Response to

USPTO - Patent Eligible Jurisprudence Study (2021)

Rajendra K. Bera[1]

Acadinnet Education Services India Pvt. Ltd., B1/S1 Ganga Chelston, Silver Spring Road, Varthur Road, Munnekolala, Bangalore 560037, India. Email: rajendrabera@yahoo.com

This response is specific to the USPTO's request for comments with reference to Patent Eligibility Jurisprudence Study. Notice 86 FR 36257-36260 (4 pages), 09 July 2021.
https://www.federalregister.gov/documents/2021/07/09/2021-14628/patent-eligibility-jurisprudence-study

A suggestion

In addition to the USPTO's Patent Eligible Jurisprudence Study, it appears that a companion study by the National Academies of Sciences, Engineering, and Medicine would be highly valuable.

Contact me

Please feel free to contact me if further information or clarification related to this submission is required. My email address is rajendrabera@yahoo.com

This document was created on 30 August 2021.

[1] Chief Mentor. Communicating author. The views expressed are those currently held by the author.

Response to

USPTO - Patent Eligible Jurisprudence Study (2021)

Rajendra K. Bera[2]

Acadinnet Education Services India Pvt. Ltd., B1/S1 Ganga Chelston, Silver Spring Road, Varthur Road, Munnekolala, Bangalore 560037, India. Email: rajendrabera@yahoo.com

1 Introduction

Under the prevalent patent systems around the world patenting of inventions related to advances in quantum computing, synthetic biology, and artificial intelligence (AI) have begun to raise serious concerns. Advances in AI are particularly problematic because their influence will be felt on all hitherto patent eligible inventions. Because AI machines have the potential to prolifically invent patentable technology, it will undoubtedly shake the very foundation on which the patent system rests. It will require us to redefine what we mean by novelty, non-obviousness, and written description of the invention (e.g., shouldn't a binary string suffice as written description because it is the lingua franca of computers).

Historically, the modern patent system arose in 1474 (The Venetian Patent Statute) to facilitate, indeed drive, economic growth as a means of improving people's well-being by equitably rewarding those rare human inventors who conjured novel, useful and non-obvious inventions with limited period monopolistic priviledges. In return the inventor would share and place in public view sufficient details of the patented invention to enable another skilled in the relevant arts related to the invention to reproduce the invention and do so freely once the limited period monopoly was extinguished. Along the way, jurisprudence developed that inventions, which in principle could be implemented solely in the mind could not be patented. What was unforeseen before was the possibility of a mindless machine inventing other machines, which, had it been invented by a human might have been patentable!

Present patent systems prohibit non-humans from being granted a patent. Thus, an invention produced by an AI machine is not patentable on several counts: (1) machines are not humans; (2) AI created inventions will be logically and mechanically derivable theorems from some axiomatic system embedded in the AI system; (3) any machine in any population of equivalent AI machines must be deemed capable of ab initio reproducing on demand an invention produced by another in its population. Thus any AI machine conjured invention (essentially a mathematical theorem in terms of written description of the invention) will not only belong to the prior art (i.e., the mathematical axiomatic system) but it will also be obvious because it can be invented without any application of mind (call it machine instinct!). Even more, all possible theorems derivable from the embedded axiomatic system, from the AI machine's perspective, will be deemed obvious and anticipated from the earliest date and time the very first AI machine that was

[2] Chief Mentor. Communicating author. The views expressed are those currently held by the author.

embedded with the specific axiomatic system. Thus an unlimited number of inventions can spring forth spontaneously and automatically from AI machines on demand without violating any law of Nature or of man-made patent systems. Thus, such studies as conducted by the National Academies (of the U.S.) may well be futile efforts in 'Advancing Concepts and Models for Measuring Innovation'[3].

