



WIPO Impact of Artificial Intelligence on IP Policy Response from Brunel University London, Law School & Centre for Artificial Intelligence

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About Brunel Law School

The [Intellectual Property Law](#) team at [Brunel University London Law School](#) focus its innovative research on topics including copyright, trademark, design and patents. In particular, we recognise the need for more research relating to the intersection between intellectual property (IP) and artificial intelligence (AI). To that end, in 2019 we hosted a conference '[Disruptive Innovation and Law: Evolution Towards A Tech-Law World](#)' to discuss, explore and signpost future research and interaction between leading scholars, practitioners and industry on the impact of AI on IP.

About Brunel Centre for Artificial Intelligence

The [Centre for Artificial Intelligence](#) approaches AI related research projects with a multi-disciplinary, multi-institutional and multi-country perspective. Our priorities are to: understand the impact of AI at three – Macro, Meso and Micro – levels, map the research terrain of the field of big data and AI in business, investigate the impact of AI and related technologies on societies, organisations and individuals and explore and develop theory and conceptual models to support AI practices.

About the Authors

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Introduction

Artificial intelligence (AI) has arisen in the realm of creativity and innovation and is expected to become an integrated part of daily life in the near future. New AI technologies present exciting opportunities for developments in the creative arts, entertainment industries, as well as life enhancing inventions. However, of course, there are social, economic and ethical implications that need to be addressed and policy that needs to adjust accordingly. As such, we welcome the WIPO public consultation that seeks for measures to encourage technological innovation.¹ The study began in 2019 with The WIPO Technology Trends report, offering evidence-based projections to inform global policymakers on the future of AI. Subsequently, in September 2019, WIPO held a Conversation on IP and AI bringing together member states and other stakeholders to discuss the impact of AI on IP policy, with a view to collectively formulating the questions that policymakers need to ask. In December 2019, WIPO published its issues paper with a call for comments from the widest-possible global audience.

Intellectual property has always had a symbiotic relationship with the development of new technology and in turn policy has needed to adapt to keep pace with the technology and cultural changes. AI technology has the potential to shake up the IP system, raising fundamental questions from inventorship and authorship to ownership and infringement. We believe that the advancement of AI technologies requires urgent attention from policy makers in order to ensure the effectiveness of the intellectual property regime, and to a greater extent to mitigate harmful social, economic and ethical implications.

Below we address the WIPO draft issues paper with suggestions for amendments and recommendations of areas for consideration, relating to patents (issues 1, 3 and 5), copyright (issues 6 and 7), and designs (issue 11). In doing so, we distinguish that the way that policy responds to AI with regards to each field of IP is different as unique issues and implications arise within each sector.

¹ 'WIPO Begins Public Consultation Process on Artificial Intelligence and Intellectual Property Policy', PR/2019/843 (13 December 2019)
<https://www.wipo.int/pressroom/en/articles/2019/article_0017.html> accessed 6 February 2020.

Response:

PATENTS

Throughout its history the patent system has been evolving, expanding its patentable subject matter and adjusting its patentability standards to keep pace with technological development. However, with the emergence of modern technologies the patent system has encountered new challenges. In particular, such technologies as AI have brought new ways of inventing, which require only a limited involvement of a human. This has raised a range of important issues, with the key question of whether the patent system is still able to fulfil its objectives of incentivising and rewarding innovation. We believe that the advancement of AI technologies requires urgent adjustments to the patent system in order to avoid significant negative consequences of an unbalanced protection afforded to the outputs of AI activities, which in turn may result in harmful social, economic and ethical implications.²

Issue 1: Inventorship and Ownership^{*3}

6. In most cases, AI is a tool that assists inventors in the invention process or constitutes a feature of an invention. In these respects, AI does not differ radically from other computer-assisted inventions. However, it would now seem clear that inventions can be autonomously generated by AI, and there are several reported cases of applications for patent protection in which the applicant has named an AI application as the inventor.

7. In the case of inventions autonomously generated by AI:

(i) Should the law permit or require that the AI application be named as the inventor or should it be required that a human being be named as the inventor? In the event that a human inventor is required to be named, should the law give indications of the way in which the human inventor should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over inventorship?

(ii) The inventorship issue also raises the question of who should be recorded as the owner of a patent involving an AI application. Do specific legal provisions need to be introduced to govern the ownership of autonomously generated AI inventions, or should ownership follow from inventorship and any relevant private arrangements, such as corporate policy, concerning attribution of inventorship and ownership?

(iii) Should the law exclude from the availability of patent protection any invention that has been generated autonomously by an AI application?⁴

² Center for the Fourth Industrial Revolution, *Artificial Intelligence Collides with Patent Law* (White Paper, 2018) 4.

³ The response to issues 1, 3 and 5 was prepared by Dr Olga Gurgula.

⁴ WIPO Secretariat, WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI) Second Session, draft issues paper on intellectual property policy and artificial intelligence (13 December 2019)

With the rapid evolution of AI technologies and the increase of their computational power, the process of inventing has undergone substantial changes. As AI is becoming more efficient in sorting data, finding patterns, and making predictions, these technologies are increasingly employed in various innovation-driven sectors. AI technologies have now reached such a level that they are capable of producing outputs with only a limited involvement of a human. Such outputs, if they were produced by a human inventor, would be capable of attracting patent protection. This raises an important question of whether under the current patent law regime an AI system can be defined as the inventor. We believe that the answer to this question is negative.

The patent system, including its rationale and the fundamental principles on which the patentability standards are based, are designed around a ‘human inventor’. Thus, the primary justification of patent law is utilitarian, i.e. it is aimed at incentivising and rewarding innovative activities of inventors. The protection is provided to inventions that are the results of ‘human ingenuity’ and not merely to discoveries or an obvious extension or workshop variation of what was already known.⁵ The concept of ‘invention’ entails the ‘act of intellectual creation original to the inventor’,⁶ i.e. the mental act occurring in the mind of the inventor. Moreover, a dividing line between what is patentable and what is a mere extension of existing knowledge is also grounded on ‘human capabilities’ by comparing what the notional ‘person skilled in the art’ would have been able to discover without unusual effort and the additional step of human ingenuity made by the inventor.⁷ All these considerations evolve around the intellectual and creative activities of ‘human inventors’ and, thus, leave little space for ‘non-human inventors’.

More specifically, the analysis of the matters related to inventorship is designed around a human inventor. When determining when an invention was created and by who, the courts generally focus on the ideas occurring in the mind of the inventor, i.e. conception of the invention.⁸ For example, in the UK, Section 7(2) of the Patents Act 1977 states that a patent will primarily be granted to the inventor or joint inventor and Section 13(1) requires that the inventor(s) have a right to be mentioned in any patent or any published application. The Patents Act, however, provides little assistance in determining who the inventor is and simply states in Section 7(3) that the inventor is the actual deviser of the invention. Interpreting this provision, the UK courts explained that the inventor is ‘the natural person who “came up with

⁵ PLG Research [1994] FSR 116, 137.

⁶ Robert L Harmon, *Harmon on Patents. Black-Letter Law and Commentary* (BNA Books, 2007) 32.

⁷ Lisa Vertisky, ‘Thinking Machines and Patent Law’ in Barfield et al (eds.), *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar, 2018) 496.

