AI – GENERATED WORK OF ART: WHO DESERVES THE AUTHORIAL CREDIT?

By Akshat Agrawal, January 5, 2019

In light of the recent auction of the Artificial Intelligence-generated portrait of Edmond Belamy and genuine growth of AI generated art and musical works, it is important for us to indulge in the policy debate of who to accord authorship under the Copyright Act, for the same. Even the Delhi High Court recently came up with a query regarding authorial accreditation in works which are computer-generated (using AI). Before I proceed with my arguments, I would like to clarify a few things:

i) This article assumes the absence of any contract defining ownership and authorial rights specifically, and solely deals with the doctrinal interpretation of rules of authorship in the context of AI-generated works.

ii) This article does not deal with authorship of computer generated “useful articles” rather merely deals with aesthetic copyrightable works, which are generated using an AI software.

The Indian Copyright Act prescribes a very vague definition of an “author” in relation to a computer-generated work. It states in section 2(d)(vi) that the author is the person who causes the work to be created. There has been no jurisprudence analyzing this provision and hence this article seeks to analyze the multi-jurisdictional take proposing a policy interpretation which will enhance innovation and rightly accord authorship, in accordance with the doctrinal principles of copyright law.

Authorship in AI-generated original output, may seem intuitively simple. A lot of complexities, however, are associated while doctrinally interpreting and concluding the determination of authorial accreditation. It is imperative to take note, while determining authorship, that AI is not a static concept. It is one which has developed over years and embarks within itself various forms of variations. In certain AI mechanisms, the contribution of the human is a lot more than other mechanisms. For example, deep learning as opposed to machine learning involves more autonomy on the part of the computer while generating output. This evaluation of autonomy in content generation,
which is exercised by the generating medium i.e. the computer is important to be understood and considered, while according copyright authorship.

Here, I would like to establish that any uniform approach applying to all kinds of AI generated content, and one uniform path from either of the aforementioned three, is an untenable approach. This is because of the varying nature of autonomy exercised by the machine in different scenarios. A factual examination of the contribution, of the programmer and the user, in the output generated ought to be done by the courts, while deciding upon claims on authorship. The need of the hour is to effectively accommodate evolving technologies within the legal framework to maintain the sanctity of precedents and prevailing logic. A straight jacket solution is a narrow approach, and an increased scientific analysis of various contributions to the expression needs to be performed.

As has been argued at many forums, intuition suggests that the programmer of the generative software is the logical owner of the output, because of being the author of the author of works. This generic claim however, is against the fundamental tenants of copyright law and the situation is much more complicated than it seems to be. The concepts of Idea-Expression dichotomy and the legally accepted definition/interpretation of derivative might suggest otherwise in certain situations.

**VIDEOGAME CASES?**

A lot of arguments in the AI authorship debate have been backed up by videogame cases without realizing the basic difference in potential and characteristics of automated technology and the one’s based on fed-in memory. These arguments tend to run on convenience and a false analogy rather than on strict doctrinal and precedent accepted principles of copyright. The courts have repeatedly held in videogame cases that game displays are copyrightable by the owner of copyright in game programs, that generates such displays. (*Stern Elec. v. Kaufman*, 669 F.2d 852 (2d Cir. 1982)) The rationale behind the same has been emphasized in the case of *Sega Enterprises v. Accolade Inc.* 977 F.2d 1510, 1520 (9th Circuit 1992) where the court has held authorship to be in the hands of the programmer. This is because – in a videogame, all the image sequences generated upon interaction with the user, are merely copies of the memory stored on the computer program. Nothing is originally and autonomously generated by the program herein and everything that comes as a display is fed in the memory of the game by the programmer.

This is not the case always in AI generated works and displays, as the exact expression cannot be predicted in various deep learning programs and situations. Memory is not the inciter of the expression, rather it is the intelligence which is fed in. Hence an analogy with video games as a generic view can turn out to be an erroneous one.
I. WHEN CAN THE PROGRAMMER BE ARGUED TO BE THE AUTHOR OF THE AI GENERATED OUTPUT?