The deep implication is that as various branches of science, technology, and synthetic biology advance and refine their axiomatic systems and embed them in AI machines, billions of potential inventions would cease to be patentable in those branches immediately. Much worse, inventions related to patents in force, if reinvented by an AI machine on the fly in a process and used in commerce as intermediates in a chain of processes can hardly be detected, and if detected how would one enforce patent rights? In almost all cases, such an "infringement" can be worked around if challenged by modifying the sequence of theorems that define the offending process or a group of processes. Thus, AI advances are poised to make present patent systems irrelevant sometime in the future. In the interim, an overhauling of the patent system is required if it is to serve its present intended purpose. The most important part of this overhaul is finding a mechanism that will force the USPTO and the judiciary to play complementary roles—one grants and the other adjudicates infringement, while the validity of a patent is certified by a third entity, the Patent Validation Board (PVB), and such certification will be binding on both the USPTO and the judiciary. It is in the judiciary that the most important changes must occur.

2 The judiciary's quandary

The courts find themselves in an untenable role due to their lack of deep knowledge in science, technology, engineering, mathematics and medicine (STEMM). The situation arose because at the time the patent system was introduced in the United States,

> there were still abundance of cases which could not be brought under rule, until they should have presented themselves under all their aspects; and these investigations occupying more time of the members of the board than they could spare from higher duties, the whole was turned over to the judiciary, to be matured into a system, under which everyone might know when his actions were safe and lawful. Instead of refusing a patent in the first instance, as the board was authorized to do, the patent now issues of course, subject to be declared void on such principles as should be established by the courts of law. This business, however, is but little analogous to their course of reading, since we might in vain turn over all the lubberly volumes of the law to find a single ray which would lighten the path of the mechanic or the mathematician. It is more within the information of a board of academical professors, and a previous refusal of patent would better guard our citizens against harassments by lawsuits. But

[3] NAP (23640) (2017). *Advancing Concepts and Models for Measuring Innovation*: *Proceedings of a Workshop*, NAP, Washington, D.C., 2017. http://www.nap.edu/23640 See also: Crawford & Calo (2016). Crawford, K., and Calo, R., There is a Blind Spot in AI Research. Nature, **538**, 20 October 2016, pp. 311-313. http://www.nature.com/polopoly_fs/1.20805!/menu/main/topColumns/topLeftColumn/pdf/538311a.pdf
White House (2016a). Preparing for the Future of Artificial Intelligence. White House, 03 May 2016. https://obamawhitehouse.archives.gov/blog/2016/05/03/preparing-future-artificial-intelligence
White House (2016b). Preparing for the Future of Artificial Intelligence. Executive Office of the President, National Science and Technology Council, Committee on Technology White House, October 2016. https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf
White House (2016c). Artificial Intelligence, Automation, and the Economy. Executive Office of the President of the United States, December 2016. https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/documents/Artificial-Intelligence-Automation-Economy.PDF

> England had given it to her judges, and the usual predominancy of her examples carried it to ours.[4] — Thomas Jefferson (1813)

The U.S. patent system seeks to encourage the creation of new inventions and their dissemination. The *quid pro quo* expectations of society vis-à-vis a patent has two main aspects. First, a need to draw "a line between the things which are worth to the public the embarrassment of an exclusive patent, and those which are not"[5], and second, full public disclosure of the invention by the inventor. In either case, the judiciary is ill-equipped to express an opinion because of lack of STEMM expertise.

The first (the "embarrassment") is a subjective matter of equity that gives the judiciary enough leeway to vary the terms of the argument depending on one's sublime ethical, political and religious leanings so that one can prove virtually anything. This is amply reflected in the many divided or convoluted judicial opinions. Mathematicians know this happens when an axiomatic system (which the legal system valiantly tries to emulate) is inconsistent or applicable rules of inference have been incorrectly applied.[6] Injection of subjectivity in the interpretation of law allows inconsistencies to surreptitiously creep in and *stare decisis* perpetuates them. This has resulted in patents becoming potent weapons of business war in the hands of patentees to selectively destroy competing inventors, retard further development of crucial improvements, raise the cost of doing R&D, deny timely benefits of additional useful, novel, and non-obvious products and processes to society, and burden courts with plentiful, unnecessary, acrimonious, and expensive litigation. The second (specification), is a matter of law and its fulfillment must be decided on available facts, if necessary, by relying on the expertise of relevant experts. This body of experts could populate a Patent Validation Board (PVB). The role of the PVB *inter alia* would be to deal with these two main aspects so that "a previous refusal of patent would better guard our citizens against harassments by lawsuits".