⁸ *Burroughs Wellcome v Barr Labs, Inc.*, 40 F.3d 1223, 1227 (Fed. Cir. 1994).

the inventive concept”.⁹ The court in *Yeda* emphasised that it is not sufficient to merely contribute to the claims, because the claims may include non-patentable elements derived from the prior art.¹⁰ Therefore, a person will be considered as the inventor if they can demonstrate that they have contributed to the ‘inventive concept’. Certain contributions are usually treated by the courts as being inventive (e.g. where a person contributed to the solution of a particular problem) and, thus, such a person will be considered as a (co)inventor. On the other hand, if a person merely contributed an ‘unnecessary detail’ to the invention,¹¹ or the contribution was of a managerial, administrative or financial nature,¹² such a contribution will not be considered inventive. Therefore, the touchstone in defining inventorship is the nature of the actual contribution to the conception of the invention, which must be creative or intelligent.¹³ This naturally excludes AI technologies from being identified as the inventor. While ‘AI activity may be instrumental if not decisive to the patentability of an invention and the success of the latter in solving a technical problem’, such technologies nevertheless cannot be considered as ‘a deviser of the invention’, because they are not capable of cognition (at least at present).¹⁴ Instead, these technologies should be seen as ‘a crucial tool in arriving at the invention’.¹⁵

As the modern level of technology requires certain human involvement in the inventing process of AI systems, we believe that the current patent law regime is capable of accommodating AI-generated inventions by attributing inventorship to a person who intellectually dominated over the inventive process.¹⁶ We also believe that at present there is no need to implement any changes to patent law in order to define an AI system as the inventor. Any such changes to the current legal framework are likely to disturb the rationale and the fundamental principles of the patent system discussed above. Should the technology progress to such a level, in which no human involvement would be required (the so-called ‘strong AI’), then the mechanisms of protection for the outputs of such a technology would need to be reconsidered.

⁹ *University of Southampton’s Applications* [2005] RPC 220, at 234.

¹⁰ *Rhone-Poulenc Rorer International Holdings v Yeda Research and Development Co.* [2007] UKHL 42, [20].

¹¹ *IDA v University of Southampton* [2006] EWCA Civ 145, [39].

¹² *Morgan v Hirsch*, 728 F.2d. 1449, 1452 (Fed. Cir. 1984).

¹³ Noam Shemtov, *A Study on Inventorship in Inventions Involving AI Activity* (EPO, 2019) 19.

¹⁴ Lisa Vertisky, ‘Thinking Machines and Patent Law’ in Barfield et al (eds.), *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar, 2018) 497.

Burroughs Wellcome v Barr Labs, Inc., 40 F.3d 1223, 1227 (Fed. Cir. 1994).

¹⁵ Noam Shemtov, *A Study on Inventorship in Inventions Involving AI Activity* (EPO, 2019) 19.

¹⁶ *ibid* 13.

Issue 3: Obviousness Analysis Of AI-Generated Inventions Requires Adjustments

9. A condition of patentability is that the invention involves an inventive step or be non-obvious. The standard applied for assessing non-obviousness is whether the invention would be obvious to a person skilled in the relevant art to which the invention belongs.
- (i) In the context of AI inventions, what art does the standard refer to? Should the art be the field of technology of the product or service that emerges as the invention from the AI application?
 - (ii) Should the standard of a person skilled in the art be maintained where the invention is autonomously generated by an AI application or should consideration be given to replacing the person by an algorithm trained with data from a designated field of art?
 - (iii) What implications will having an AI replacing a person skilled in the art have on the determination of the prior art base?
 - (iv) Should AI-generated content qualify as prior art?

The use of AI technologies in the inventing process raises another important question of whether the current approach to the obviousness analysis should be changed in relation to AI-generated inventions. We believe that the answer to this question should be affirmative. The current obviousness tests, as, for example, applied by the EPO and the UK courts,¹⁷ are deeply rooted in the assessment of human capabilities, i.e. their motivation to pursue certain routes, restricted by their abilities to analyse limited amount of options, predictability and expectation of success, etc. All these principles and concepts may become less relevant with respect to the inventive process with the use of AI.

While various jurisdictions have developed certain specific structured approaches to analysing obviousness, the fundamental question to be answered is whether the invention would have been obvious to the ‘person skilled in the art’. Thus, the non-obviousness analysis is based on the distinction between the mental capabilities and knowledge of the notional person skilled in the art and the mental act of the inventor. However, with respect to AI-generated inventions the key output that has led to the invention is produced by AI. This is an important factor, because AI significantly expands the range of things that a human aided by AI can discover without undue effort or experiment, i.e. many inventions may be the result of a massive computational power that allows for rapid trial and error searching - something that an AI system can be programmed to do, while from a perspective of the person skilled in the art without the aid of AI the results may be surprising.¹⁸ Therefore, without relevant changes in

¹⁷ E.g. the current UK obviousness analysis derives from *Windsurfing v Tabur Marine* [1985] R.P.C. 59 Ca; it was restated in *Pozzoli* [2007] EWCA Civ 588 CA. The EPO applies the problem-solution approach (see EPO, *Guidelines for Examination in the European Patent Office* (November 2019) G-VII at 5.1-5.4).

¹⁸ Lisa Vertisky, ‘Thinking Machines and Patent Law’ in Barfield et al (eds.), *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar, 2018) 497. 503.

assessing this type of invention - human capabilities are essentially judged against AI capabilities. This sets a very low standard for obviousness that may render the majority of inventions generated by AI non-obvious to the person skilled in the art who relies only on their common general knowledge and mental capabilities.

This brings us to one of the key questions in the obviousness analysis of AI-generated inventions, which is how to define the person skilled in the art and whether/how the current standard should incorporate AI? Under the *EPO Guidelines*, the average person skilled in the art is presumed to have at their disposal 'the means and capacity for routine work and experimentation which are normal for the field of technology in question'.¹⁹ The question is, therefore, has the use of a particular AI technology become a 'normal' tool for routine work in the relevant field of technology?²⁰ If not, then, as was mentioned above, the use of an AI technology for the purpose of generating inventions may render all inventions non-obvious for the person skilled in the art without the assistance of an equivalent AI tool. How should this be addressed to avoid patent flooding? On the other hand, if the use of AI has become normal in the given field, what is the correct approach to construing the person skilled in the art for the purpose of AI-generated inventions, i.e. who should be the person skilled in the art or be included in the team of the persons skilled in the art?

Another crucial question relates to defining the relevant field of the invention and the scope of the prior art. Obviousness is assessed by 'hypothesising what would have been obvious at the priority date to the person skilled *in the art to which the patent in suit relates*'.²¹ Therefore, the correct definition of the 'art' of the invention is the key element because it provides the basis for identifying the 'person skilled in the art' and their common general knowledge.²² It is, therefore, important to establish the 'field of endeavour in which the inventors were working',²³ avoiding 'both unduly wide and unduly restrictive definitions' as this can create difficulties.²⁴ The properly defined relevant art further helps with the selection and assessment of the prior art.²⁵ In particular, when analysing obviousness, the courts narrow down a potentially very

¹⁹ EPO, *Guidelines for Examination in the European Patent Office* (November 2019) G-VII.3. See also Genentech's Patent [1989] R.P.C. 147 'the person skilled in the art should be credited with sufficient time and the best available equipment to carry out the work....'.

²⁰ Peter Blok, 'The Inventor's New Tool: Artificial Intelligence – How Does it Fit in the European Patent System?' (2017) EIPR 71.

²¹ *Technograph Printed Circuit Ltd v Mills & Rocky* [1972] R.P.C. 346 at p. 362 (emphasis added). See also Paul G Cole and Richard Davis, *CIPA Guide to the Patents Acts* (Sweet & Maxwell, 8th edn, 2016) 172.

²² *ibid.*, 121.

