A Practical Introduction to Generative AI, Synthetic Media, and the Messages Found in the Latest Medium

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Abstract

OpenAI's text generation program ChatGPT and the text-to-image generators Stable Diffusion and Dall-E have broken records for early public adoption, capital investment, and a technological shift potentially more far-reaching than even the internet itself. The broad category of generative AI has the potential to disrupt industry, art, and culture, both if done poorly and if done well. Despite significant problems with accuracy and deep concerns about the social and legal consequences of the premature adoption of these technologies, global multinational enterprises are moving these projects out of the test labs and into everyday use. This article provides a comprehensive, but introductory overview of the development of generative AI, the training methods used to produce artificially generated content, the industry opportunities for generative AI, and the legal considerations that enterprises adopting these technologies should consider. After discussing the development and implementation of the technology, the article emphasizes the key concerns regarding algorithmic bias, adherence to civil rights laws and community standards, concerns regarding defamation, and legal liability under intellectual property laws including copyright, trademark, and trade secret. The article also provides common sense steps that enterprises adopting early generative AI systems should incorporate into their agreements with the producers of generative AI networks.

Keywords

Artificial intelligence, algorithm, generative AI, large language models, neural networks, LLM, GAN, ToS, IP, AI-generated content, ChatGPT, Stable Diffusion, OpenAI, Stability AI, Dall-E, generated adversarial networks, synthetic media, training, deepfakes, bias, digital redlining, civil rights, defamation, copyright, trademark, trade secret, patent, publicity rights, drug development, libel, products liability, soundalikes, text generation, videogames, films, videos, design.

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Table of Contents

1. Introduction

> Story—sacred and profane—is perhaps the main cohering force in human life. A society is composed of fractious people with different personalities, goals, and agendas. What connects us beyond our kinship ties? Story. … Story is the counterforce to social disorder, the tendency of things to fall apart. Story is the center without which the rest cannot hold.
>
> — Jonathan Gottschall, The Storytelling Animal: How Stories Make Us Human
>
> Mythology, in other words, is psychology misread as biography, history, and cosmology.
>
> — Joseph Campbell, The Hero with a Thousand Faces

The question was simple: how does one explain to a 9-year-old what the James Webb Space Telescope has discovered? The answer should have been as well. But Google Bard got it wrong, and the embarrassment cost the company $100 billion in market value.[1] That is the indelible lesson from the Google preview of Google Bard, the generative artificial intelligence (AI) program designed to use natural language to glean facts from across the internet and provide interactive chat with users on whatever subjects might cross their minds.

Bard incorrectly stated that the James Webb telescope took the "very first pictures of a planet outside of our own solar system."[2] The problem with the answer is that the Very Large Telescope in Chile actually earned this scientific first.[3] The answer shook a stock market that had been betting on Alphabet having a technological answer ready to compete with OpenAI and the incorporation of ChatGPT technology into Bing and Office.

The stock market had been giddy with the prospect of Microsoft, Alphabet, Meta, and Nvidia (maker of the graphical processing units providing most of the hardware for next generation AI)[4]

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[1] By Jeran Wittenstein, *A Factual Error by Bard AI Chatbot Just Cost Google $100 Billion*, TIME (Feb. 9, 2023), https://time.com/6254226/alphabet-google-bard-100-billion-ai-error/ ("Google parent Alphabet's shares tumbled 7.7% on Wednesday after concerns surfaced about the competency of Bard, the ChatGPT rival it unveiled on Feb. 6. The selloff continued on Thursday …. The rout has erased about $170 billion in market value.").

[2] Sundar Pichai, *An important next step on our AI journey*, GOOGLE MESSAGE FROM OUR CEO (Feb. 6, 2023), https://www.blog.google/technology/ai/bard-google-ai-search-updates/. *See* Tristan Bove, *A robot's $100 billion error: Alphabet shares tank after its ChatGPT rival makes a mistake in its very first ad*, FORTUNE (Feb. 8, 2023), https://fortune.com/2023/02/08/google-bard-ai-mistake-ad-stock-price-market-cap/.

[3] *See Very Large Telescope*, EUROPEAN SOUTHERN OBSERVATORY, https://www.eso.org/public/teles-instr/paranal-observatory/vlt/ (last visited March 9, 2023) ("The VLT has stimulated a new age of discoveries, with several notable scientific firsts, including the first image of an extrasolar planet (eso0428), tracking individual stars moving around the supermassive black hole at the centre of the Milky Way (eso0846), and observing the afterglow of the furthest known Gamma-Ray Burst."). *See* Bove, *supra* note __ ("But the very first image of an exoplanet was captured by the Very Large Telescope, a ground-based array in Chile, in 2004 and confirmed as an exoplanet in 2005, according to NASA—long before James Webb's 2021 launch. James Webb, however, is being used to identify and catalog exoplanets.").

