PHIL 481: ***Computers, Creativity and Copyright: Autonomous Robot's Status, Authorship and Outdated Copyright laws.***

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There are many hurdles in robot status, authorship and copyright laws that must be considered when deciding if a computer should have the ability to copyright what it creates. This paper will argue that robots designed using machine learning have a degree of autonomy. It will then be argued that an autonomous robot is capable of originality in its creations and could be considered creative and is therefore a contender for copyrights to its creation. Sullins presents two distinct types of robots: telerobots and autonomous robots. This paper will focus on autonomous robots (I.e., AI) that are designed using machine learning. The lack of definition of originality in the Berne Convention will be addressed as a key reason for cases on originality being ununiform leading to an ambiguous chain novel in this area of law. The objective approach to originality will be presented in both the artists expression and audience reactions. Then creative autonomous robots, *AARON* and *The Painting Fool*, will be presented as case studies. Next the authorship of AI's creations will be discussed, the programmers of AI software's will be considered in the multiplayer model. The Next Rembrandt case will show new artwork, created by AI, resembling past pieces but brought to life in an inventive way. The current framework of copyright does not accommodate non-human authors. It will be shown that traditional patent/copyright laws have become irrelevant, inapplicable and outdates with respect to creative robots and the 3As (advanced, automated and autonomous). Speciesism will be seen in *The Bicentennial Man* Case Study and an autonomous robot being legally held accountable for its actions in *The Dark Net Shopper* Case Study will be shared. Finally, I will argue that copyright laws must be adjusted to protect AI as creators. AI is autonomous and

creative in its own right: therefore, it should have partial ownership/authorship of its creations. As a creator, autonomous robots should receive the copyrights of that which it produces.

In *When is a Robot a Moral Agent?* Sullins introduces a kind of taxonomy in order to make sense of attributing moral agency to this classification of technology. Sullins presents two types of robotic technology: "telerobots" and autonomous robots" and analyzes their relationship to moral agency and moral responsibility, arguing that each is different. Telerobots are remotely controlled machines that can make only minimally autonomous decisions (Sullins, 2016). These machines are usually used in morally charged situations where the locus of moral agency and moral responsibility falls on the agent, not the tool or victim. This is because the human operator is involved in all the telerobot's decisions, it provides the agency for the machine. Sullins states that autonomous robots are "capable of making at least some of the major decisions about their actions using their programming" (Sullins, 2016). Unlike telerobots, the moral responsibility or moral agency does not reside in the operator as there is not one. According to the standard theoretical schema the moral responsibility would reside with the programmers of the autonomous robots (Sullins, 2016). Sullins argues instead that programmers are only partially morally responsible for the actions of an autonomous robot. Sullins draws on an analogy of parents, on his view, parents are only partially morally responsible for their offspring's actions. Programmers (like parents to their children) are a contributing factor in the actions of the autonomous robot which are either constrained or heavily influenced by its programming which they engineered (Sullins, 2016). As seen in machine learning algorithms programmers are not the exclusive cause of any action. If we were to imagine the two types of robots presented by Sullins painting; an autonomous robot learns

to paint in a style on its own, while the telerobot paints in the same style by its programmers. The first autonomous robot would have a stronger claim to the ownership of the artwork it creates then the second telerobot because it does not have a human operator that provides the agency and decision making for it. Sullins argues that autonomous robot's moral agency and responsibility is caught in a complex web of relations. No single entity within this web of relations is the sole locus of moral agency or responsibility but, the autonomous robot should be considered a member of it.