²³ *ibid.*

²⁴ *ibid.*

²⁵ *ibid.*

broad scope of the state of the art by assessing it through the eyes of the person skilled in the art, who is only expected to have scrutinised the information available in their own or closely related fields.²⁶ For example, in *Blue Gentian LLC v Tristar Products (UK) Ltd* the invention concerned an expandable garden hose, while one of the prior art references, on which the obviousness attack was based, related to an oxygen hose used for air crew in an aircraft.²⁷ The court held that a garden water hose designer presented with the aircraft hose reference while reading it with interest, ‘would also see a document which was not addressed to him or her’.²⁸ The court further stated that ‘[t]he teaching is concerned with something used in an environment and context a very long way from garden water hoses and subject to considerations which the garden water hose designer would know they knew little about.... They would not be confident the idea would be practical if applied to a garden water hose.’²⁹ Therefore, while the person skilled in the art may have access to a wide scope of the prior art, this may not ‘translate into understanding or into the integration of different technological fields’.³⁰ As one of the courts noted, ‘knowing of a piece of prior art is one thing; appreciating its significance to the solution to the problem in hand is another’.³¹ However, AI systems do not have similar restrictions as to specific fields of technology. On the contrary, the use of AI technologies may expand the scope of the prior art dramatically by their capability to delve into, learn and apply concepts from entirely unrelated fields. Therefore, an important question in this regard is what should be the ambit of the prior art for the purpose of the obviousness analysis of AI-generated inventions?

Finally, such notions as predictability and expectation of success currently play an important role in the assessment of obviousness. This is especially true with respect to the pharmaceutical and biotechnology industries, which are generally considered to be fraught with uncertainty.³² It is, therefore, important to consider how the advances in AI technologies with significant processing capabilities affect uncertainty from a perspective of the person skilled in the art.³³ In other words, would such advancements in the AI technology make most inventions predictable and thus obvious to warrant patent protection under the current standards of patentability?

²⁶ Lionel Bently *et al.*, *Intellectual Property* (5th edn, OUP 2018) 584.

²⁷ *Blue Gentian LLC v Tristar Products (UK) Ltd* [2013] EWHC 4098 (Pat).

²⁸ *ibid*, [100].

²⁹ *ibid*, [100].

³⁰ Brenda M Simon, ‘The Implications of Technological Advancement for Obviousness’ (2013) 19 *Mich. Telecomm. & Tech. L. Rev.*, 109.

³¹ *PLG Research* [1994] FSR 116, 137.

³² Clark Sullivan and Michael Kline, *Introduction to Patentability in Drug Development* (Future Science Ltd, 2016) 90 (‘it is not possible to predict pharmaceutical activity *ab initio*’).

³³ Brenda M Simon, ‘The Implications of Technological Advancement for Obviousness’ (2013) 19 *Mich. Telecomm. & Tech. L. Rev.*, 105.

The issues raised above require urgent solutions. We believe that the current approach to the obviousness assessment must be adjusted by taking into account the advancements in AI technologies, and their role and impact on the inventive process. If the obviousness standard remains unchanged, this would establish a very low bar for patentability leading to an increasing number of patents, which, in turn, will exacerbate the problem of ‘patent thickets’ that is already significant in a number of industries.

Issue 5: Considerations to Inform a Policy Response

11. A fundamental objective of the patent system is to encourage the investment of human and financial resources and the taking of risk in generating inventions that may contribute positively to the welfare of society. As such, the patent system is a fundamental component of innovation policy more generally. Does the advent of inventions autonomously generated by AI applications call for a re-assessment of the relevance of the patent incentive to AI-generated inventions. Specifically,

- (i) Should consideration be given to a *sui generis* system of IP rights for AI-generated inventions in order to adjust innovation incentives for AI?*
- (ii) Is it too early to consider these questions because the impact of AI on both science and technology is still unfolding at a rapid rate and there is, at this stage, insufficient understanding of that impact or of what policy measures, if any, might be appropriate in the circumstances?*

Based on the above considerations, the answer to the key question of whether the outputs generated by AI technologies should be afforded patent protection depends on whether the provision of such protection corresponds to the rationale of the patent system itself, i.e. whether AI-generated inventions will be incentivised and rewarded through the grant of a patent.³⁴ When devising further policies in this area, it is also important to balance the interests of private parties with those of society. In particular, patenting of AI technologies coupled with ‘big data’ that trains such technologies and is owned by a small number of players on the market may significantly limit access to the process of innovation concentrating the returns from inventions in the hands of these players.³⁵ Such potential negative consequences should attract attention of patent and competition law policymakers in order to prevent restrictions on innovation and competition. It is also important to consider a broader perspective of a just distribution of benefits to all engaged in the inventive process in order to create the incentives ‘to continue their investments of financial, physical and human capital’.³⁶ Finally, while the challenges posed by the present-day technology may be overcome and accommodated by

³⁴ Erica Fraser, ‘Computers as Inventors – Legal and Policy Implications of Artificial Intelligence on Patent Law’ (2016) 13(3) SCRIPTed 325.

³⁵ Lisa Vertisky, ‘Thinking Machines and Patent Law’ in Barfield et al (eds.), *Research Handbook on the Law of Artificial Intelligence* (Edward Elgar, 2018) 509.

³⁶ *Ibid* 507.

the current patent law framework, a further sweeping development of AI technologies may require new approaches. Should the technology indeed reach the level of intellectual capability that is functionally equal to humans' capabilities (the 'strong AI'), then novel mechanisms to address the issues that will be raised by such a technology will be required, including new models for protecting the results generated by such an advanced technology.

COPYRIGHT AND RELATED RIGHTS

Issue 6: Authorship and Ownership^{*37}

12. *AI applications are capable of producing literary and artistic works autonomously. This capacity raises major policy questions for the copyright system, which has always been intimately associated with the human creative spirit and with respect and reward for, and the encouragement of, the expression of human creativity. The policy positions adopted in relation to the attribution of copyright to AI-generated works will go to the heart of the social purpose for which the copyright system exists. If AI-generated works were excluded from eligibility for copyright protection, the copyright system would be seen as an instrument for encouraging and favoring the dignity of human creativity over machine creativity. If copyright protection were accorded to AI-generated works, the copyright system would tend to be seen as an instrument favoring the availability for the consumer of the largest number of creative works and of placing an equal value on human and machine creativity. Specifically,*

- (i) Should copyright be attributed to original literary and artistic works that are autonomously generated by AI or should a human creator be required?*
- (ii) In the event copyright can be attributed to AI-generated works, in whom should the copyright vest? Should consideration be given to according a legal personality to an AI application where it creates original works autonomously, so that the copyright would vest in the personality and the personality could be governed and sold in a manner similar to a corporation?*
- (iii) Should a separate *sui generis* system of protection (for example, one offering a reduced term of protection and other limitations, or one treating AI-generated works as performances) be envisaged for original literary and artistic works autonomously generated by AI?*

AI Authorship

Whilst it may be reported that AI created, for example, a painting, this is an over-simplification of the creative process. The famous AI portrait of Edmond Belamy, signed as authored by an algorithm, sold for \$432,500. The work was created by Obvious, a Paris-based collective consisting of Hugo Caselles-Dupré, Pierre Fautrel and Gauthier Vernier by way of what they call “GAN: Generative Adversarial Network”. The algorithm consists of two parts; the Generator and the Discriminator. Caselles-Dupré, Fautrel and Vernier input a data set of 15,000 portraits, the Generator makes a new image based on the data set and the Discriminator tries to spot the difference between a human-made image and one created by the Generator.³⁸ Likewise, Sunspring claims to be the first ever screenplay written entirely by an artificial intelligence, but of course it required a human to develop the software and to collate and input the hundreds of screenplays used as the dataset.³⁹

³⁷ The response to Issue 6 was prepared by Dr Hayleigh Bosher and Mr Simon Stokes.

³⁸ Christies <<https://www.christies.com/features/A-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx>> accessed 13th February 2020.

³⁹ Thereforefilms <<http://www.thereforefilms.com/sunspring.html>> accessed 13th February 2020.