[4] *See* Kif Leswing, *Meet the $10,000 Nvidia chip powering the race for A.I.*, CNBC (Feb. 23 2023), https://www.cnbc.com/2023/02/23/nvidias-a100-is-the-10000-chip-powering-the-race-for-ai-.html ("Nvidia takes 95% of the market for graphics processors that can be used for machine learning, according to New Street Research.

and the hundreds of companies trying to participate in the cultural phenomenon unleashed by the public launch of OpenAI's ChatGPT.[5] "ChatGPT's wide range of uses, status as the fastest-growing consumer app in history, and potential to disrupt internet searches has pushed rivals to throw out the slow and cautious strategy that has dominated A.I. research for years."[6]

Using a variety of different training methods (which are discussed in section 3), new and emerging generative AI systems can produce data that mimics the content of human creativity.[7] These neural networks can generate content in the form of text, voice, pictures, videos, software, physical and molecular designs, audiovisual works combining these features, and more.[8]

As a story-telling medium, "ChatGPT has been used to create thousands of books that have been published on Amazon. Interestingly enough, the genres and topics covered by these AI-generated books are quite wide, ranging from self-help to cookbooks to romance novels."[9] The services are far more than search engines because they do not merely find published content, they evaluate, combine, and synthesize the known information to provide an answer of their own. Trained on the data with which they are provided, they develop their own responses to the questions presented.

Generative AI is just one of many AI implementations, but the focus of this paper is limited to the potential for large networks to create new works as a result of their synthesis of the information they are provided. As explained in this article, generative AI is fundamentally different than other forms of AI because it reflects a new form of automation in which the creative output upon which all societies depend may now be generated by narrow AI systems that do not actually understand what they are producing.[10] The power of a generative AI to compete with humans to tell stories,

… AMD and Intel have competing graphics processors, and big cloud companies like Google and Amazon are developing and deploying their own chips specially designed for AI workloads.").

[5] *See* Bern Elliott, *Why is ChatGPT Making Waves in the AI Market?*, GARTNER (Dec. 8, 2022), https://www.gartner.com/en/newsroom/press-releases/2022-12-08-why-is-chatgpt-making-waves-in-the-ai-market ("Artificial intelligence (AI) research and deployment company OpenAI recently announced the official launch of ChatGPT, a new model for conversational AI. According to OpenAI, the dialogue provided by this platform makes it possible for ChatGPT to "answer follow-up questions, admit its mistakes, challenge incorrect premises and reject inappropriate requests.").

[6] Bove, *supra* note __.

[7] *See* Rob Toews *The Next Generation Of Large Language Models*, FORBES (Feb. 7, 2023), https://www.forbes.com/sites/robtoews/2023/02/07/the-next-generation-of-large-language-models/?sh=a6a71bd18dbc.

[8] *Id*. *See also* Lee, *supra* note __; Wang, *supra* note __ at 588 ("It is now possible using GANs to generate photorealistic object images such as birds and faces, generate indoor or outdoor scenes, translate images from a source domain to the target domain, generate high-definition images from low-definition images, and so on.").

[9] *AI Generated Books are Flooding Amazon Kindle Store*, ODSC (Feb. 23, 2023), https://opendatascience.com/ai-generated-books-are-flooding-amazon-kindle-store/. *See also These authors are using ChatGPT to write books and sell them on Amazon*, N.Y. POST (Feb. 23, 2023), https://nypost.com/2023/02/21/chatgpt-launches-boom-in-ai-written-e-books-on-amazon/ ("There were over 200 e-books in Amazon's Kindle store as of mid-February listing ChatGPT as an author or co-author, … [a]nd the number is rising daily. There is even a new sub-genre on Amazon: Books about using ChatGPT, written entirely by ChatGPT.").

[10] *See generally* Oladeji M. Tiamiyu, *The Impending Battle for the Soul of ODR: Evolving Technologies and Ethical Factors Influencing the Field*, 23 CARDOZO J. CONFLICT RESOL. 75, 88 (2022) ("The role of AI in art helps

make music, and create art would trigger significant upheavals across a multitude of industries; to unleash that power to a machine not yet capable of assessing its own creative work makes those implications pale in comparison.

At this stage, most of the AI innovation remains steered toward business.[11] AI systems are excellent at automating routine tasks, while assuring that rote procedures are followed consistently time after time. The systems identify patterns in data that help identify customer interests and behaviors, increasing productivity and profitability. The systems also have the potential to augment the tasks that humans find tedious, increasing workforce satisfaction.[12] Even though these new systems remain error prone, companies are jostling to be first with practical applications. In March 2023, Salesforce "introduced Einstein GPT, an A.I. system that it hopes will help salespeople, marketers, and customer service agents do their jobs more efficiently, as well as detailed plans to integrate the chatbots into the Slack messaging system."[13]

Salesforce CEO Marc Benioff also identified uses for generative AI in Slack, the business messaging app, describing the impact of generative AI as transformative for commerce. "The world is experiencing one of the most profound technological shifts with the rise of real-time technologies and generative AI….. This comes at a pivotal moment as every company is focused on connecting with their customers in more intelligent, automated, and personalized ways."[14]

Salesforce is not alone. "Every industry that requires humans to create original work—from social media to gaming, advertising to architecture, coding to graphic design, product design to law, marketing to sales—is up for reinvention."[15] And yet, the problems have barely been identified and certainly not addressed.