In order to classify an autonomous agent as an author, one must first address the question of originality. The Berne Convention entered into force in 1887 and plays an important role in copyright protection. This text encouraged two basic principles that resonate today: the establishment of a union and the principle of national treatment. Through the principle, called the "nationalization of the international" the convention purports to be "open to all countries of the world and capable, by means of periodic revision, of keeping pace with juridical, technical and economic change" ("Guide to the Berne Convention," 1971). This nationalization protects works created by human beings but looking for a human author becomes problematic when the work is created by an autonomous robot. This citizen clause might make it impossible to implement the originality standard to artistic works created by AI. Even if the issue of protection for non-human agents was solved, in order to acquire this protection a work must comply with the basic requirements, which includes originality. Although originality is a strict requirement, there is no international definition or standard that member-states could adopt nationally (Yanisky-Ravid & Velez-Hernandez, 2018). The convention presents a list with several types of works that must be included as protected works, but it doesn't include a definition or

standard for the concept of originality that could guide member-states by explaining why or how originality in works should be protected. The only constant expression regarding originality is the phrase “shall be protected as original works” but there is no national concept of, and standard for, originality under the Convention (Yanisky-Ravid & Velez-Hernandez, 2018). The ambiguity in the Berne Convention’s definition of originality leads to inconsistent accounts of the concept in law.

The current illusive, ambiguous and inconclusive definition allows for cases on originality to be ununiform, which creates an ambiguous chain novel in this area of law. The lack of a clear definition means that the existing concept of originality is inadequate for addressing new, possibly “copyrightable” art works produced by creative robots. Moreover, the lack of a clear definition leads to interpretations of “originality” that are vague and disharmonized. This causes confusion in the industry as well as the public. This uncertainty surrounding an important legal concept has triggered a search for a solution that could eliminate or reduce future conflicts.

The objective approach is presented by Yanisky-Ravid and Velez-Hernandez as a potential solution to the current ambiguous definition of originality. The objective approach to originality takes the audiences interpretation of the work into consideration. Courts have struggled to decipher which audience provides adequate feedback for judging artwork as original and protected. This can be seen in Bleistein v Donaldson Lithographing, where Justice Holmes delivered an opinion that found pictorial used for advertisement was original and protected by copyright. Holmes described the adequate audience as one that could decide the value of the artwork and was made up of two groups at opposite extremes. The first group was

made of professionals only in law and the second was on the general public's knowledge. The draw backs of the first group (law professionals) was that works of genius may miss appreciations (Yanisky-Ravid & Velez-Hernandez, 2018). Their very novelty would make them repulsive until the public had learned the new language in which their author spoke. The second group (the general public) was less educated in comparison to the legal professionals. If the photos command the interest of any public, they have commercial value, it would be bold to say that they have not an aesthetic and educational value – the taste of any public is not to be treated with contempt. Holmes decision might incline courts to seek a more subjective opinion when evaluating artworks by considering the public's aesthetic interpretation. This could lead to an aesthetic analysis (isolated appreciation of beauty) instead of an observation and acknowledgment of the artists effort with the artwork's originality and distinction. A change in the intellectual knowledge (demanding expertise in the art form) of the audience who observes, decodes and decides if an artwork is original could lead to a change in the quantum necessary to achieve originality.

When the federal court in *Koons* analyzed the originality of the sculpture made by the defendant, and whether he copied the plaintiff's work, it acknowledged an important conclusion in favor of the plaintiff. Although the court found a substantial similarity, uniqueness was important for the protection of the artist's expression of an idea: "What is protected is the original or unique way that an author expresses those ideas, concepts, principles or processes" (Yanisky-Ravid & Velez-Hernandez, 2018). AI does not express ideas, concepts, principles or processes in the same way as a human artist would, on the inherent fact that we don't know AI's rationale. Professor R. Anthony Reese, summarizing the tendency of court decisions

regarding the transformation of content and the transformation of purpose, concluded that, for the fair use analysis, the latter is far more important than the former (Reese, 2008). Every artist creates with a unique purpose. The purpose and ways in which autonomous robots create are very different to that of humans. There is a newness that adds value to a painting created by AI, even if it is the exact same content of a human's painting, and this must be compensated. The artwork can be described as a novel painting that is distinguishable and singular, in other words, a protectable expression of an idea. The fair use analysis focuses not on the author's intent, but rather on the reader's reaction. In the art world, the author's intention is an important factor in originality and the constitution of the work itself. It would be very rare that the artist and audience have the same interpretation of a piece as they would need to be identically connected to the subject depicted in the work. The proposed objective approach might be applicable to works created by autonomous robots and is further warranted by the intangible, vague nature of art.