A recent European Commission Report on AI and IP⁴⁰ stated that we could be moving towards AI autonomy, at least to a level that the human contribution is “trivial to the creative or inventive process”⁴¹ and therefore we could be entering into an era where machines will “not only assist humans in the creative process but create or invent all by themselves.”⁴² However, we are not presently at that stage and at present AI technology is not currently truly autonomous. In fact, in a typical machine learning system there is human involvement and human intervention at a number of points, such as choosing how to set the system up – writing and choosing of the algorithm (including which learning models to use), choosing and collating data, often this includes the undertaking of data cleansing or other actions on the data including how it is structured, providing feedback, reviewing output and revising model and so on. In fact, the data itself, such as in the examples mentioned above, are human created sources. Therefore, a fundamental problem with Issue 6 is that it seems to present a false premise by assuming that AI is completely autonomous. Whereas, AI systems are highly dependent on programmers, developers and data input through human intervention to train intelligent algorithms. Stating that AI applications are capable of producing literary and artistic works autonomously, neglects to acknowledge that an AI application would need source data in order to do so. Phrasing the question in the way that it appears in Issue 6, seems to suggest that AI can create from nowhere. When, of course, in fact it can only produce content output following content input with initial instruction.

In particular, the question ‘should copyright be attributed to original literary and artistic works that are autonomously generated by AI or should a human creator be required?’ creates confusion. If the question was answered, either in the positive or negative, the question of who should be attributed as the author of a work that was generated using AI technology would remain unanswered. This is because the question, as currently stated in Issue 6, fails to recognise that all AI-generated work requires human intervention, whether that be through writing the code or providing the data.

It should also be noted that there are difficulties in distinguishing works generated by humans and by machines. AI-generated works often arise as a result of collaboration between several humans and the machine.⁴³ Care needs to be taken to ensure that works created by humans with technology as a tool are not captured unnecessarily. For example, creating a work by typing on a word processor would be considered a human work, assisted by technology. On

⁴⁰ Maria Iglesias, Sharon Shamuilia and Amanda Anderberg, *Artificial Intelligence and Intellectual Property - A Literature Review*, EUR 30017 EN (Publications Office of the European Union, 2019).

⁴¹ ibid., 12.

⁴² ibid., 12.

⁴³ Toby Bond and Sarah Blair, Artificial Intelligence & Copyright: Section 9(3) (2019) JIPLP 14(6), 423.

the other hand, an AI software generating its own screenplay might be considered an AI-generated works. Would it then be considered joint-authorship where, for example, a software auto-corrects or suggests next sentences and enhances the creative work?

An accumulative concern is that the use of the word original in the context of AI-generated works may not equate to originality in the human sense. An important discussion that needs to be had revolves around originality and whether we should recognise AI-generated works as such, or perhaps more likely, categorise them as unoriginal copyright works, such as is afforded to films, sound recordings, broadcasts and typographical arrangements. Issue 6 is phrased as if only original works can be protected by copyright, and that unoriginal works cannot be protected, which neglects to appreciate copyright protection for works such as sound recordings.

Copyright Ownership

Issue 6 describes the copyright system as being associated with the human creative spirit for the encouragement of the expression of human creativity. In the 2011 CJEU case *Painer*⁴⁴, the Court held that “an intellectual creation is an author’s own if it reflects the author’s personality. That is the case if the author was able to express his creative abilities in the production of the work by making free and creative choices...by making those various choices, the author of a portrait photograph can stamp the work created with his ‘personal touch.’” This emphasises the need for human personality input to the creation of copyright works. Therefore, in Issue 6, it should be considered whether granting of *legal* personality, in the sense of a technical label for a bundle of rights and responsibilities, to AI could or should amount to an author’s personality.

Further, it is important to recognise that extending copyright protection to AI-generated works could disrupt the philosophical justifications for copyright and undermine the foundations upon which protection is currently built. There are different schools of thought on justifications for granting copyright to AI-generated works⁴⁵ and these need to be explored further. Therefore, it should be asked, in addition, on what theoretical basis should the protection be granted.

In some jurisdictions, such as the UK, South Africa, Hong Kong, India, Ireland, and New Zealand, copyright ownership has already been provided to AI-generated works through protection for computer-generated works. The ownership of the copyright is granted to the

⁴⁴ *Painer* (C-145/10) ECLI:EU:C:2011:798, paras [88] – [92].

⁴⁵ Toby Bond and Sarah Blair, Artificial Intelligence & Copyright: Section 9(3) (2019) JIPLP 14(6), 423.

person who set up the arrangements necessary for the creation of the work. For example, section 9(3) of the Copyright, Designs and Patents Act 1988 states that “*in the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.*” Section 173 of the act defines a computer-generated work as a “*work is generated by computer in circumstances such that there is no human author of the work.*” This work is granted protection for 50 years after it was made.⁴⁶

The UK approach follows the economic justification for copyright as rewarding the person who has invested in the development of the software that created the output. In Issue 6, it is stated that copyright is concerned with “human creative spirit and with respect and reward for, and the encouragement of, the expression of human creativity.” However, this neglects the protection of works which protect, from an economic perspective, the reward for the investment in the creation of a work and should therefore be worded in a more neutral way. As present, this part of Issue 6 leans towards the romantic justifications for copyright, which are not globally adopted and may therefore create distortion in the discussion of the issue.

It should also be noted that AI systems are highly dependent on data, for example millions of images, texts, videos, sounds, and raw data are required to feed and train AI systems such as machine learning or deep learning. The data content may be protected by copyright. In principle the developers should obtain permission to access and use the data for that purpose. The use of this data in AI processing may need to be addressed within the copyright and moral rights context, for example would copyright and moral rights in the data lead to those copyright holders having a stake in the output of the AI-generated work?

Lastly, there has already been reports of AI-generated works being recognised as being created by the AI, such as the examples given above of the painting and screenplay. The implication of ownership are highly important and already private agreements on the basis of this ownership are being made. For example, Warner Music signing a record deal with Endel, an algorithm developed by a start-up based in Berlin, that creates tailor-made custom sound frequencies based on personal user inputs such as weather, time of day, location, and biometric details such as heart rate.⁴⁷ In this case, the co-founders and software engineers were listed as songwriters in order to register the copyright of the music. This highlights

⁴⁶ Copyright, Designs and Patents Act 1988, section 12(7).

⁴⁷ Hayleigh Bosher, ‘Warner Music Signs Distribution Deal with AI Generated Music App Endel’ (IPKat, 2019) <<https://ipkitten.blogspot.com/2019/03/warner-music-signs-distribution-deal.html>> accessed 13th February 2020.

practical implications for the discussion of ownership of copyright in AI-generated works. In these circumstances it should also be considered whether or not private agreements could or should be made above or below any policy decision as to the ownership of copyright in AI-generated works.

Conclusions relating to issue 6: Authorship and Ownership

By way of summary, the following key observations and recommendations are made in response to Issue 6.

1. It should be recognised that currently AI technology is not fully autonomous
2. It should also be noted that it will be difficult to distinguish between works that are machine made or human made, perhaps a further question on how to deal with this would be helpful, as well as a consideration of joint authorship.
3. A greater discussion on original in the context of AI generated works needs to be included as to whether we should recognise AI generated works as original, or categorise them as unoriginal copyright works such as is afforded to films, sound recordings, broadcasts and typographical arrangements.
4. It should be considered whether granting of legal personality to AI could or should amount to an author's personality.
5. It should also be considered on what theoretical justification should copyright protection be granted.
6. The use of data in AI processing needs to be addressed within regards to copyright and moral rights.
7. The language of the issue should be neutral towards the romantic / author led justifications for copyright, as well as the economic approaches taken in some jurisdictions.
8. Questions should be asked about the capacity of private agreements to be made above or below any policy decision made as to the ownership of copyright in AI generated works.