Industry leaders likely hope that the rapid innovations mean that many of the problems will be resolved by the new technology. A new version of ChatGPT, known in its pre-release phase as

to provide a framework for the possibilities of AI in ODR."); Molly K. Land & Jay D. Aronson, *Human Rights and Technology: New Challenges for Justice and Accountability*, 16 ANN. REV. L. & SOC. SCI. 223, 223 (2020); Gia Jung, *Do Androids Dream of Copyright?: Examining AI Copyright Ownership*, 35 BERKELEY TECH. L.J. 1151, 1151 (2020); Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. REV. 1305 (2019); Sonia K. Katyal, *Private Accountability in the Age of Artificial Intelligence*, 66 UCLA L. REV. 54 (2019); Frank Pasquale, *A Rule of Persons, Not Machines: The Limits of Legal Automation*, 87 GEO. WASH. L. REV. 1 (2019); Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARV. J. L. & TECH. 889 (2018).

[11] Saarthak Bakshi, *Why Artificial Intelligence Is Taking The World By Storm*, BUSINESS WORLD (June 29, 2019), https://www.businessworld.in/article/Why-Artificial-Intelligence-Is-Taking-The-World-By-Storm/29-06-2019-172451/.

[12] *Id*. ("Artificial Intelligence helps in directing and locating the entrepreneur to their potential customers, … maintain the several business activities like sales, the flow of cash, inventory and various other records…, assists in better problem-solving, … involves no errors and faults in its functions…., [and] actually reduces the amount of pain that humans have to take….").

[13] Chris Morris, *Salesforce is joining the ChatGPT frenzy by launching an OpenAI-powered tool on Slack*, FORTUNE (March 7, 2023), https://fortune.com/2023/03/07/salesforce-artificial-intelligence-slack-einstein/.

[14] *Id*.

[15] Sonya Huang, Pat Grady, and GPT-3, *Generative AI: A Creative New World*, SEQUOIA (Sep. 19, 2022), https://www.sequoiacap.com/article/generative-ai-a-creative-new-world/.

GPT-4, is anticipated to be released in the first quarter of 2023.[16] While the rapid iteration will resolve some of the challenges discussed below, it will only exacerbate others. The anticipated technical improvements may not help with the legal liabilities or the social upheaval. Moreover, in the long run, the potential for generative AI to create a disruptive force to labor markets, cultural institutions, and social norms will go well beyond the sales and marketing concerns being discussed in boardrooms today.

This article addresses the requirements to meet corporate accountability requirements to fulfill corporate accountability obligations with respect to laws and regulations around intellectual property, products liability, privacy, and employment and nondiscrimination. The paper also provides a primer for those in business who are not familiar with the AI technologies and the fields impacted by the advances in these technologies.

2. The Evolution of AI from Fiction to Reality

Although automata with clockwork mechanics had been used throughout the Middle Ages,[17] the first "robot" appeared in modern literature with the 1920 play, R.U.R.: Rossum's Universal Robots, written by Karel Čapek.[18] The term robot was a Czech word for forced labor, and the play depicted an early conception of the "singularity," which is the point at which the intelligent, self-aware machines come to dominate humanity rather than serve as its labor force.[19] Perhaps even better known is the 1927 film, Metropolis, by Fritz Lang, that explored similar themes.[20] Even before the depiction of self-aware robots in film, "elaborate mechanical inventions" were creating music and stories.[21] "John Clark's The Eureka (1845) … could produce Latin verses with a pull of a lever…. Because of the strict rules of Latin hexameter, this wooden machine was capable of flawlessly randomizing words and arranging them in the plausible output."[22]

The fictional development of robots was combined with massive artificial intelligence and popularized by Isaac Asimov, who wrote more than three dozen books involving self-aware robots,

[16] *See* Alex Blake, *Microsoft will launch ChatGPT 4 with AI videos next week*, DIGITAL TRENDS (March 10, 2023), https://www.digitaltrends.com/computing/chatgpt-4-launching-next-week-ai-videos/.

[17] *See*, Jessica Riskin, *Machines in the Garden*, 1 REPUBLICS OF LETTERS (April 30, 2010): http://rofl.stanford.edu/node/59.

[18] Britannica, "R.U.R.". *Encyclopedia Britannica*, https://www.britannica.com/topic/RUR (last visited Feb. 27, 2023).

[19] *Id*.

[20] *See Metropolis*, IMDB (Thea von Harbou and Fritz Lang (screenplay); Fritz Lang (director)), https://www.imdb.com/title/tt0017136/.

[21] Vladimir Todorović, *Wandering Machines, Narrativity in Generative Art*, 11 CITAR J. 50 (2019), https://journals.ucp.pt/index.php/jsta/article/view/7334/7114 (listing these examples: Jacques Vauconson's Flute Player (1730's), Jaquet Droz's Automata (1768-1774), Joseph Faber's talking machine Euphonia (1845), and John Clark's The Eureka (1845)).

[22] *Id*. at 50-51.

as well as a dozen stories featuring "Multivac," a massive government-run answer machine that could understand natural language queries and provide thoughtful answers.[23]

The fictional depictions often frame the popular reference to the emergence of these technologies. John McCarthy is attributed with coining the academic term "artificial intelligence" during a 1956 Dartmouth College conference dedicated to capturing human-like thought processes by computers.[24]

Although work has been underway for decades to better understand ways to mirror the processes of human thinking and decision-making, the past five years have seen an explosion of AI adoption. "Artificial intelligence is driving important developments in technology, from controlling autonomous vehicles, to developing medical diagnoses, to combating climate change."[25] Each success generates new research. "The total number of AI publications grew from 162,444 in 2010 to 334,497 in 2021, according to the 2022 AI Index Report. In 2021, a PubMed search of papers with the keyword 'deep learning' returned 14,685 citations, up from 107 papers in 2010."[26]

The rapid growth of AI includes experiments in self-driving vehicles,[27] healthcare,[28] facial recognition to unlock a cell phone,[29] and uses in the production of music,[30] digital images,[31] deepfake videos, and much more.[32] AI plays a substantial role in national defense. Through its

[23] *See Multivac*, WIKIPEDIA, https://en.wikipedia.org/wiki/Multivac (identifying the Asimov stories "Franchise" and "The Last Question" as framing the exploration and expansion of the technology.)

