

July 25, 2024

Director of the U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria VA 22313

RE: Request for Comments Regarding the Impact of the Proliferation of Artificial Intelligence on Prior Art, the Knowledge of a Person Having Ordinary Skill in the Art, and the Determinations of Patentability Made in View of the Foregoing, Docket No: PTO-P-2023-0044

To the United States Patent and Trademark Office:

Thank you for the opportunity to comment. My name is Liza Vertinsky, and I am a Professor of Law at the University of Maryland Francis King Carey School of Law. I have graduate degrees in law and in economics, and I worked for a decade as a practicing attorney supporting high tech and biotech companies and universities in intellectual property transactions and technology transfer prior to joining academia. In my current research I explore ways in which law can support innovation in the public interest. The comments I provide are my own and do not reflect the views of my institution, and I do not represent any clients or receive any industry funding.

While recognizing that artificial intelligence technologies (AI) and their use impact many different aspects of the patent system,¹ I restrict my comments today to the impact of the proliferation of AI on the knowledge of the person of ordinary skill in the art (the “PHOSITA”) as it is used in determining whether an invention is obvious. I make two basic points:

1. That the concept of the PHOSITA should be empirically informed by how members of the relevant innovation community are using AI in their knowledge creation, acquisition, and application.
2. That decisions about how the proliferation of AI impacts different elements of patentability are interdependent and collectively should be considered not just in light of immediate and follow on incentives to innovate, or practical concerns with implementation, but also in light of potential effects of unequal and highly concentrated

¹ For an early discussion of a range of issues raised by emerging AI technologies, *see, e.g.*, Liza Vertinsky & Todd M. Rice, *Thinking About Thinking Machines: Implications of Machine Inventors for Patent Law*, 8 B.U. J. SCI. & TECH. L. 574 (2002); Liza Vertinsky, *Thinking Machines and Patent Law*, in 18 RESEARCH HANDBOOK ON THE LAW OF ARTIFICIAL INTELLIGENCE (Woodrow Barfield & Ugo Pagallo eds., 2018); and Liza Vertinsky, *Reorienting Patent Policy Towards Responsible AI Design*, chapter in Research Handbook on the Law of Artificial Intelligence (W. Barfield, U. Pagallo, eds), 2nd Edition, Edward Elgar Publisher (forthcoming 2025).

access to the most sophisticated AI technologies on access to patents, innovation and competition.

My remarks focus primarily on Question 6, which asks both whether the PHOSITA presumes a natural person and, if so, how the availability of AI as a tool impacts the PHOSITA's level of skill.

Patentability doctrines are interdependent, approaches taken in one area should be consistent with approaches taken in other areas, and all of the doctrines should be interpreted in ways that are consistent with the underlying justification for the patent system. The U.S. Patent and Trademark Office (USPTO) guidance on AI-assisted inventorship “explains that while AI-assisted inventions are not categorically unpatentable, the inventorship analysis should focus on human contributions, as patents function to incentivize and reward human ingenuity.”² If we understand the justification of the patent system to be to promote the progress of science and the arts by encouraging human ingenuity, then this suggests a consistent focus across patent doctrines on the human role in the discovery process. While the PHOSITA is an artificial construct, not an actual person, it is a construct that is human centered and that works with other concepts of patentability, like inventorship, that are similarly understood as human-centered. We want to encourage human acts of discovery that go beyond what would be obvious to a representative human skilled in the art engaging in conventional acts of learning and discovery.

When determining the level of skill of the PHOSITA, conventional uses of technology by the representative person in the pursuit and application of knowledge in the relevant field is, and should continue to be, reflected in the level of skill. Patent doctrines serve to balance competing interests in rewarding inventors, preserving access to and use of existing public knowledge, and preserving opportunities for follow on inventors and inventions. A robust and sustainable innovation ecosystem relies on retaining this balance, making decisions about what should not be patentable just as important as decisions about what is patentable. If we do not attribute appropriate technologically enabled skill and knowledge to the PHOSITA, we run the risk of patenting knowledge that is and should be freely available to everyone skilled in the art. If we attribute too much technologically enabled skill and knowledge to the PHOSITA, we run the risk of failing to adequately reward significant contributions of new knowledge.

In order to get the balance right in a changing technological environment, determining what and how AI technologies might impact the knowledge of the PHOSITA should be an empirical exercise. We need a PHOSITA that is based on an empirical understanding of what a representative member of the relevant innovation community would know or reasonably infer based on the prior art.³ In determining the scope of this knowledge, we need to think about how members of this community are using AI technologies to acquire, understand, learn from and apply knowledge contained in the prior art.⁴ This will provide us with a better understanding of

² U.S. Patent and Trademark Office, *Inventorship Guidance for AI Assisted Inventions*, 89 FR 10043, February 13, 2024.

³ See, e.g., the approach proposed by Laura Pedraza-Farina and Ryan Whalen, *The Ghost in the Patent System: An Empirical Study of Patent Law's Elusive "Skilled Artisan"*, 108 IOWA L. REV. 247 (2022). See also Daralyn J. Durie & Mark A. Lemley, *A Realistic Approach to the Obviousness of Inventions*, 50 WM. & MARY L. REV. 989, 999–1004 (2008).