1. THE IDEA-EXPRESSION DICHOTOMY

Before getting into this concept, I would like to reinstate the idea-expression dichotomy and the case of Baker v. Selden. The court in that case had principally held that ideas, process and general concepts cannot be protected by copyright. Merely the actual expression is protectable. This view has almost been accepted in most of the jurisdictions and has also been incorporated in the TRIPS multi-lateral agreement (Article 9(2)). This principle has further been interpreted in various cases dealing with software copyright, across jurisdictions, to hold that the author of the software does not get an authorial claim in the functionality and the user interfaces developed by the software. (Navatire v Easy Jet [2004] EWHC 1725 (Ch) [74] [130]; Nova v. Mazooma Games [2007] EWCA Civ 219 [51]).

The statutory definition of a derivative work in the US is “a work based upon one or more pre-existing works, such as a translation, musical arrangement, abridgment, condensation or any other form in which the work may be re-case transformed and adapted, including works consisting of editorial revisions and annotations, representing original authorship.” (17 USC § 101) The court has interpreted this definition and the meaning of – “based upon” to be construed not in its generic sense, but rather a narrow sense to connote substantial similarity in the expression, irrespective of the form. (Professor Pamela Samuelson (Richard M Sherman Distinguished Professor of Law at UC Berkeley), in her seminal - highly forward looking- paper, “Allocating Ownership rights in computer generated works” 47 U.Pitt L.Rev. 1185 (1985) (“paper 1” herein onwards), has argued that for an authorial claim on a derivative work to exist, there must be “recognisable blocks of expression of the original work found.” It has, based on this rationale, been argued by scholars that the expression of the output of a software never encompasses the code which generates it, and hence due to the lack of identifiable blocks of expression, no copyright in the output should be accorded to the computer programmer doctrinally.

This view, in my opinion is partially desirable and correct in certain situations as it recognises that the programmer creates the potentiality for the creating the output and not the expression of the output in its actuality. (Pamela Samuelson, paper 1, 1209)

2. WHEN PARTIALLY UNDESIRABLE? – INTERPRETATION OF “DERIVATIVE WORK”

This approach, though, is based on a very strict interpretation of a derivative work/adaptation and states that merely the literary code is an expression of a computer programme. In situations where the output is a copyrightable work like a cinematographic/musical or an artistic work, the code may encompass within itself certain recognisable
compilations which are found in the output as well, in a different material form. In that particular case, such compilations ought to be recognised as a distinct and original contributions of the programmer to the output. It involves sufficient skill, judgment and a creative spark (specifically for the US) to be called an original expression, embodied in the code as well as visible in the output.

A simple example of the same is the concept of the various memories videos, which are generated by Facebook and other social media platforms like Google photos. These are made by using the new age AI technology, involving aspects of machine learning. The programmer here, not only gives the capability to the computer to create the video (non-protectable), but rather also incorporates certain compilation mechanisms which are his own exercise of skill, judgment and creativity. For example hypothetically – chronological arrangement of pictures, choosing the one with most number of likes, most number of comments next, one’s with the most number of people tagged etc. These are elements of compilations which are embodied in the computer code language and dictate the expression generated, and can also be seen as a pattern in the expression of the output, forming a recognisable expression of the code.

The selection and sequence of the pictures i.e the narrative flow contributes as much as the pictures themselves to the emotions evoked and the expression of the copyrightable output. Such embodiment of compilations and specific arrangements are not mere ideas but detailed ideas of the programmer visible in the expression of the output and are protectable as has been ruled in the case of *Ibicos Computers v. Barclays Mercantile* [1994] FSR 275, 292. This case, recognises an important interpretative principle of the *Baker v. Selden* approach, applicable specifically when recognisable expression can be found in the code. In an opinion in the case of *Lotus v. Paperback*, 740 F.Supp 37, 58 [15] (D Mass 1990), the court rightly (in my opinion) concluded that elements of expression, even if embodied in a useful article, are copyrightable if capable of identification and recognition independent of the functionality.