[24] *See* HERBERT L. ROITBLAT, ALGORITHMS ARE NOT ENOUGH: CREATING GENERAL ARTIFICIAL INTELLIGENCE 1 (2020).

[25] Rose Acoraci Zeck, *ANALYSIS: Patents Forecast Widespread Reach of AI Tech in 2023*, BLOOMBERG LAW (Nov. 13, 2022), https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-patents-forecast-widespread-reach-of-ai-tech-in-2023.

[26] Gil Press, *Recent Anecdotal Evidence of Practical AI*, FORBES (May 30, 2022), https://www.forbes.com/sites/gilpress/2022/05/30/recent-anecdotal-evidence-of-practical-ai/?sh=3290d5121aee.

[27] Claire D, *Top 13 Examples of Artificial Intelligence In Daily Life*, DIGITALOGY (Aug. 19, 2020), https://blog.digitalogy.co/best-examples-of-artificial-intelligence-in-everyday-life/.

[28] West and Allen, *supra* note __ (discussing Merantix, a German company that analyzes Computer Tomography (CT) images using deep learning to identify tumors.)

[29] *See* Claire D, *supra* note __.

[30] *A short history of AI in music production*, MUSICRADAR (June 14, 2022), https://www.musicradar.com/news/the-history-of-ai-in-music-production.

[31] Brian Jarvis, *How Artificial Intelligence Has Changed Photo Editing*, DIGITAL PHOTOGRAPHY SCHOOL, https://digital-photography-school.com/artificial-intelligence-changed-photo-editing/ (last visited Feb. 28, 2023) ("One of the hottest topics in the imaging community is the power of AI to take low-quality images and upscale them into high-resolution files." AI also automates masking, sky replacement, color adjustment and other image attributes.).

[32] *See* Claire D, *supra* note __. *See also* Thomas H. Davenport and Rajeev Ronanki, *Artificial Intelligence for the Real World*, HARV. BUS. REV. (Jan.-Feb. 2018), https://hbr.org/2018/01/artificial-intelligence-for-the-real-world.

> Of the 152 projects [James Wheaton and Andrew Nguyen] studied, the most common type was the automation of digital and physical tasks—typically back-office administrative and financial activities—using robotic process automation technologies. RPA is more advanced than

Project Maven, the American military is deploying AI "to sift through the massive troves of data and video captured by surveillance and then alert human analysts of patterns or when there is abnormal or suspicious activity."[33]

The expanding range of applications mirrors the increase in innovation and investment.

> The global AI market was valued at nearly $59.7 billion in 2021, and is estimated to reach $422.4 billion by 2028. …
>
> The number of patents issued by the US Patent & Trademark Office for AI technologies has surged over the past five years. During this timeframe, the number of AI-related patents issued has increased from 3,267 in 2017 to 18,753 in 2021. As of Nov. 2, [2022] the USPTO has issued 15,992 AI-related patents…[34]

Although patents for AI inventions are growing at a rapid pace, this does not mean that patents generated by AI are having the same success. "Under the legal systems of the UK, US, China, Germany and many others, however, only a human can be recognised as an inventor."[35] The premise is being tested globally by Stephen Thaler, the creator of DABUS, which stands for "Device for Autonomous Bootstrapping of Unified Sentience."[36] DABUS "has so far conceived of two inventions: a 'fractal container', designed to allow for coupling of multiple containers, improve grip, and improve heat transfer; and a 'neural flame', a flashing light designed to emit a uniquely-identifiable light signal that attracts enhanced human attention.[37]

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earlier business-process automation tools, because the "robots" (that is, code on a server) act like a human inputting and consuming information from multiple IT systems. Tasks include:

- transferring data from e-mail and call center systems into systems of record—for example, updating customer files with address changes or service additions;
- replacing lost credit or ATM cards, reaching into multiple systems to update records and handle customer communications;
- reconciling failures to charge for services across billing systems by extracting information from multiple document types; and
- "reading" legal and contractual documents to extract provisions using natural lanuage processing.

[33] West and Allen, *supra* note __ (*quoting* Christian Davenport, *Future Wars May Depend as Much on Algorithms as on Ammunition*, Report Says," WASHINGTON POST (Dec. 3, 2017)).

[34] Zeck, *supra* note __.

[35] Tom Dines, *A patent predicament: who owns an AI-generated invention?*, FINANCIAL TIMES (Oct. 6, 2019), https://www.ft.com/content/84677ec8-be73-11e9-9381-78bab8a70848.