Issue 7: Infringement and Exceptions^{*48}

13. An AI application can produce creative works by learning from data with AI techniques such as machine learning. The data used for training the AI application may represent creative works that are subject to copyright (see also Issue 10). A number of issues arise in this regard, specifically,

- (i) Should the use of the data subsisting in copyright works without authorization for machine learning constitute an infringement of copyright? If not, should an explicit exception be made under copyright law or other relevant laws for the use of such data to train AI applications?
- (ii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, what would be the impact on the development of AI and on the free flow of data to improve innovation in AI?
- (iii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, should an exception be made for at least certain acts for limited purposes, such as the use in non-commercial user-generated works or the use for research?
- (iv) If the use of the data subsisting of copyright works without authorization for machine learning is considered to constitute an infringement of copyright, how would existing exceptions for text and data mining interact with such infringement?
- (v) Would any policy intervention be necessary to facilitate licensing if the unauthorized use of data subsisting in copyright works for machine learning were to be considered an infringement of copyright?
- (vi) How would the unauthorized use of data subsisting in copyright works for machine learning be detected and enforced, in particular when a large number of copyright works are created by AI?

(i) Should the use of the data subsisting in copyright works without authorization for machine learning constitute an infringement of copyright? If not, should an explicit exception be made under copyright law or other relevant laws for the use of such data to train AI applications?

This is a very important issue, which should definitely be addressed in policy discussions. Some suggestions on how to frame the questions around this issue are as follows:

⁴⁸ The response to issue 7 was prepared by Dr Paula Westenberger.

- (a) Ask the question more widely in relation to relevant subject-matter,⁴⁹ including not only copyright “works”⁵⁰ but also other subject-matter, such as phonograms, broadcasts and performances,⁵¹ and non-original databases⁵².
- (b) Clarify that this question is also addressing the use of the work or subject matter itself, and not only “information” about the work or subject matter. In this respect, it is important to note that Artificial Intelligence (“AI”) systems may be using actual extracts of protected subject-matter.⁵³ It is therefore important to make clear that, if the term “data” is to be used in this question, that it is framed in its broader sense, in order to include protected subject-matter, as per the following approach: “the term ‘data’ is used in a broad sense, including informational items that could be protected by copyright (such as images, videos or text) and items that are not necessarily copyright protected, such as pure raw data.”⁵⁴ Alternatively, the question could make specific reference to the use of protected subject-matter, instead of the use of “data”.
- (c) Clearly distinguish the question of infringement of rights (specifically including both *economic* and *moral* rights) from the question on limitations and exceptions. Although discussions on rights and exceptions may ultimately inter-relate, as limitations and exceptions will usually apply to a specific economic right,⁵⁵ identifying the scope of a right and applicability of an exception are separate issues that will require specific in-depth consideration.

⁴⁹ Iglesias et al make the distinction between “work” and “protected subject-matter” when describing the dataset used for Artificial Intelligence (“AI”) training, which “incorporates individual works (e.g. pictures deserving copyright protection) or a protected subject-matter (substantial part of a database deserving *sui generis* protection)”, also pointing out that “[m]illions of images, texts, videos, sounds, and raw data are required to feed and train AI systems”: Maria Iglesias, Sharon Shamuilia and Amanda Anderberg, *Intellectual Property and Artificial Intelligence – A literature review*, EUR 30017 EN (Publications Office of the European Union, 2019) 9-10.

⁵⁰ See Berne Convention for the Protection of Literary and Artistic Works of 1886 (as amended on September 28, 1979) (“Berne Convention”), art 2.

⁵¹ See for example the Rome Convention (International Convention for the Protection of Performers, art. 4-6).

⁵² Protected by *sui generis* protection in some national or regional systems such as the European Union Directive 96/9/EC of The European Parliament and of the Council of 11 March 1996 on the legal protection of databases, art 7.

⁵³ Esposti et al, for example, explain that “[i]n some systems, the new works result from new combinations of fragments of previous works”: Mirko Degli Esposti, Francesca Lagioia and Giovanni Sartor, “The Use of Copyrighted Works by AI Systems: Art Works in the Data Mill” (2019) European Journal of Risk Regulation 3.

⁵⁴ Maria Iglesias, Sharon Shamuilia and Amanda Anderberg, *Intellectual Property and Artificial Intelligence – A literature review*, EUR 30017 EN (Publications Office of the European Union, 2019) 10.

⁵⁵ For example, art 3 and 4 of Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC (“Digital Single Market Directive”), obliges member states, *inter alia*, to create an exception specifically to the right of reproduction in Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society (“Information Society Directive”), for text and data mining. The quotation exception in the Berne Convention, art 10(1), however, is not restricted to any specific

The discussion on whether AI should be considered to infringe economic rights, for example, would benefit from an investigation on how the infringement of different rights is assessed in relation to each specific work or subject-matter, and whether economic rights are engaged at all, in light of specific AI deployments.⁵⁶ Another important consideration would be whether it would ever be possible for AI systems to be “taught” copyright law and be trained not to infringe, particularly in view of complex copyright principles such as the idea-expression dichotomy,⁵⁷ the possibility of non-literal copying constituting infringement of certain works, tests that operate on a qualitative instead of quantitative basis, different periods of protection for different subject-matters etc. It is also suggested that consideration of moral rights should also be expressly referred to in the question.⁵⁸

On limitations and exceptions, it is important to address the question on whether new limitations and exceptions should be created, both in the context of innovative AI usages, but also in the context of already existing sector-specific discussions: for example, the need to facilitate the creation of or access to datasets for the AI to “learn” from can be addressed in the context of discussions on limitations and exceptions to allow digitization of libraries and archives.⁵⁹ However, it is also extremely important to address the extent to which existing limitations and exceptions may already be used in the context of specific AI deployments, such as the quotation exception in article 10(1) of the Berne Convention.⁶⁰

It is suggested, therefore, that the following two separate general issues, and their specific sub-issues, are addressed in depth, in relation to specific deployments of AI: (1) the extent to which exclusive rights are possibly being infringed (e.g. reproduction, adaptation, communication to the public etc.) and in relation to which subject-matter; and (2) the extent to

exclusive right, stating generally that “it shall be permissible to make quotations” under the heading “Certain Free Uses of Works”.

⁵⁶ For example, is the AI reproducing an original part, or merely copying a style? In this respect, Esposti et al explain that “the concept of “style” itself is a very ambiguous and questionable one, vaguely defined and also strongly dependent on the medium (written text, visual art, video, music, etc)": Mirko Degli Esposti, Francesca Lagioia and Giovanni Sartor, “The Use of Copyrighted Works by AI Systems: Art Works in the Data Mill” (2019) European Journal of Risk Regulation 8.

⁵⁷ TRIPS, art 9(2).

⁵⁸ E.g. Berne Convention, art 6 bis, WIPO Performances and Phonograms Treaty 1996 (WPPT), art 5.

⁵⁹ As per the WIPO website: “Limitations and exceptions is an issue considered in the agenda of the WIPO Standing Committee for Copyright and Related Rights (SCCR) and, recently, its debate has been focused mainly on three groups of beneficiaries or activities in relation to exceptions and limitations – on educational activities, on libraries and archives and on disabled persons, particularly visually impaired persons.” <<https://www.wipo.int/copyright/en/limitations/>> accessed 14 February 2020.

⁶⁰ An exception which Bently and Aplin have recently dubbed “global, mandatory, fair use”: Lionel Bently and Tanya Aplin, “Whatever Became of Global, Mandatory, Fair Use? A Case Study in Dysfunctional Pluralism” in Susy Frankel (ed), *Is Intellectual Property Pluralism Functional?* (Edward Elgar, 2019).

which existing limitations and exceptions are already applicable, and whether and how should new limitations and exceptions be created (exceptions to which rights, and under which conditions, e.g. the three-step test⁶¹).