⁴ For examples of empirical studies seeking to measure how AI is being used, see, e.g., K. McElheran et. al., *AI Adoption in America: Who, What and Where?*, Working Paper, December 18, 2023 available at

what, from the perspective of a human enabled with AI tools, is obvious and therefore not patentable.

In sum, the PHOSITA can be understood as a hypothetical representative member of the relevant innovation community who makes uses of AI technologies that are conventional within this community in conventional ways to acquire and learn from and apply learnings from the prior art. Since members of the community will also be members of the general public, this should include common uses of AI technologies that are reasonably available to the general public to search and learn from and apply the prior art.

This incorporation of AI technologies into skill level will likely expand the knowledge of the PHOSITA, in some areas more radically than in others. The empirical determination of the skill level of the PHOSITA will change over time as AI technologies and their use evolve. Where uses of AI technologies in the relevant industry become more sophisticated, this expanded sophistication of use will be attributed to the skill of the PHOSITA and will likely expand the universe of discoveries that are obvious in light of the prior art. But the net effect on patentability remains uncertain, since inventors will also have access to AI technologies, perhaps better or different AI technologies used in different ways, to expand their own universe of possible patentable discoveries.

Interdependence with other patentability requirement

The effects of adopting this approach to the PHOSITA on the patent system will depend on the ways in which AI is reflected in other patent doctrines, such as prior art and inventorship determinations. It will depend, for example, on how the USPTO approaches the evaluation of what is considered a “significant contribution” by a human to an AI-enabled invention. If the standard for what is “significant” is low, for example, making it easy to attribute inventorship to a human that adds very little to the output of an AI system, we might want to increase the AI-enabled skill that we attribute to the PHOSITA.

Concerns about growing divergence between the power of AI technologies available to the representative skilled artisan and the power of the most sophisticated AI technologies available

In employing an empirical approach to the PHOSITA, the focus will be on what the representative member of the relevant innovation community would find obvious in light of the prior art through conventional uses of AI technologies reasonably available to those in this community.

Where the gaps between this average or representative AI capability and the capabilities of the most sophisticated AI models increase, those with access to the most sophisticated AI models will have an increasing comparative advantage in making discoveries that do not fall within the knowledge of the PHOSITA. Indeed, it might be that the inventor with access to cutting edge AI

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4673528; K. Bonney et. al., *Tracking Firm Use of AI in Real Time: A Snapshot from the Business Trends and Outlook Survey*, NBER working paper 32319, available at <https://www.nber.org/papers/w32319>; T. Babina et. al., *Artificial Intelligence, Firm Growth, and Product Innovation*, 151 *Journal of Financial Economics* 103745 (2024).

models can make a discovery that might be obvious to a skilled artisan using this cutting edge AI model but not to a skilled artisan using the customary or conventional AI technologies.

There will inevitably be a growing gap between the knowledge available to those with generally accessible AI and the knowledge available to those who can access the most sophisticated AI technologies and use them to invent. The increasingly unequal access to rapidly evolving and increasingly powerful AI has the potential to negatively impact access to patents and access to innovation and the potential to increase market concentration.

As the divergence between the power of generally available AI and the power of the most sophisticated AI models increases, this could lead to a concentration of capabilities to invent in those who can access to the most sophisticated AI models. Control over these most sophisticated models is increasingly concentrated in a few large companies.⁵ In this case, the patent system will favor those inventors, and the companies who employ them, that have access to the most sophisticated AI, while making it relatively harder for inventors with limited access to overcome obviousness determinations. This will impact both the effects of the patent system on competition and the effect on the UPSTO goal of ensuring a democratic and robust innovation eco-system.

Conclusion

In conclusion, I suggest that in order for the PHOSITA to play a role that is both a meaningful measure of public knowledge and consistent with the USPTO approach to AI and inventorship, the concept must be both human centered and empirically grounded in how members of the relevant innovation community are using AI. Given the broad reach of AI technologies across different subject areas, the boundaries of what is the relevant community of innovation for this purpose will likely expand.

I also suggest that the implications of AI for the PHOSITA cannot be evaluated in isolation from how the proliferation of AI is reflected in other patent doctrines, such as prior art and inventorship. The effects of AI on any one doctrine must be evaluated in the context of changes to and impacts on other doctrines.

I conclude that while it is reasonable to attribute conventional uses of AI to the PHOSITA, we should be concerned about the impact on access to innovation and competition when these conventional uses diverge significantly from the capabilities of the most sophisticated AI models.

⁵ See, e.g., J. Vipra and A. Korinek, *Market concentration implications of foundation models: The Invisible Hand of ChatGPT*, Brookings Center on Regulation and Markets Working Paper 9, September 2023; Staff in the Bureau of Competition & Office of Technology, *Generative AI Raises Competition Concerns*, *Federal Trade Commission Technology Blog*, June 29, 2023; Douglas Lippoldt, *AI Innovation Concentration and the Governance Challenge*, Center for International Governance Innovation Papers No. 292-April 2024 at <https://www.cigionline.org/static/documents/no.292.pdf>.