[36] *See* Sam Tobin, *UK Supreme Court hears landmark patent case over AI "inventor"*, REUTERS (March 2, 2023), https://www.reuters.com/technology/uk-supreme-court-hears-landmark-patent-case-over-ai-inventor-2023-03-02/; Blake Brittain, *U.S. scientist hits another dead end in patent case over AI 'inventor'*, REUTERS (Oct. 20, 2022), https://www.reuters.com/legal/litigation/us-scientist-hits-another-dead-end-patent-case-over-ai-inventor-2022-10-20/.

[37] Sanjaya Mendis, Rachel Wasserman and Chuck Rothman, *AI and Patent Law: Can AI Be an "Inventor"?*, LEXOLOGY (May 31, 2022), https://www.lexology.com/library/detail.aspx?g=648f10e3-c937-4604-bf89-c21e66b4d669.

The argument that an AI device could obtain patent protection was dismissed as inconsistent with the plain language of the statute and the meaning of the word "individual" in the Patent Act.[38] "Here, there is no ambiguity: the Patent Act requires that inventors must be natural persons; that is, human beings."[39]

Although litigation and applications continue around the globe, only South Africa has allowed the registration of an AI-authored invention, and South Africa does not review the merits of a patent application at the time of registration, only its procedural requirements.[40]

The same outcome has occurred in the U.S. for copyrights of works created by non-human parties.[41] "To qualify for copyright protection, a work must be original to the author."[42] In addition, copyright only subsists if the work "possesses at least some minimal degree of creativity."[43]

Among the recent attempts to claim copyright ownership was the claim brought by PETA on behalf of Naruto, a seven-year-old crested macaque from the island of Sulawesi, Indonesia.[44] Naruto "borrowed" a camera from wildlife photographer David Slater and took a series of exceptional selfies with the camera. Slater eventually recovered the camera and published the images without Naruto's permission. But since Naruto had no right to make a copyrightable image,[45] those works fell into the public domain and were free for Slater or anyone to publish. In cases of alleged divine authorship, the courts distinguish between the uncopyrightable text authored by the non-humans from the various contributions provided by their human editors, including textual questions posed as well as the order, selection, and arrangement of the text provided.[46]

Relying on the history of copyright cases discerning the modicum of creativity required by authors, on February 1, 2022, the Copyright Review Board denied Steven Thaler's attempt to register his two-dimensional artwork entitled "A Recent Entrance to Paradise" as lacking the

[38] *See* Thaler v. Hirshfeld, 558 F. Supp. 3d 238, 246 (E.D. Va. 2021), *aff'd sub nom*. Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022). *See also* Mohamad v. Palestinian Auth., 566 U.S. 449, 453-54 (2012) ("[t]he ordinary meaning of the word [individual], fortified by its statutory context," referred to a "natural person" ….").

[39] Thaler v. Vidal, 43 F.4th 1207, 1210 (Fed. Cir. 2022).

[40] *See* Kingsley Egbuonu, *The latest news on the DABUS patent case*, IP STARS (Feb. 28 2023), https://www.ipstars.com/NewsAndAnalysis/The-latest-news-on-the-DABUS-patent-case/Index/7366

[41] But this is not without controversary. *See, e.g.*, Nina I. Brown, *Artificial Authors: A Case for Copyright in Computer-Generated Works*, 20 COLUM. SCI. & TECH. L. REV. 1, 20 (2018) ("The courts have not yet been confronted with determining whether a computer can meet that definition, or whether an author must be human. Importantly, the Constitution does not define authors as human."); Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer–Generated Works: Is Anything New Since CONTU?*, 106 HARV.L.REV. 977 (1993); Urantia Found. v. Maaherra, 114 F.3d 955, 958 (9th Cir. 1997).

[42] Feist Publications, Inc. v. Rural Telephone Service Company, Inc., 499 U.S. 340, 345 (1991).

[43] *Id*.

[44] Naruto v. Slater, 888 F.3d 418, 420 (9th Cir. 2018) ("all animals, since they are not human—lacks statutory standing under the Copyright Act.")

[45] *Id*.

[46] *See* Urantia Found. v. Maaherra, 114 F.3d 955, 959 (9th Cir. 1997); Oliver v. Saint Germain Foundation, 41 F. Supp. 296 (S.D. Cal. 1941).

requisite originality required under copyright caselaw.[47] The Copyright Review Board explained that "copyright law only protects "the fruits of intellectual labor" that "are founded in the creative powers of the [human] mind.""[48] The Copyright Board quoted a long history of cases using human pronouns to reinforce the longstanding interpretation that authorship is an act of human creativity and this creativity is the essential minimal requirement for copyright protection.[49]

Applying these cases to generative AI, the production of code, images, videos, or text would not be protected by copyright, but if the questions used to generate the text were of sufficient detail to merit copyright protection, then those may be subject to copyright protection, a question left intentionally unanswered by the Copyright Review Board.[50] More practically, selections, editing, and arrangements of AI-generated content would also be protected by thin copyrights extending only to the human additions to those works. One can speculate that if this field grows, the copyright registration process will increasingly require applicants to disclaim all content that was AI-generated as a step in the registration process.

Despite the lack of patent and copyright protection for AI-generated content and inventions, AI has already become deeply embedded in products most people use daily from route predictions in mapping apps to automated customer service. AI has done very well across many industries and does not need intellectual property protection to enhance these services.