The concept of originality has been stretched farther in creative projects such as *AARON* and *The Painting Fool*. In 2013 an art exhibit took place in Paris which received press coverage, and featured works produced over several years. This show was a typical art exhibition except for the fact that the artist on display was a computer program known as *The Painting Fool* ("The Painting Fool," 2018). This AI was created by Simon Colton, he suggests that for programs to count as creative they must pass something different then the Turing test. Colton suggests instead that an AI artist would have to behave in ways that were skillful, appreciative, and imaginative. The Painting Fool has made progress on all three fronts. By appreciative Colton means responsive to emotions (Gayford, 2016). This can be seen in an earlier work, where the

program scanned an article on the war in Afghanistan, extracted keywords and found images connected with them. These were then used to create a representational image that the program felt reflected the content and mood of the newspaper article. One aspect of human imagination is displayed here which is the ability to see one thing as something else. The ability to see shapes on a flat surface, as something else: something in the three-dimensional world entails creativity.

Harold Cohen was a computer art pioneer and the developer of *AARON*. In 1973 this painter collaborated with a program called *AARON, AARON* has been able to make pictures autonomously for decades. Cohen referred to this partnership with *AARON* as quite autonomous and stated that near the end of their time together *AARON* served Cohen by making drawings which he would then develop into paintings. “Cohen was a talented engineer: His machine would compose images of people in rooms, then draw them, mix its own dyes and color the drawings” (Cohen, 2016). For nearly a decade many of *AARON*s paintings were representational images that Cohen “regarded as superior to his own” (Cohen, 2016). Many of the algorithms used were not like the artists expertise, or style. Cohen stated that “*AARON* was a distinctly different kind of intelligence from his own and he puzzled over its surprising success” (Cohen, 2016). *AARON* is an example of a robot that can create artwork autonomously by using the teachings (code) of Cohen.

The complex web of relations inherent in the creation of autonomous robots is seen in the Multiplayer Model. This model describes the multiple participants and stakeholders that overlap and are independent in the process of creating an autonomous robot. It will be shown that the traditional efforts of copyright to identify one inventor are no longer applicable in the

multi-layered creation of AI systems and the inventions created by them. There are at least ten entities among many possible stakeholders who are partially, indirectly or temporarily involved in the invention process. The category of stakeholders can overlap or remain separate and distinct. These include but are not limited to; The Software Programmers, The Data Suppliers, The Trainers/Feedback Suppliers, The Owners of the AI Systems, The Operators of the Systems, The New Employers of Other Players, The Public, The Government, The Investor and finally the AI system (Yanisky-Ravid & Velez-Hernandez, 2018). If any of the ten players listed above can claim ownership over the AI's invention, then the question of how to identify the actual inventor who's entitled to the patent rights must be addressed. Many of the players may have a contractual obligation to assign the invention to the company, but who actually invented the patentable subject matter remains unsolved. If none of the players qualify as an inventor according to the current legal definition, it becomes hard to deceiver what other entity should hold copyrights for an AIs invention. Even if the programmer has copyright to the software it does not mean that the owner thereby owns the patent rights to the new, unpredictable, and evolving inventions created by the autonomous AI system. Granting the programmers, the copyright on the AI system does not necessarily entail granting them the rights to the products and processes developed by AI systems as well. This statement does not question if programmers are entitled to ownership over the software they develop, but rather that this entitlement does not automatically result in ownership of the products and processes created by AI systems.