The creation of the Patent Validation Board (PVB) would eliminate the court's role in dealing with STEMM-related issues. This also means that Markman hearings, doctrine of equivalents, reverse doctrine of equivalents, prosecution history estoppel will cease to exist in patent lawsuits. The PVB will also put the USPTO on guard and drastically reduce the number of patents of dubious quality it issues and thus drastically reduce the activities of patent trolls.

The suggested changes would involve a major overhaul of the entire patent system where the PVB becomes the pivot around which the USPTO and the judiciary balance their respective roles of granting a patent and of enforcing a patent. The PVB is expected to provide an impartial view of the validity of a patent that becomes binding on both the USPTO and the judiciary.

3 Documentation of the rationale behind suggested changes

The rationale behind the suggested changes was earlier presented to the USPTO in three reports. Since these reports are already available with the USPTO, they are incorporated here by reference. These are:

---

[4] Jefferson (1813). Letter from Thomas Jefferson to Isaac McPherson, 13 August 1813, http://press-pubs.uchicago.edu/founders/documents/a1_8_8s12.html in The Writings of Thomas Jefferson. Edited by Andrew A. Lipscomb and Albert Ellery Bergh. 20 vols. Washington: Thomas Jefferson Memorial Association, 1905. See also: Patent History Materials Index - Patent Material from Mechanic's Magazine (1835-1837). IPMall, (no date). https://ipmall.law.unh.edu/content/patent-history-materials-index-patent-material-mechanics-magazine-1835-1837

[5] SCOTUS (1989) SCOTUS (1989). *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.,* 489 U.S. 141, 151 (1989), https://supreme.justia.com/cases/federal/us/489/141/case.html at 148 (quoting Thomas Jefferson).

[6] Hofstadter (1979). Hofstadter, D., Gödel, Escher, Bach: An Eternal Golden Braid, Basic Books, 1979.

1. Bera, R. K. Patent subject matter eligibility. A response to Notice of Roundtables and Request for Comments Related to Patent Subject Matter Eligibility. USPTO, Federal Register, 17 October 2016, pp. 71485-71489 (5 pages). Submitted 11 December 2016. https://www.uspto.gov/sites/default/files/documents/RT2%20comments%20Rajendra%20K%20Bera.pdf

2. Bera, R. K. Patent examination reforms. A response to Request for Comments on Examination Time Goals USPTO, Federal Register, 25 October 2016, pp. 73383-73384 (2 pages). Submitted 13 January 2017. https://www.uspto.gov/sites/default/files/documents/etacomment_f_bera_13jan2017.pdf

3. Bera, R. K. Patenting Artificial Intelligence Inventions. A response to Request for Comments on Patenting Artificial Intelligence Inventions. USPTO, Federal Register, 27 August 2019, pp. 44889 (1 page). Submitted 21 October 2019. https://www.uspto.gov/sites/default/files/documents/Rajendra-Bera_RFC-84-FR-448809.pdf

In addition, some scientific background related to synthetic biology, artificial intelligence, and quantum computing is provided in the following book chapter authored by me and is incorporated here by reference:

Bera, R. K. Synthetic Biology, Artificial Intelligence, and Quantum Computing. Book Chapter in Synthetic Biology - New Interdisciplinary Science. Madan L. Nagpal, Oana-Maria Boldura, Cornel Baltă and Shymaa Enany (Eds.), IntechOpen, 2019. DOI: 10.5772/intechopen.83434. https://www.intechopen.com/books/synthetic-biology-new-interdisciplinary-science/synthetic-biology-artificial-intelligence-and-quantum-computing

All the links were last visited on 28 August 2021.

4 Conclusions

A major overhaul of the entire patent system is suggested centered around the creation of a Patent Validation Board (PVB). The PVB becomes the pivot around which the USPTO and the judiciary balance their respective roles of granting a patent and of enforcing a patent. The PVB is expected to provide an impartial view of the validity of a patent that becomes binding on both the USPTO and the judiciary. The creation of the (PVB) would eliminate the court's role in dealing with STEMM-related issues. The PVB will force the USPTO and the judiciary to play complementary roles—one grants and the other adjudicates infringement—while the validity of a patent is certified by the PVB, and such certification will be binding on both the USPTO and the judiciary. It is in the judiciary that the most important changes must occur.