Instead, questions continue to be raised about the quality of the output by generative AI systems in factual contexts, the ability of these systems to adequately address legal and ethical requirements for the use of their output, and legal concerns that the process of training these systems and the content generated does so in a manner that respects the intellectual property rights of third parties. These questions, more than the questions of authorship and inventorship, will define the growth of generative AI in commercial enterprise.

3. A Nontechnical Introduction to the Technologies

For purposes of understanding the scope of the technologies at the heart of AI, it is helpful to have some construction of the meaning of "intelligence."[51] Two often-used quotes help capture the broad outline of the construct. First, intelligence can be considered as "an agent's ability to

[47] *See* Second Request for Reconsideration for Refusal to Register *A Recent Entrance to Paradise* , COPYRIGHT REVIEW BOARD (Correspondence ID 1-3ZPC6C3; SR # 1-7100387071) (Feb. 14, 2022), https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf.

[48] *Id*. at 2 (*quoting* Trade-Mark Cases, 100 U.S. 82, 94 (1879), reproduced in U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES § 306 (3D ED. 2021) ("COMPENDIUM (THIRD)").

[49] *Id*. at 4 (*quoting* Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 56-59 (1884) (copyright extends "the exclusive right of a man to the production of his own genius or intellect….").

[50] *See id*. ("Because Thaler has not raised this as a basis for registration, the Board does not need to determine under what circumstances human involvement in the creation of machine-generated works would meet the statutory criteria for copyright protection."0.

[51] *See* Stephan De Spiegeleire, Matthijs Maas, and Tim Sweijs, *What is Artificial Intelligence? Artificial Intelligence and the Future of Defense*, HAGUE CENTRE FOR STRATEGIC STUDIES, 26 (2017), http://www.jstor.com/stable/resrep12564.7.

achieve goals in a wide range of environments."[52] A second construction is slightly more directive: "Intelligence is the computational part of the ability to achieve goals in the world."[53]

Under these definitions, the purpose of intelligence is to be able to both understand the external world and apply that understanding to operations. Those operations can range from answering questions to driving a plane or automobile in a real-world environment. An automaton that can move in a pre-determined manner does not meet either of these criteria. The automation is not understanding the inputs to select appropriate choices and it is undertaking its operations following pre-defined behaviors. "Artificial intelligence algorithms are designed to make decisions, often using real-time data. They are unlike passive machines that are capable only of mechanical or predetermined responses."[54]

In 2005, Ray Kurzweil wrote that "Artificial intelligence permeates our economy."[55] The AI pervasive at the beginning of this century is described as "narrow" because the focus is on a particular task.[56] Narrow AI has made headlines and provided the underpinning for many common tools and services. "In 1997, Garry Kasparov, head in hands, lost a chess match to IBM's Deep Blue. Almost exactly 20 years later, Go champion Ke Jie was defeated by the AI company DeepMind's AlphaGo Master."[57] In contrast to these narrow forms of AI, general or strong AI is a machine or system that demonstrates "the full range of human intelligence"[58] or meets "the full range of human performance across any task."[59] Just as narrow AI can exceed humans in its accomplishment of certain goals, the transition to general AI may bring with it the ability of the machine intelligence to exceed human capacity, and for this stage, the label may be "artificial superintelligence."[60]

In its attempt to develop regulations surrounding the adoption of AI within the European Union (EU), the European Commission created "AI Watch, the European Commission knowledge service to monitor the development, uptake and impact of Artificial Intelligence (AI) for Europe."[61] AI

[52] *Id*. *quoting* Shane Legg and Marcus Hutter, *A Collection of Definitions of Intelligence*, ARXIV (June 25, 2007), http://arxiv.org/abs/0706.3639.

[53] *Id*. *quoting* John McCarthy, *What is Artificial Intelligence: Basic Questions*, STANFORD UNIVERSITY FORMAL REASONING GROUP (2007), http://www-formal.stanford.edu/jmc/whatisai/node1.html.

[54] Darrell M. West and John R. Allen, *How artificial intelligence is transforming the world*, BROOKINGS (April 24, 2018), https://www.brookings.edu/research/how-artificial-intelligence-is-transforming-the-world/.

[55] Ray Kurzweil, Long Live AI, Forbes (Aug. 15, 2005), https://www.forbes.com/forbes/2005/0815/030.html?sh=1991ab7d7e8f.

[56] *Id*. *See also* Spiegeleire, Maas, and Sweijs, *supra* note __ (describing the task-specific AI as "narrow" or "weak" in contrast to general AI or strong AI).

[57] Henry Shevlin, Karina Vold, Matthew Crosby, & Marta Halina, *The limits of machine intelligence*, EMBRO REPORTS (Sep. 18, 2019), DOI 10.15252/embr.201949177.

[58] Kurzweil, *supra* note __.

[59] Spiegeleire, Maas, and Sweijs, *supra* note __.

[60] *Id*.

[61] SAMOILI, S., LÓPEZ COBO, M., GÓMEZ, E., DE PRATO, G., MARTÍNEZ-PLUMED, F., AND DELIPETREV, B., AI WATCH. DEFINING ARTIFICIAL INTELLIGENCE. TOWARDS AN OPERATIONAL DEFINITION AND TAXONOMY OF ARTIFICIAL INTELLIGENCE, EUR 30117 EN, PUBLICATIONS OFFICE OF THE EUROPEAN UNION, LUXEMBOURG (2020).