The Next Rembrandt project used machine learning based AI and examined the entire collection of Rembrandt's work. The project studied each pixel of Rembrandt's portraiture work

in high resolution 3D scans and digital files. The project then specified that the AI would create a portrait of a "Caucasian male with facial hair, between the ages of thirty and forty, wearing black clothes with a white collar and a hat, facing to the right" ("The Next Rembrandt, n.d.). The texture of Rembrandt's paintings was then considered, and the brush strokes were analyzed to determine the exact angle and number of layers of ink that should be applied. The final piece was not a copy of Rembrandt's work, it is considered a visualization of the data collected. Again, Koons states that what is protected by copyrights is the original or unique ways that an author expresses ideas, concepts, principles or processes. The artwork was described as novel because its process was distinguishable and singular from the past, it is therefore a protectable expression of an idea. Although the content may be the same the purpose and way of arriving at the final product differs. Although the AI was informed by Rembrandt's past stylistic choices it put them to practice in a new way. The piece that *The Next Rembrandt* created is said to be an original piece created by AI in the style of the Dutch master.

The Compendium of Copyright says in section 503.03(a) that ""In order to be entitled to copyright registration, a work must be the product of human authorship" ("Compendium II of Copyright Office Practices," 2014). This can be classified under Warren's concept of speciesism as it is favoring the interests of the human species over and against those of other creatures (autonomous robots) (Warren, 1997). Courts view authorship as a purely human phenomenon (Bridy, 2011). Although Autonomous Robots keep creating innovative pieces of art the court seems steadfast in the idea that copyright authorship is reserved for legal persons.

The Bicentennial Man presents a similar case of bias in favor of humans over those of intelligent machines. Current copyrights and past jurisdictions do not consider creative robots

as an active member in its own creation. A case can be made that the bias which many of the characters exhibited in the Bicentennial Man was derived from a form was derived from a form of prejudice philosophers' term Speciesism. The story is told from the point of view of Andrew, an experimental robot. Andrew is given his human name by, Little Miss, the youngest daughter for whom he carves a beautiful pendant out of wood. This leads to the realization that Andrew has talents, which the Martins (the family he serves) encourage him to develop. Little Miss helps Andrew fight for the right to receive money for his creations (Asimov, 1976). Although the judge does grant Andrew his freedom, the opposing attorneys argue that "the word freedom has no meaning when applied to robot. Only a human being can be free." to this the judge responds, "There is no right to deny freedom to any object with a mind advanced enough to grasp the concept and desire the state." As discussed by Anderson, Asimov made an excellent case for the view that certain types of intelligent machines, ones like Andrew, should be given rights and should not be required to act as slaves for humans (Anderson, 2011).

Anderson believed that Andrew may not have been programmed with the correct principles, because they did not acknowledge rights Andrew should have had. Anderson stated that if we could simply find the right set of ethical principles for intelligent machines to follow, they could very well show human beings how to behave more ethically (Anderson, 2011). Most people hold a modest speciest view, meaning more weight and special consideration will be given to human interests than the corresponding non-human interest (Kagan, 2015). This form of speciesism still violates a fundamental moral principle; namely, the principle of equality consideration of interests – which states that the interest of every being affected by an action are to be considered and given the same weight as the like interests of any other being

(Yanisky-Ravid & Velez-Hernandez, 2018). The current copyright laws don't acknowledge the creative rights which autonomous robots should be considered for. By updating copyright laws to account for the 3As (advanced, automated and autonomous AI) progress will be made to eliminate speciesism. Copyright laws are speciest because they do not assign equal weight to the like interest of non-humans and violate the principle of equal consideration. Current copyright laws consider human economic gain, reward and credit them fully for their joint relationship with AI that make projects like *The Next Rembrandt*, *AARON* and *The Painting Fool* possible.