Applying this to the concept to a machine-learning AI software like the one mentioned above, the compilation can be argued to be an expression and one’s that go beyond the obvious functionality of the software. They are an individual inculcation of the programmer and are not obvious ways of arrangement at all. Hence, they can be argued to be a copyrightable, for which authorial credit must be given to the programmer. The generic idea herein is the concept of making a video using images inputted by the user. That is not being sought copyright on. Rather, it is the specific way in which the images are being arranged which a copyrightable expression. This is dictated by the expression of the programmer embodied in the code and is recognisable in the output as well. Hence, in such a situation authorial accreditation and copyrightability of the output to the programmer is definitely warranted.
The possibility of certain information or compilations (arrangements/sequences and created selections) embodied in the code being represented in other forms like an artistic or cinematographic work, cannot be ignored. This has to be recognized to effectively accommodate technological dynamism and developments. Hence, *in a similar situation* i.e. when the copyrightable expression of the output, be it a cinematographic or a musical or an artistic work, can be argued to be a derivative work of the computer program, the programmer should be given copyright authorship on the output of the AI software. The test of the same is – existence of “recognizable blocks of expression” in the information embodied in the code and the output generated, irrespective of its form.

In the UK case of *Banner Universal Motion Pictures v. Endemol Shine Group ltd.*, (2017) EWHC 2600 (Ch), where the court went on to hold (in para 43) that a format of a TV game/reality show can be argued to be copyrightable, even though the inherent concept involves certain changing elements from episode to episode. The requirements that have been mentioned are (i) clearly identifiable features which distinguish from other shows of a similar type and (ii) coherence in framework for capability to repeat. These according to the court distinguish the format from being a mere idea to an expression of the idea/ a detailed idea. An analogy can be drawn with the same in the case of AI generative softwares. For eg. in the memories video, there are distinguishable compiling elements, in a coherent form which are original and are repeated in every such video, even though the images themselves are different. Hence drawing an analogy, the AI programs which inculcate such original arrangements and compilation mechanisms embodied in the code can result in an authorial claim for the programmer in the output.

**II. WHEN CAN THE USER BE ARGUED TO BE THE AUTHOR?**

It is interesting to note the potential of artificial intelligence as an evolutionary technology. Concepts of deep learning can make music and even art, which one eventually won’t be able distinguish with a human-made song. AI can exercise a lot more autonomy, resulting in certain outputs which cannot even be conceived or expected by the programmer, as has been reported [here](#) and [here](#) by The Atlantic. Many AI softwares exist which can make music and even [art](#) on its own, without involving any recognisable blocks of expression from the code. It can make websites out of a drawing, as depicted [here](#), and even portraits as the *Edmond Belamy* one. AI, in certain situations, works on the experience gathered by it from certain inputs. It learns from them to produce its own autonomously created output. In such cases, it would be doctrinally incorrect to give authorial credit to the programmer as the mere contribution of the programmer is to teach the program on how to learn from inputs and create the output (method of operation), rather than dictating the expression itself.
In such advanced AI systems, it has doctrinally been argued that the person who is the most proximate contributor to the expression should be given authorial accreditation. For example, in a hypothetical situation, where the AI software learns how to make music, and consequently makes music by learning from 1000 songs fed to it, it is the person who fed those songs who should be given authorial accreditation and not the programmer who merely teaches how to learn from those songs and make its own. It is this selection of the 1000 songs fed to the software, which results in the particular output which is generated. But-for these particular songs, the expression of the output could never have been the same, as the program learns from them. It can therefore be argued that the expression cannot go beyond the input of the experience dictated and fed to the software i.e. the 1000 songs themselves. Ergo, the user who implements and uses the software, by feeding in that particular compilation of songs, is the closest contributor to the expression of the output generated. The expression of the output can be argued to involve “recognisable blocks of expression” with the specific compilation of songs inputted and fed to gather experience and learn from. Hence the autonomy exercised by the computer is limited to these songs and does not go beyond. In such cases, it is the user who should be given authorial accreditation. A similar analogy can be drawn with a work of art, which is created out of certain experience gathered by the AI software, upon feeding certain pictures to it to learn from.

Therefore it can be safe to conclude in such cases, that the programmers would own the rights to the composition produced when they use it (by feeding the experience) and the users would when they do. The person by whom, the arrangements necessary for the creation of the work are undertaken, has been given statutory authorial credit in multiple jurisdictions (UK, New Zealand, Ireland, UK and India) and this approach seems to safely point towards the user of the software. This path though, is only viable when the output is not a derivative work of the software.