Watch published a comprehensive review to help better define the range of technologies involved with AI. That study provided a more operational understanding of AI:

> The study of the definitions found in literature leads us to identify four characteristics that are commonly mentioned in AI: i) perception of the environment and real-world complexity, ii) information processing: collecting and interpreting inputs, iii) decision making, including reasoning, learning and taking actions; and iv) achievement of pre-defined goals.[62]

Using these four criteria, AI Watch then proposes this definition for AI:

> Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behaviour by analysing how the environment is affected by their previous actions.[63]

The AI Watch definition highlights another of the important taxonomies involved with AI. Different technologies approach their problem solving using very different strategies. AI is merely a catchphrase for a range of various technologies involving the analysis of informational inputs that result in the system being able to achieve a stated goal.[64] Much like the range of strategies for training humans and animals, there are a range of techniques to address how the data is provided to the computer systems and how that data is processed.

Traditional computers follow the logic of decision trees provided by the system programmers. Jacquard knitting machines reproduce complex weaving patterns based on the information programmed into the machines, and early mainframe computers with punch card inputs used similar techniques to analyze and sort the data that was coded or structured into those machines. Improvements in the input devices have led to massive increases in the data available to the machine from which to glean patterns.

Since the 1950s, these systems were known as "machine learning systems."[65] The rules of a game such as checkers or blackjack were trained into the computer, and by running millions of

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[62] *Id*. at 4.

[63] *Id*. *quoting A Definition of AI: Main Capabilities and Disciplines*, HIGH-LEVEL EXPERT GROUP ON ARTIFICIAL INTELLIGENCE (April 8, 2019), https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=56341.

[64] *See* Nikola Datzov, *The Role of Patent (In)Eligibility in Promoting Artificial Intelligence Innovation*, 92 UNIV. MISSOURI-KANSAS CITY L. REV. __ (2023) (Although "AI" is nearly ubiquitous, it has no agreed upon definition.). *See also* Tabrez Y. Ebrahim, *Data-Centric Technologies: Patent and Copyright Doctrinal Disruptions*, 43 NOVA L. REV. 287, 291 (2019).

[65] *See What is Machine Learning*, IBM, https://www.ibm.com/topics/machine-learning (last visited Feb. 2, 2023) ("Arthur Samuel, is credited for coining the term, "machine learning" [in the 1950s]"); *The IBM 700 Series, Computing Comes to Business*, IBM https://www.ibm.com/ibm/history/ibm100/us/en/icons/ibm700series/impacts/ (last visited Feb. 2, 2023) ("On February 24, 1956, Arthur Samuel's Checkers program, which was developed for play on the IBM 701, was demonstrated to the public on television. In 1962, self-proclaimed checkers master Robert

simulations, the computer could learn to predict the best next choice in each turn of the game.[66] The rules and options were programmed into the computer using labeled datasets. Then algorithms or weighted math formulae would be used to iteratively improve the performance of the computer's selection of options for its choices.[67] This process was later labeled "supervised learning"[68] as alternative systems were developed called "unsupervised learning" that eliminated the need for labeling or quantifying the datasets. "Unsupervised learning uses machine learning algorithms to analyze and cluster unlabeled data sets. These algorithms discover hidden patterns in data without the need for human intervention."[69] "Through machine learning, practitioners develop artificial intelligence through models that can "learn" from data patterns without human direction. The unmanageably huge volume and complexity of data (unmanageable by humans, anyway) that is now being generated has increased the potential of machine learning, as well as the need for it."[70]

A subset of the machine learning techniques is described as neural networks. "Neural networks, or artificial neural networks (ANNs), are comprised of node layers, containing an input layer, one or more hidden layers, and an output layer. Each node, or artificial neuron, connects to another

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Nealey played the game on an IBM 7094 computer.") *See also What is Machine Learning*, BERKELEY SCHOOL OF INFORMATION (June 26, 2020), https://ischoolonline.berkeley.edu/blog/what-is-machine-learning/.

[66] *See What is Machine Learning*, *supra* note __ ("In supervised learning, the algorithm "learns" from the training dataset by iteratively making predictions on the data and adjusting for the correct answer.").

[67] *See*, *e.g.*, Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 GA. ST. U. L. Rev. (2019). https://readingroom.law.gsu.edu/gsulr/vol35/iss4/8.

[68] *See* Julianna Delua, *Supervised vs. Unsupervised Learning: What's the Difference?*, IBM (March 12, 2015), https://www.ibm.com/cloud/blog/supervised-vs-unsupervised-learning

> Supervised learning can be separated into two types of problems when data mining: classification and regression:
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> - Classification problems use an algorithm to accurately assign test data into specific categories, such as separating apples from oranges. Or, in the real world, supervised learning algorithms can be used to classify spam in a separate folder from your inbox. Linear classifiers, support vector machines, decision trees and random forest are all common types of classification algorithms.
> - Regression is another type of supervised learning method that uses an algorithm to understand the relationship between dependent and independent variables. Regression models are helpful for predicting numerical values based on different data points, such as sales revenue projections for a given business. Some popular regression algorithms are linear regression, logistic regression and polynomial regression.

[69] *Id.*

> Unsupervised learning models are used for three main tasks: clustering, association and dimensionality reduction: **Clustering** is a data mining technique for grouping unlabeled data based on their similarities or differences. … **Association** … uses different rules to find relationships between variables in a given dataset. … **Dimensionality reduction** is a learning technique used when the number of features (or dimensions) in a given dataset is too high. It reduces the number of data inputs to a manageable size while also preserving the data integrity.

