

## Comments on the WIPO survey: future IP regulations regarding artificial intelligence

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Together with the obvious success of the new AI systems, the old philosophical and socio-political question already asked by the first founders of AI has returned with a bang: Can machines be creative? Answering this question will considerably affect the meaning, the scope and the legislation of the protection of intellectual property.

In order to find a possible answer I would like to have a closer look on two aspects of intellectual property as the aforementioned question is particularly relevant for the protection of inventions by means of patents and the protection of artistic works by means of copyright law.

So - can an AI system, today or in the near future

- a) actually invent something (patent system)?
- b) actually produce artistic works (copyright law)?

There are indications for both questions to be answered in a positive way. AI seems to be capable of producing its own literature and artistic works. In 2018, a German poem – “Sonnenblicke auf der Flucht” (“Views of the sun on the escape”) was published that had been written by an AI. Works of Goethe and Schiller were used as training data and the poem was then generated by the AI. This poem though was received in different ways. Is it an actual artistic work or a mere juxtaposition of words and phrases based on modern algorithms?

We have to consider the following question: What is a creative act (be it of technical or artistic nature)? Followed by another question: Can such an act be generated by a machine (by software)?

Runco et al. define creativity as the ability to create something that is new or inventive and that is helpful and useful.<sup>1</sup> In this context, we must not forget that creativity also appears in works of art that are, strictly speaking, not “useful”. Novelty alone is not sufficient for creativity; the results must also carry a “sensible” or “meaningful” aspect. Otherwise, all new actions, i.e. those that had not happened before, would automatically be creative even if they were bizarre or pointless.

Compared to all living creatures on this planet, by now the ability to become creative has been restricted to human beings. Some animals can create inventions to a certain extent; however, this ability is very limited whereas human creativity does not seem to have any limits. In “The Human

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<sup>1</sup> Mark A. Runco, Garrett J. Jaeger: *The Standard Definition of Creativity*. In: *Creativity Research Journal*. Vol. 24, No. 1, 1st of January 2012, [ISSN 1040-0419](https://doi.org/10.1040-0419), pp. 92–96.

Place in the Cosmos”, philosopher Max Scheler wrote about the “incredible surplus of phantasy that, by default, has been given to humans in contrast to animals”<sup>2</sup>.

Will AI compete with us as regards this ability?

AI is very good in learning, based on many data at high speed and in combining the results very skilfully with each other. Today, faces can be generated using AI that have been put together from photographs of three different people. A human observer cannot distinguish such an “artificial” face from a real photograph by. Thus, AI has created a “new” human face entirely by itself.

But is this sufficient for a real creative act?

Normally, creativity is seen as something that “deterministically” cannot be derived from something already existing. The patent system also requires an “inventive step” for an invention to be patentable that is something like an idea, an inspiration, and an intuition that cannot be directly derived from already known inventions. Could an AI produce such an additional factor, an inventive step?

When preparing this comment, I talked to several AI experts and they had different views on the question whether or not AI purely functions deterministically.

The first expert stated that AI exclusively consists of mathematics and could only function deterministically (even if we - from “outside” - no longer can reproduce how the result has been achieved - black box).

Another expert stated that conventional computer systems, including the “classical methods” of AI, are indeed completely deterministic, however, non-deterministic processes (on which deep learning is based) can be realised in complex, artificial neuronal networks which no longer are explicit if-then-relationships.

If AI systems finally function deterministically, I think the essential basic element of creativity will be missed: a certain freedom of creation.

Even if AI systems do not function deterministically, the second element still remains: the creation of a meaning, the ability to integrate results in a context. Being something new is not sufficient for “real” creativity.

Legal systems often have to deal with this very question of making a difference between something really original (patent system: inventive / copyright law: artistic) and a recombination of something already available. It is not easy to differentiate and it can hardly be objectified but essentially, the legal systems regarding “intellectual property” are built on that difference. A clever recombination of existing artistic works is seen as plagiarism and technically, a clever combination of already existing inventions does not contain an inventive step.

So can AI really be creative or is it limited to aping creativity? Equipped with high capacities, can it only create complex plagiarisms? Or could AI really develop a new music genre or a new picture language? Could AI develop a piece of twelve-tone music like Arnold Schönberg or a piece of cubism like Pablo Picasso?

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<sup>2</sup> Max Scheler: *Die Stellung des Menschen im Kosmos*, 1928, p. 108.

Or is it still the human being only who can achieve this thanks to creative freedom?

Of course, you can disagree with this opinion and state that, in the end; creative works originating in the human spirit are just combinations of something that has already existed before. Nonetheless, I do not think that this is how the history of human civilisations can be explained in all its facets (arts, culture, science, technology, religion ...).

For centuries, the perception of creativity has argued that something “additional”, not graspable is needed. An inspiration connected to sense. We often compare our spirit or our brain with a computer, however, the actual specific abilities of the human spirit may get lost when pursuing this comparison.

US-American philosopher John Searle disputed against the computer model of the spirit because our spirit does not function like a computer program limited to linking symbols. According to Searle, creative thinking cannot be reduced to a linking of symbols on a syntactic level but it refers to the semantic contents. Computer programs could combine something that already exists but are unable to create something completely new that escapes any type of formalisation.

At the same time, the discussion on what creativity really means opens up a new view on the established practice of both the patent system and the copyright law. I think that nowadays, many patents are issued for inventions that do not comprise a “genuine” inventive step, so-called trivial patents. Such trivial patents might actually be created by an AI alone. Hence, the discussion on AI is also a good opportunity to sharpen again both the sense and the goal of the IP legislations and to align them with the needs of creative people, enterprises and the society.