this software was to become the world's largest copyright holder. Qentis eventually turned out to be a satirical artwork,80 however the legal question raised by this still remains; is it possible to have a personal imprint of the author in works created by the use of AI's capability of brute force without a subsequent selection. The free and creative choices necessary for the personal imprint of the author do not have to be deliberate and intentional, but this type of "creative" process seems to be the opposite of the creative process the copyright regime aims to protect. Does this way of creating lack the free and creative choices that are necessary for a

work to carry the personal imprint of the author? The choices made by the Ai in this situation are purely based on the calculation of each possibility and would hardly be defined as creative or free. The AI is not free to choose a word it thinks is the best fit or is the best option according to the combination of the trained algorithm; it simply must make all the imaginable combinations possible.

2.4.4.7 Creation without any human interference

The recent developments in strong AI technology mean that AIS now are able to create and select a work without any interference of a human. With no human interference is meant that no human contribution existed beyond the initial development of the AIS itself. The autonomous AI-author needs to be developed with the possibility of autonomous creation of works of art in mind. The input must be substantial and in no defining manner be restricted and the learning algorithm also cannot have substantial restrictions in order to speak of an autonomous AIS. This means that the human influence in the development cannot have had any significant impact on how the output will turn out.The manner in which an autonomous AIS makes choices cannot be called random any longer, the AI is trained to analyse all kinds of input and make a decision based on this analysis. Human creators may not have to be trained to make this analysis, but everything they see in their lifetime is also input and the choices they make in creating art are also based on those analyses.

Chapter Three

Authorship

3.1 Introduction

International treaties have no definition of authorship or whether a work requires a human author in the first place but like with any other law or legal treaty it is the assumption of having a connection to a human. For example, the Berne Convention grants moral rights to the author, but how one can tell a human- created work apart from a computer-created work? It might indeed be an impossible task, but the work must be connected to a human author in order to be copyrightable, this is the basic assumption of different legislation. The copyright theory is altogether founded on the assumption that ideas come from human minds and humans are the fountain of creativity. These facts make it so that most of the IPR legislation is based on the assumption of a human author.64 In the light of these assumptions it is quite surprising that only few decisions address what authorship means or even who is or can be an author and even fewer copyright laws touch the idea of authorship or tries to define it.

3.2 Six signifiers of authorship

Tuomas Sorjamaa divides authorship into 6 sub-categories in his masters' thesis, that he then calls the six signifiers of authorship. These six signifiers are; 1) Originality, 2) Personality , 3) Labour , 4) Intent , 5) Ownership , 6) Investment .75 Since Copyright is so heavily based on

authorship it is meaningful to examine authorship from different viewpoints such as given by Sorjamaa.

According to Sorjamaa these six signifiers define the term authorship, but the list is not even exclusive. Since authorship as a concept is so complex it is not even possible to give a perfect definition of authorship . Defining authorship perfectly is not even that important, but to get the idea why authorship is such an important part of copyright.

Originality is the most important part of authorship. If the work is not original, it therefore cannot enjoy protection by copyright. Personality somewhat overlaps with originality or rather personality is part of originality. This is most obvious with a copyrightable work like a book. Writer's personality will at least have some input on the final work. Labor is quite obvious since without having your own input on the work you should not have copyright over the work, and it can be argued that such works that do not require any labor should not be copyrightable. Intent as a factor in authorship is rather hard to define at least when there is only one author. In joint authorship intent plays more important role where it can be used to define who should have ownership over the given work. Nevertheless, intent can complex the matter more than it solves. Ownership is one of the key aspects of authorship. Usually author is also the owner of a work and copyright, so authorship and ownership are tied into each other. There might be cases where the author and the owner are not the same person, but these cases are somewhat rare. Lastly investment ties into labor and intent since investment can

be seen as both. When creating something new you must work for it, this gives us labor and as a by-product we get intent; creators intent is to create something. These two factors can then be transformed as investment.

3.3 AI as the author

The boundaries in deciding when a human is an author of a copyrighted work are not very difficult to distil; this difficulty increases in regards AIS. When is an AIS an author? One definition of an AI-author could be a "computational system, which by taking on particular responsibilities, exhibit[s] behaviours that unbiased observers would deem to be creative."6 Supplementary will be assumed that the AI-author outputs works that are novel and surprising, in the meaning that the work is not a copy of any existing work or a predictable transformation of an existing work.

3.4 Examples of AI creators

One of the first AI creators was a computer program called Racter, who wrote the book "The policeman's beard is half constructed" in 1984. Racter was fed with grammar rules and vocabulary and then it created the text with random generation and therefore the book is not pre-programmed. Racter can create texts by using its files, which have been given to it by the programmers.51 Racter is not the only AI creator and there have been others, like AARON and BRUTUS.52

Another example is e-David, which is also an AI-painter. Like with The New Rembrandt, e-David's creations are

original intellectual property works. E-David takes photos with its camera and then creates paintings, using these photographs as reference. Although e-David creates new with the software, which is purely made by its programmers, it still takes photographs independently and this could be seen as its own creative input on the works57

As we can see from this rather short presentation of AI-creators, they are reality and out there, creating and inventing. Some of these AI-created works are even displayed worldwide in different exhibitions.[1]

Conclusion:

Works created by AI are, in certain situations, eligible for copyright protection. The requirement of an original expression is fulfilled fairly easy, especially when factoring in the fact that humans are responsible for the input and learning algorithm that eventually becomes the trained algorithm that influences the output. Another reason why an AI system is able to create a work that reflects an original expression is that the original reflection does not have to be based on the personal interference of the author in all the parts of the work. [2] This prevents that works created by automatic means are deemed to do not reflect an original expression by default and results in the fact that the mere involvement of AI in the creation of the work does not mean that a work cannot be an original expression. The fulfillment of the requirement of the

[1] Robots Unlimited. Life in a virtual age; https://newatlas.com/creative-ai-algorithmic-art-painting-fool-aaron/36106/
[2] Spoor, Verkade, & Visser, 2005, p. 74.

personal imprint can differ based on the manner AI is involved of the creation of a work.

The first situation is the use of AI by a human author as a mere tool, If AI is used as a tool by a human-author it is reasonable to assume that the personal imprint of the author is present in the work. The creativity of the author can also be expressed in the selection of the rules that need to be followed by a tool.

The second is co-authorship between a human author and an AI author. For the human author a co-authorship with an AI system seems to result in the same rights as a co-authorship with a human author. Possible problems in this situation lie with the defining of Asibot as a co-author, but these do not stand in the way of the possibility for copyright protection of the work.

The third is human selection of autonomously created work by AI. The action of selecting the work and setting the conditions in which the work is created seems enough to result in sufficient free and creative choices by the human author to have his personal imprint carried by the work.

The fourth is creation by use of the brute force of AI computing power.

The choices made by the AI when using brute force are purely based on the putting together of each possibility in a certain framework. The AI is not free to choose or select the best option according to the trained algorithm. The last situation to have been discussed is the autonomously created work by AI and the fact that AI is modeled after the

learning and creative process of that of a human is a huge factor in defining the choices made by an AI as free and creative.

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