The Dark Net Shopper Case is an example of a robot being held accountable for its creation. The autonomous robot, designed by a group of artists, went on a weekly shopping spree in the deep web with a budget of $100 in Bitcoin and randomly choose, purchased and mailed items to the art gallery where the purchases were being displayed (Bitnik, 2014). Although the context and purchases were facilitated by the artists, when the robot purchased ecstasy it was the bot that was seized, or some say "arrested," by authorities. The artists stated that "we as well as the Random Darknet Shopper have been cleared of all charges" (Bitnik, 2014). The role the artists played in the autonomous robot's purchase can be compared to that of the stakeholders over a piano, a paint brush, a computer, a printer, who, do not hold rights over the rhythm, painting, or photo, produced by the creative user. There is a difference between buying or creating artistic tools and putting those tools to a practice that invent something distinguishable and singular. Both paintbrushes and algorithms give rise to the creation of artwork when used by autonomous agents. A human uses the paintbrush to create while a robot uses an algorithm. The creator of the paintbrush does not hold ownership of the

human's artwork, yet the creator of the algorithm retains ownership of the robot's artwork. The difference between a paintbrush and an algorithm must be considered. An algorithm is a process or set of rules to be followed in calculations or other problem-solving operations. A robot or computer is dependent on algorithms where humans are not dependent on paintbrushes and could just use our fingers to paint. This dependency makes it difficult to specify who should hold ownership of the creation, as algorithms are a necessary stepping stone to a robot's creation, but not the full path to that creation. Algorithms restricts the creator's (autonomous robot) ability to a certain framework. On the other hand, a paintbrush helps with creations but there are no inherent constraints or rules that come with the practice of using a paintbrush in creating art. Perhaps the mass production of paintbrushes compared to the labor and skills it takes to create an algorithm is a main reason for this distinction. Locke's Labor theory states that "the labor of his body and the work of his own hands are properly his" (Day, 1966). If we could learn to mass produce algorithms using machines, would this allow or help autonomous robots be considered creators and be entitled to copyright their work? This case shows a past jurisdiction that when a robot breaks the law on its own initiative it can be held liable, although the question of its right to copyrights is still being negotiated locally.

With all presented concepts and case studies in mind I call on policy makers to rethink and adjust current copyright laws governing AI systems. The traditional structure must be replaced with tools that allow for growth in the new 3A era of autonomous and creative robots such as *AARON* and *The Painting Fool* that can create original work. The current copyright laws call for one entity to hold all the creative copyright, which is unreasonable in the web of relations that make AI possible, as seen the multiplayer model. There is a difference between

the transformation of purpose versus the transformation of content in artwork. Even if an AI copies a painter work exactly the purpose for creation and mode by which the content was brought to life is different. Personhood is currently a requirement to protect one's creations, this speciesist idea is central to copyright laws and restrains all non-humans from copyright. There are many economic incentives tied to the legal support of a creation. This monopoly-like hold for a period allows for the authors efforts to reap personal gain and advance public welfare. The Constitution's promotion of creation was motivated by the desire to guarantee people's freedom to create new works. Economic gain would not satisfy AI because they aren't citizens, don't have bank accounts, children to provide for, food to buy, etc. What value would AI gain from copyright laws? If AI became more like Andrew, the main character presented in *The Bicentennial Man* who actively desired and pursued the possibility of becoming more human, this included being allowed to sell his wood works for a profit. The current goals of copyright laws do not give AI incentive to progress. As stated, the driving force behind human progress is seen as innovation and exclusive rights that allow for benefit from IP (Yanisky-Ravid & Velez-Hernandez, 2018). This may lead to concern about AI copyright ownership as AI does not have any need or ability to take advantage of IP benefits. Allowing AI copyright may narrow the playing field for innovation, creating a more competitive market for expression, advancing human progress in return. This can be seen in the Next Rembrandt case study, where it can analyze works in a way that art students may not be able to and drive art students to study and produce works in a whole new way. Copyright laws need to shift to a more objective approach for AI to be considered and granted rights to their creation. Art is seen as an emotional outlet for many, a way of bringing our subconscious to the forefront, could we potentially learn more

about the way AI thinks and perceives from AI's creations? If we do not grant copyright to AI are we restricting expression and ability to potentially gather a deeper understanding of the rationale in autonomous robots' decisions? The current approach in which policy makers seek to identify one human inventor behind products is no longer relevant as machines act independently with no human being behind the inventive act itself. AI is autonomous and creative in its own right; therefore, it should have partial ownership of its creations. As a creator, autonomous robots should receive the copyrights of that which it produces.

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