(d) Consider expanding the questions to include other possible AI technologies beyond “machine learning”.⁶² This would arguably be in line with the recommendation of the European Parliament for a “technologically neutral approach to intellectual property applicable to the various sectors in which robotics could be employed”.⁶³

(ii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, what would be the impact on the development of AI and on the free flow of data to improve innovation in AI?

This is another very important question, and the same comments made above are also applicable to this question. One additional point that relates to the question of free flow of data is the recommendation of the European Parliament on “Interoperability, access to code and intellectual property rights”, as follows: “The interoperability of network-connected autonomous robots that interact with each other should be ensured. Access to the source code, input data, and construction details should be available when needed, to investigate accidents and damage caused by smart robots, as well as in order to ensure their continued operation, availability, reliability, safety and security.”⁶⁴

Therefore, this question could possibly be framed so as to go beyond copyright considerations in relation to datasets, to also include discussions on copyright regulation of the AI itself, such as in relation to software protection.

(iii) If the use of the data subsisting in copyright works without authorization for machine learning is considered to constitute an infringement of copyright, should an exception be made for at least certain acts for limited purposes, such as the use in non-commercial user-generated works or the use for research?

⁶¹ Berne Convention, art 9(2), TRIPS Agreement, art 13.

⁶² As per Iglesias et al, “There are many different technologies that fall under this broad AI definition. At the moment Machine Learning is the most widely used”: Maria Iglesias, Sharon Shamuilia and Amanda Anderberg, *Intellectual Property and Artificial Intelligence – A literature review*, EUR 30017 EN (Publications Office of the European Union, 2019) 4.

⁶³ See European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)), para 18.

⁶⁴ See European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)).

Please refer to the answer in item (i) above, particularly under section (c). In essence, it is extremely important to consider specific demands by different users, such as in the context of libraries and archives. However, it is also important that such considerations do not overly limit other potential uses, for example, simply on the basis of whether the use is commercial or non-commercial. Certain commercial uses may be desirable to stimulate competitiveness, research and innovation, and could specifically target certain categories of beneficiaries not currently contemplated by existing exceptions.⁶⁵ Attention should also be directed to the need to understand the different ways that AI may operate, and based on that, whether existing limitations and exceptions, in the limited manner in which they have been drafted, are sufficient to accommodate such innovative uses. Some exceptions such as those allowing temporary acts of reproduction⁶⁶ and text and data mining⁶⁷ in some jurisdictions may apply to certain AI deployments, but not comprehensively. For example, the exception for temporary reproduction will not apply where permanent copies are retained⁶⁸ and text and data mining exceptions in the Digital Single Market address the creation of exceptions for the reproduction right, but not other acts that are potentially relevant to AI usages, such as communication to the public, apart from being limited to only certain beneficiaries. It would be therefore important to address these current gaps, with consideration on whether there is a need for more flexible limitations and exceptions. In sum, overly restricting limitations and exceptions may have the adverse effect of hindering future technologies, and in this regard, more openly drafted

⁶⁵ On this point, Iglesias et al noted that “[s]ome commentators expressed concern about the impact of this exception on European competitiveness, in particular by excluding commercial undertakings, start-ups and unaffiliated researchers” and that “a number of authors recommended introducing more flexibility into European copyright law, either through a more generous provision or through an open norm”; and also summarised some scholarly proposals, including in relation to considering categories of beneficiaries such as journalists in the context of text and data mining (“TDM”) exceptions: Maria Iglesias, Sharon Shamuilia and Amanda Anderberg, *Intellectual Property and Artificial Intelligence – A literature review*, EUR 30017 EN (Publications Office of the European Union, 2019) 10-11. In this respect, Geiger et al argued that the “extension of the scope of the TDM exception beyond research organisations to all those enjoying lawful access to underlying mined materials, notably to start-ups and journalists, will increase the positive impact of the legislative action on research and innovation” and that “[i]n case of TDM for commercial uses carried out by some entities (e.g. other than research organizations or, possibly, individual researchers and journalists), fair remuneration could be considered provided that harm can be demonstrated on the basis of relevant empirical data”: Christophe Geiger, Giancarlo Frosio and Oleksandr Bulayenko, “The Exception for Text and Data Mining (TDM)^[SEP] in the Proposed Directive on Copyright in the Digital Single Market - Legal Aspects”, *In-Depth Analysis: For the JURI committee* (European Parliament 2018) 25, available at: <[http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/604941/IPOL_IDA\(2018\)604941_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/604941/IPOL_IDA(2018)604941_EN.pdf)> accessed 13 February 2020.

⁶⁶ Information Society Directive, art 5(1).

⁶⁷ For example, art 3 and 4 of Directive (EU) 2019/790 (Digital Single Market Directive).

⁶⁸ For an analysis of the application of art 5(1) of the Information Society Directive to the steps of constructing an training model for machine learning, and explaining that a “fifth step can be identified in the permanent creation of a file (the trained model)”, see: Thomas Margoni, “Artificial Intelligence, Machine learning and EU copyright law: Who owns AI?” (*CREATe Working Paper*, 2018) 4, available at <<https://www.create.ac.uk/artificial-intelligence-machine-learning-and-eu-copyright-law-who-owns-ai/>> accessed 13 February 2020.

limitations may be more compatible with technological neutrality.⁶⁹ Therefore, adding considerations on technological neutrality, on improving innovation and on addressing fundamental rights may all be good additions to this question.

(iv) If the use of the data subsisting of copyright works without authorization for machine learning is considered to constitute an infringement of copyright, how would existing exceptions for text and data mining interact with such infringement?

Another relevant question, dealt with above in item (i), particularly section (c), and in item (iii). In essence, text and data mining exceptions are relevant to AI discussions, and it is important to investigate whether these exceptions are fit for purpose for AI usages. It is important, however, to consider the system of limitations and exceptions more broadly, as discussed above.

(v) Would any policy intervention be necessary to facilitate licensing if the unauthorized use of data subsisting in copyright works for machine learning were to be considered an infringement of copyright?

Some comments made above in item (i) also apply to this question, particularly in terms of subject-matter terminology. Some researchers, as highlighted above, have discussed whether fair or equitable remuneration could be considered for instance in the context of text and data mining, which could be a point to be added in relation to this question.

One particular dimension to the general question of licensing and contract, which does not appear to be covered in this question, would be whether exceptions can be overridden by contract, and it may be important to address within this question certain discussions on reservation of rights. For instance, in the context of article 4 and of the Digital Single Market Directive, reserving of rights is permitted, and recital 18 clarifies that for “content that has been made publicly available online, it should only be considered appropriate to reserve those rights by the use of machine-readable means, including metadata and terms and conditions of a

⁶⁹ Geiger et al highlight the relevance in: “the future design of an “opening clause” to be added to the list of exempted uses to address situations that are not yet covered by existing exceptions and limitations but are justified by important public interest rationales and fundamental rights such as freedom of expression and the right to information. In particular, TDM research and innovation would profit substantially from such an opening clause”: Christophe Geiger, Giancarlo Frosio and Oleksandr Bulayenko, “The Exception for Text and Data Mining (TDM) in the Proposed Directive on Copyright in the Digital Single Market - Legal Aspects”, *In-Depth Analysis: For the JURI committee* (European Parliament 2018) 24.

website or a service.” Thus, it may also be interesting to raise discussions on smart contracts and blockchain⁷⁰ in relation to this point.

(vi) How would the unauthorized use of data subsisting in copyright works for machine learning be detected and enforced, in particular when a large number of copyright works are created by AI?