**WHEN IS THIS APPROACH PROBLEMATIC?**

According authorship to the user, though, can be problematic in certain situations like :

i) When the input of the songs/art or experience fed is merely mechanical and does not fulfil the threshold of originality in copyright law. For example, randomly selecting pictures or songs and feeding them without the exercise of any skill and judgment on the part of the user.

ii) When the use of the software is open sourced and everyone gets to feed in songs, with the final outcome being a result of not one user, but multiple inputs by multiple personnel.

The law currently is not equipped to deal with such situations, although even a small amount of creativity or exercise of judgment (depending on jurisdictions and the originality
standard) in selection of inputs fed, can be argued to result in a claim to authorship. However, when this is not fulfilled, the correct policy approach in my opinion with regard to the current legal sphere is keeping the resultant output in the public domain and open to exploitation by all.

CAN THE COMPUTER BE THE AUTHOR?

Due to the amount of autonomy exercised by the computer and the direct contribution to the expression, it may seem that the computer in itself is the most deserving of authorial accreditation, in the case of an AI generated output. Further, the AI software goes beyond being a tool as it has its own competence and ability. It works by leaning from the experience fed to it. However, the law, in its current state and policy, cannot confer such authorship/ownership to the generative software. This is because of:

i) Lack of legal personhood

ii) Unwarranted implications, which are against the practical motives of copyright law in the first place

The current jurisprudence of copyright law is incapable of accommodating machines holding their own property. The US court of Appeals, in the case of *Naruto v. Slater*, 88 F.3d 418 (9th Cir. 2018) [“The monkey selfie case”], went on to hold that completely autonomous non-human entities cannot claim copyright authorship/do not have statutory standing before the court under the Copyright Act. This pronouncement was with respect to an animal seeking authorship, however it can totally be analogous to an AI generative software which autonomously (without a human agent) produces results and output. The rationale of the same, in my opinion is perfectly in accordance with the theories of copyright and is good policy as well.

The major reason for the existence of copyright law is to ensure the progress of science and arts, by providing for an added economic benefit as well as due accreditation. Although, I ain’t arguing that copyrights are the sole reason for which the work comes into place, it still is an important mechanism to incentivise further production. It encourages creativity and originality by providing incentives whether it be economic-oriented (royalties, infringement compensation) or credit-oriented (moral rights). It provides a limited monopoly over exploitation of original content which, definitely, is a compelling incentive to produce more. It psychologically endows upon a feeling of accomplishment due to original expression, which results in further production and inducement for the same.

Machines do not require any such incentives or accreditation in order to produce an outcome. Apart from human requirement and interaction, there is no other “motivating factor”, like copyright, which directly induces the production of the output. The machine,
whenever used/employed will produce an output irrespective of copyright authorship being given or not. Hence, there is in fact no reason to recognize a claim for copyright ownership by the machine.

A few proponents have argued that AI has potential to reach a stage, where it will possess its own consciousness and would need such incentives to produce. However, it is safe to say that we haven’t reached that stage yet and it is an extremely far-sighted claim, which does not really necessitate change in the legal regime or provision of legal personhood as of now.

CONCLUSION

It is essential for the Indian courts and policy makers to realise the importance of this issue and take into account all these doctrinal considerations, rather than simply and intuitively adopting a convenient solution of given authorial credit to the programmer in every AI generated output. India is in a relatively nascent stage of technological development and usage of Artificial intelligence, and hence it seems even more imperative to discuss these issues in a timely manner to foster industrial growth, by providing proper incentives through copyright law. Therefore consideration must be given to academic scholarship which has been going on in this field since years in other jurisdictions, while deciding the best policy to adopt.

An appropriate approach in such cases, in my opinion, would be that the most proximate contributor to the expression should be given authorial status, irrespective of them being the actual creator of the expression or not. This would incentivise usage and production of original output by the use of the AI software, employing various distinct selections and arrangements, consequently resulting in distinct and original formulations and outputs.

Hence, the most feasible way of according authorship is to identify the contributor of certain imperative elements of the expression and are directly identifiable in the generated output. This can be a particular mode of arrangement or a particular selection or compilation, which directly induces the aesthetic effect/emotions evoked by the copyrightable work generated.