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*This brief update about generative AI supplements the Introduction.*

One of the themes of the casebook is the dynamic interplay between intellectual property law and technological development. The book's Introduction explains its goal of offering the analytical tools that will be "useful no matter what technological change or cultural shift tomorrow brings." We are writing this supplement in the midst of one of the most profound technological transformations of our time: rapid advances in generative AI, including large language models and the introduction of ChatGPT. These developments will have consequences well beyond intellectual property doctrine—for one thing, they will change the practice of law. Within the intellectual property field, as elsewhere, it is too early to make predictions. However, we wanted to highlight a few issues that have made their way to the courts and the government agencies responsible for copyrights and patents. Future editions of the book may cover these matters in more depth as decisions are issued. In the meantime, there will doubtless be opportunities to discuss new developments in class as they occur.

- **Can AI-generated inventions be patented?** In the United States, the answer is "no." Patents are reserved for human inventors. In 2019, Stephen Thaler tested this requirement by filing patent applications for two inventions made by his AI system. The United States Patent and Trademark Office rejected the applications. The Federal Circuit affirmed in 2022, making clear that "there is no ambiguity: the Patent Act requires that inventors must be natural persons; that is, human beings." *Thaler v. Vidal* (Fed. Cir. 2022). The Supreme Court denied certiorari in 2023.
- **Is AI-created art eligible for copyright?** So far, in the United States, the answer here is also "no." Human authorship is a prerequisite for copyright. This rule is currently being challenged in the district court for the District of Columbia by Stephen Thaler (again), who is contesting the Copyright Office's refusal to register copyright for artwork generated by his AI system, but the weight of precedent is against Thaler's arguments. *Thaler v. Perlmutter* (D.D.C.)
- **What is the scope of copyright in works made with AI tools?** Of course, humans have long used technology to create – from the invention of the camera to Photoshop – and many works will be the product of both human and machine creativity. The Copyright Office has issued preliminary guidelines on the copyrightability of such works (available online at [https://www.copyright.gov/ai/ai\\_policy\\_guidance.pdf](https://www.copyright.gov/ai/ai_policy_guidance.pdf)). The answer, naturally, "will depend on the circumstances, particularly how the AI tool operates and how it was used to create the final work." But the guidelines explain that if someone merely provides an instructional prompt such as "write a poem about copyright law in the style of William Shakespeare" and the AI produces "complex written, visual, or musical works in response," the resulting work is not copyrightable. On the other hand, if "the traditional elements of authorship" emanate from the person and the AI is merely "an assisting instrument," the result is copyrightable. And if a person takes AI-generated art and arranges or modifies it in a creative way, copyright would only cover the human contributions, not the machine-generated aspects of the work. In a recent example involving a comic book made of AI-produced images, the Copyright Office said that while the images themselves could not be copyrighted, the text written by the human author and the way she selected and arranged the text and images could be. Copyright Office, *Cancellation Decision re: Zarya of the Dawn* (VAu001480196) (Feb. 21, 2023).

- **If an AI system is trained using copyrighted material, is this infringement?** Moving from AI-generated *outputs* to the *inputs* used in building AI tools, courts will soon address the question of whether using copyrighted material to train AI is infringing. In 2023, Getty Images sued Stability AI for copying at least 12 million copyrighted images to train its Stable Diffusion AI image generator, and another group of plaintiffs filed a class-action lawsuit against Stability AI, DeviantArt, and Midjourney for using their copyrighted images without permission. The outcome in these cases will likely turn on whether this kind of copying is legal under the “fair use” doctrine covered in Chapter Thirteen of the book. When you read the cases in section 4 of that chapter – “Fair Use Meets Technology” – think about how their analysis should apply. Is using copyrighted material to train AI the sort of “transformative” and socially valuable use that has qualified as fair use in earlier cases? Does it unduly interfere with legitimate markets of the copyright holders? (Note that the image generator cases are just two of the pending lawsuits against AI producers. Another case from the software field involves the use of copyrighted computer code to train the Copilot and Codex AI coding tools, but the legal claims are different because the code was made available under open-source licenses—among other things, the plaintiffs claim that there was a breach of the terms of the open-source licenses.)

Whatever happens with AI and intellectual property law, there are lessons to be learned from the past. Many of the readings in the book deal with an earlier technological transformation: the development of digital technologies and the World Wide Web. Themes from those readings will recur with generative AI: reallocations of costs and benefits, incumbents v. newcomers, doomsayers v. optimists, and the power of baselines, metaphors, and framing. There will be familiar questions surrounding judicial methodology, institutional competence, path dependency, and public v. private solutions when technology outpaces law. And there will be things that neither we nor ChatGPT can dream up.