Some comments made above in item (i) also apply to this question, particularly in terms of subject-matter terminology. Furthermore, the question on detection and enforcement may benefit from considerations on human rights perspectives, for example, the balance between enforcement of property rights in view of privacy and freedom of expression. Another important question to ask, particularly in face of potentially increasingly autonomous systems, may perhaps be: who exactly would be responsible for infringing copyright?

Suggested additional issue: human rights perspectives

Generally, it is suggested that the discussion on the interface between AI, copyright law and human rights⁷¹ should be further investigated in relation to the issues of infringement and exceptions. These issues are not sufficiently or explicitly addressed in the currently proposed questions in Issue 7, so it is suggested that this point is included in future consultations. There is particular scope for exploring the impact of intellectual property rights on access to and participation in cultural life,⁷² and in discussions relating to how copyright should regulate new forms of AI-enabled creativity and access to culture, the cultural rights perspective appears extremely relevant.

⁷⁰ See Simon Stokes, “Digital copyright: AI and Blockchain” (Lexology, 8 April 2019) <<https://www.lexology.com/library/detail.aspx?g=f470dbbf-eb8e-44e5-9d45-1f55bfc25e2a>> accessed 13 February 2020.

⁷¹ The relevance of a human rights approach to AI has also been noted by the High-Level Expert Group on Artificial Intelligence set up by the European Commission, believing “in an approach to AI ethics based on the fundamental rights enshrined in the EU Treaties, the EU Charter and international human rights law” in *Ethics Guidelines for Trustworthy AI* (European Commission 2019) 9, available at <<https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai>> accessed 13 January 2020.

⁷² See Caterina Sganga, “Right to Culture and Copyright: Participation and Access” in C Geiger (ed.), *Research Handbook on Human Rights and Intellectual Property* (Edward Elgar 2015) 560-576.

DATA

Issue 10: Further Rights in Relation to Data⁷³

- (i) Should IP policy consider the creation of new rights in relation to data or are current IP rights, unfair competition laws and similar protection regimes, contractual arrangements and technological measures sufficient to protect data?
- (ii) If new IP rights were to be considered for data, what types of data would be the subject of protection?
- (iii) If new IP rights were to be considered for data, what would be the policy reasons for considering the creation of any such rights?
- (iv) If new IP rights were to be considered for data, what IP rights would be appropriate, exclusive rights or rights of remuneration or both?
- (v) Would any new rights be based on the inherent qualities of data (such as its commercial value) or on protection against certain forms of competition or activity in relation to certain classes of data that are deemed to be inappropriate or unfair, or on both?
- (vi) How would any such rights affect the free flow of data that may be necessary for the improvement of AI, science, technology or business applications of AI?
- (vii) How would any new IP rights affect or interact with other policy frameworks in relation to data, such as privacy or security?
- (viii) How would any new IP rights be effectively enforced?

In relation to (vii) which asks 'how would any new IP rights affect or interact with other policy frameworks in relation to data, such as privacy or security?' We recommend that WIPO includes a reference to competition policy after the word security.

⁷³ The response to Issue 10 was prepared by Dr Hayleigh Bosher and Mr Simon Stokes.

DESIGNS

Issue 11: Authorship and Ownership^{*74}

24. As with inventions, designs may be produced with the assistance of AI and may be autonomously generated by an AI application. In the case of the former, AI-assisted designs, computer-aided design (CAD) has long been in use and seems to pose no particular problems for design policy. AI-assisted designs might be considered a variant of computer-aided design and might be treated in the same way. In the case of AI-generated designs, questions and considerations arise that are similar to those that arise with respect to AI-generated inventions (Issue 1, above) and AI-generated creative works (Issue 6, above). Specifically,

- (i) Should the law permit or require that design protection be accorded to an original design that has been produced autonomously by an AI application? If a human designer is required, should the law give indications of the way in which the human designer should be determined, or should this decision be left to private arrangements, such as corporate policy, with the possibility of judicial review by appeal in accordance with existing laws concerning disputes over authorship?
- (ii) Do specific legal provisions need to be introduced to govern the ownership of autonomously generated AI designs, or should ownership follow from authorship and any relevant private arrangements, such as corporate policy, concerning attribution of authorship and ownership?

Designs rights are to protect the visual appearance of products. Designs rights may overlap with other IP rights, such as Copyright.⁷⁵ WIPO defines industrial designs as 'in a legal sense, an industrial design constitutes the ornamental aspect of an article. An industrial design may consist of three dimensional features, such as the shape of an article, or two dimensional features, such as patterns, lines or color'.⁷⁶

WIPO design rights are protected in each Contracting State. According to Paris Convention for the Protection of Industrial Property (1883), industrial designs protection 'may not be forfeited on the ground that articles incorporating the design are not manufactured in that State'.⁷⁷ Other international legislations, such as Hague Agreement Concerning the International Registration of Industrial Designs (1925) and Locarno Agreement Establishing

⁷⁴ The response to Issue 11 was prepared by Faye F Wang, Brunel University London. This response is a further update for WIPO on Wang's response to the EU Consultation on Designs Protection in 2019, which was published – Faye Wayne 'Consultation on Design Protection in the EU: Questionnaire Commentary' (March 2019) 115 Journal of Intellectual Property Forum, 99.

⁷⁵ Gannon Solicitors, 'Design Right' (5 April 2017) <https://www.gannons.co.uk/insights/design-rights/> accessed 6 February 2020.

⁷⁶ WIPO, 'Industrial Designs' available at <<https://wipo.int/designs/en/>> (last accessed 6 February 2020).

⁷⁷ WIPO, 'Summary of the Paris Convention for the Protection of Industrial Property (1883) <https://www.wipo.int/treaties/en/ip/paris/summary_paris.html> accessed 6 February 2020.

an International Classification for Industrial Designs (1968), provide registration rules on design rights.

In 2018, the European Union also recognised the need for accessible, modern, effective and consistent legal protection for design rights in the EU. As a result, in order to encourage technological innovation through design protection, the European Commission (EC) conducted a public consultation on design protection between 18 December 2018 and 31 March 2019 in a view to assess the appropriateness of legislative measures for design rights protection in the EU.⁷⁸ There are several areas that this consultation sought for comments:

Duration of designs rights protection: one of the purposes of this consultation was to review the adequacy of the current 3 years term protection for unregistered Community design and 25 years term protection for registered Community or national design.

Spare parts designs protection: with regard to spare parts protection, it is known that spare parts are currently not protected by the Design Directive and Community Design Regulation, thought the majority of Member States include spare parts protection in their national laws. The consultation questionnaire provides a definition of 'spare parts' as '...concern visible component parts used for the purpose of the repair of a complex product (such as a motorcar) so as to restore its original appearance (covering, in particular, body panels, integrated lighting and automotive glass).'⁷⁹ It seeks for answers as to whether lack of harmonised rules concerning spare parts protection has caused any issues and that whether the rules on spare parts protection should be harmonised in the EU.

Novelty examination: the consultation seeks for views on whether the EUIPO should conduct novelty examination even though there are complexity and technical constraints in searching for prior existence on designs (both registered and unregistered) worldwide.⁸⁰

Measures to new emerging technologies: the consultation seeks to evaluate three key elements in the legislation and its application by industrial property offices and in courts. They are: a) the definition of a "design", a "product" and a "complex product"; b) the requirements for protection (e.g. related to the need of being "visible"); and c) the scope of

⁷⁸ European Commission, 'Public Consultation: Evaluation of EU Legislation on Design Protection' (18 December 2019) <https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2018-3527248/public-consultation_en> accessed 6 February 2020.

⁷⁹ Public Consultation: Evaluation of EU legislation on design protection - Questionnaire, p.14.

⁸⁰ ibid - Questionnaire, Q.31.

design protection (e.g. as to how to determine the individual character of a design).⁸¹ The consultation tries to establish whether the current design protection legislation is sufficient to cover new emerging technologies such as 3D printing.⁸² It also looks into whether the scope of design rights should interfere with prevention of transiting counterfeit design goods through the Union territory.⁸³ Furthermore, the consultation continues looking into the impact on new technologies on the representation of designs, i.e. whether the current legislation is appropriate in terms of the requirements for representation of designs for both tangible products and non-tangible products (e.g. animated designs and graphical user interfaces).⁸⁴ WIPO public consultation particularly asks for comments on authorship and ownership in AI-generated designs.⁸⁵ It is understood that some AI applications can generate designs independently, which are to be considered as ‘AI-generated designs’; whereas other AI applications can only assist in generating designs, which are to be considered as AI-assisted designs, a variant of computer-aided design.⁸⁶ The roles and functionality of an AI application for generating designs, either as a human assistant or as an independent generator, need to be further clarified. Presuming that for the purposes of this consultation, an ‘AI application’ means stakeholders’ deploying AI technology to create and invent designs for their products partly or solely. In this regard, WIPO did not anticipate any legal complications for AI-assisted designs, but it mainly raises concerns over legal challenges over AI-generated designs: a) whether AI-generated design can be automatically granted design protection; b) whether there is need for special regulations if a human contributes to AI-generated design process; c) whether there is need for specific legal provisions to regulate the authorship and ownership for AI-generated designs.⁸⁷

AI-generated designs protection may share similar challenges as 3D replica designs protection. The creation and distribution to the public of a 3D replica may be at risk of infringing design rights.⁸⁸ 3D printing’s digital design protection may relate to protection of printed objects

⁸¹ ibid - Questionnaire, Q.39.

⁸² ibid - Questionnaire, Q.40.

⁸³ ibid - Questionnaire, Q.41.

⁸⁴ Ibid - Questionnaire, Q.43. Related questions are Q.44-47.

⁸⁵ WIPO Secretariat, ‘Draft Issues Papers on Intellectual Property Policy and Artificial Intelligence’, WIPO/IP/AI/2/GE/20/1 (13 December 2019) available at <https://www.wipo.int/edocs/mdocs/en/wipo_ip_ai_ge_20/wipo_ip_ai_2_ge_20_1.pdf> accessed 6 February 2020.

⁸⁶ WIPO Secretariat, ‘Draft Issues Papers on Intellectual Property Policy and Artificial Intelligence’ WIPO/IP/AI/2/GE/20/1 (13 December 2019) <https://www.wipo.int/edocs/mdocs/en/wipo_ip_ai_ge_20/wipo_ip_ai_2_ge_20_1.pdf> accessed 6 February 2020.

⁸⁷ ibid.

⁸⁸ Faye Wang, ‘Consultation on Design Protection in the EU: Questionnaire Commentary’ (2019) 115 Journal of Intellectual Property Forum, 101.

with different textures or functions as to the original objects. Such printed objects may be newly designed with individual character which was produced by designers in 3D files. Such designed objects are not simple 3D replicas. It raises legal concerns as to whether the creation of new 3D files replicating an existing third-party design can be deemed as an infringement of design rights.⁸⁹ The same situation may apply to any AI-generated designs. The creation of AI-generated designs involves a great number of stakeholders, such as AI machine owner and producer, as well as AI software owner and writer. The ownership and authorship of AI-generated designs cannot be determined automatically but should be assessed on a case-to-case basis.

In addition, there are two types of designs rights protection, registered and unregistered. Regarding registration of designs, it may not be feasible for the law to grant AI-generated designs automated registration due to the complexity of determination and attribution of authorship and ownership for AI-generated designs.

Regarding whether AI-generated design can be granted design protection, it has to be considered whether **a skilled, intentional act** was required to generate the design. For example, a design created from a carefully constructed AI algorithm, fed with appropriate data for a specific purpose, might qualify for design protection. However, if there is an AI application publicly available and accessible, users may be able to input requests (such as shapes and materials) into the AI application, so that the AI application will be able to autonomously generate a design in response to the request. The ownership of such AI-generated design will be debatable and should be assessed individually. As such, specific legal provisions to regulate the ownership of independently (autonomously) generated AI designs appear to be most sensible to increase legal certainty, though such legal provisions should allow private agreements concerning the attribution of authorship and ownership.

Furthermore, specific legal provisions for AI-generated designs and AI-assisted designs should take into consideration designs involving technical functions. The rigid requirement of non-functionality in designs law may not be appropriate in a digital world where most designs purposefully and skilfully merge functional and aesthetic elements to display new and individual characters. There is need to have a balanced assessment of non-technical functions in design protection requirements to prevent technological monopolies through design rights

⁸⁹ European Parliament, '3D Bio-Printing for Medical and Enhancement Purposes: Legal and Ethical Aspects' (July 2018) 9
<[http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/614571/EPRS_IDA\(2018\)614571\(ANN2\).EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2018/614571/EPRS_IDA(2018)614571(ANN2).EN.pdf)> accessed 6 February 2019.

in the current legislation without jeopardising innovation of modern designs. Take the current EU legislation as an example, currently, Recital (10) of the Community Design Regulation provides [with emphasis]:

*Technological innovation should not be hampered by granting design protection to features dictated solely by a technical function. It is understood that this does **not** entail that a design must have an **aesthetic quality**. Likewise, the interoperability of products of different makes should not be hindered by extending protection to the design of mechanical fittings. Consequently, those features of a design which are excluded from protection for those reasons should not be taken into consideration for the purpose of assessing whether other features of the design fulfil the requirements for protection.*

According to Article 8(1) of the Community Design Regulation, a Community design shall not subsist in features of appearance of a product which are solely dictated by its technical function.⁹⁰ In the light of the recent case of *Doceram GmbH v CeramTec GmbH*, Article 8(1) of the Community Design Regulation together with its Recital (10) intends to “prevent technological innovation from being hampered by granting design protection to features dictated solely by a technical function of a product”.⁹¹ It was held that Article 8(1) of the Community Regulation 2002 on Community designs must be interpreted as:

*in order to determine whether the features of appearance of a product are **exclusively** dictated by its technical function, it must be established that the technical function is the **only** factor which determined those features, the existence of alternative designs not being decisive in that regard.*

In the light of the above judgment, it appears that the relationship between the appearance/aesthetic consideration and technical function needs to be exclusively and solely linked to each other to be excluded by design protection, regardless of whether there is an existing alternative design to fulfil that function. It can be considered as an exclusive test for technical function design. However, this may contradict with the definition of ‘design’ within the meaning of the Community Design Regulation, which states:

⁹⁰ Community Design Regulation 2002, Article 8(1).

⁹¹ *Doceram GmbH v CeramTec GmbH*, C-395/16, ECLI:EU:C:2018:172: para 29.

*'design' means the appearance of the **whole** or a **part** of a product resulting from the features of, in particular, the lines, contours, colours, shape, texture and/or materials of the product itself and/or its ornamentation.*⁹²

According to the above definition of 'design', appearance or ornamental aspect is the decisive factor of a design,⁹³ and that any design is unlikely to connect with technical function exclusively, solely and completely as a design involves a wide range of features. This definition also seems to contradict with the wording of its Recital (10) that '...this does not entail that a design must have an aesthetic quality...'. There appears to need clarification for these subject matters from the European Commission and WIPO.

⁹² Community Design Regulation 2002, Article 3(a).

⁹³ *Easy Sanitary Solutions and EUIPO v Group Nivelles*, C-361/15 P and C-405/15 P, ECLI:EU:C:2017:720, para 62.