[70] *What is generative AI*, MCKINSEY & COMPANY (Jan. 19, 2023), https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai#/.

and has an associated weight and threshold."[71] A basic neural network has only three node layers. If the network has more, then it earns the classification as a "deep learning" network.[72] Changes to the weights of each layer of the node inform and influence the other layers, quickly generating highly complex decision trees.

ChatGPT employs a large language model (LLM), a "deep learning algorithm that can recognize, summarize, translate, predict and generate text and other content based on knowledge gained from massive datasets."[73] In fact, GPT, or "Generative (G) Pre-trained (P) Transformer (T),"[74] utilizes such LLM system. The LLM relies on a neural network in which changes to the weights of decisions in each node carry forward to influence the weighting on decisions in subsequent nodes.[75] The weighting shifts may be very subtle and the scale of the neural network can be vast, leading the artificial intelligence system to mimic a sizable fraction of intelligent thought.

Called a transformer model, the most sophisticated of the neural networks iteratively adjusts the weighting among the nodes. "A transformer model is a neural network that learns context and thus meaning by tracking relationships in sequential data like the words in this sentence."[76] LLM is just one of the key training models. Another is the generative adversarial network (GAN), which is used more heavily to train systems to discriminate as regarding the meaning and context of a visual image, again using the deep neural networks to iteratively learn how to map the visual world interpreted through the network.[77]

Recently, the focus on AI has shifted from the manner in which the systems learn data to the ways in which the learning can be put to use. In a shift away from moving a chess piece or sorting spam email from priority email, the focus has been to provide new content, in the form of music, art, videos, and text.

> Generative AI refers to artificial intelligence that can generate novel content, rather than simply analyzing or acting on existing data. Generative AI models produce text and images: blog posts, program code, poetry, and artwork. The software uses complex machine learning models to predict the next word based on previous word sequences, or the next image based on words describing previous images. In the

[71] *What is Machine Learning*, *supra* note __.

[72] *Id*.

[73] Angie Lee, *What Are Large Language Models Used For?*, NVIDIA (Jan. 26, 2023), https://blogs.nvidia.com/blog/2023/01/26/what-are-large-language-models-used-for/.

[74] Kevin Pocock, *What does ChatGPT Stand For?*, PCGUIDE (Feb. 28, 2023), https://www.pcguide.com/apps/what-does-chatgpt-stand-for/.

[75] Lee, *What Are Large Language Models Used For?*, *supra* note __.

[76] *Id*.

[77] *See* Kunfeng Wang, *et al*, *Generative Adversarial Networks: Introduction and Outlook*, 4 IEEE/CAA JOURNAL OF AUTOMATICA SINICA 588 (Oct. 2017), https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8039016.

> shorter term, we see generative AI used to create marketing content, generate code, and in conversational applications such as chatbots.[78]

One subset of generative AI began making waves five years earlier, when in late 2017 and 2018, FakeApp was released to enable users to swap the facial images of one person on a video of someone else.[79] FakeApp substituted the facial texture or visual features of a person's face onto that of another video, creating a tool to map famous actors' images onto pornographic videos.[80] Similar faked videos were also used to create simulated revenge porn to embarrass, harass, and extort women.[81] "As of 2019, 96 percent of deepfakes on the internet were pornography, according to an analysis by AI firm DeepTrace Technologies, and virtually all pornographic deepfakes depicted women."[82]

Deepfakes are a subset of generative AI created using a generative adversarial network (GAN) model in which two networks are trained together. Then the generator tries to generate images that would fool the discriminator into believing they were real."[83] While deepfakes demonstrate the early potential for manipulating video imagery, the misuse of pornographic videos also highlights the need for management and moderation in the deployment of these tools.

Despite the foreshadowing of potential problems with generative AI, the growth of generative AI has been exponential,[84] at least as measured by the growth of U.S. venture capital.[85] Pitchbook reported that "funding of generative AI was up 27% year over year in 2022, hitting $1.4 billion" an increase from a mere $200 million in 2020.[86] "Generative AI was a breakthrough. Rather than

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[78] Danica Lo, *AI is having a moment—here's how businesses can lean in*, FAST COMPANY (Dec. 18, 2022), https://www.fastcompany.com/90826178/generative-ai (interview with Babson College Professor Thomas Davenport and Nitin Mittal, head of U.S. artificial intelligence growth at Deloitte).

[79] *See* Edvinas Keskys, *et al.*, *Regulating Deep Fakes: Legal and Ethical Considerations*, 15 J. IP LAW & PRACTICE 24 (2019), https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID3711007_code843584.pdf?abstractid=3497144&mirid=1.

[80] *Id*.

[81] *See* Tatum Hunter, *AI porn is easy to make now. For women, that's a nightmare*, WASHINGTON POST (Feb. 13, 2023), https://www.washingtonpost.com/technology/2023/02/13/ai-porn-deepfakes-women-consent/ ("a person made esports star "QTCinderella's likeness in computer-generated porn. 'For every person saying it's not a big deal, you don't know how it feels to see a picture of yourself doing things you've never done being sent to your family,' QTCinderella said in a live-streamed video."").

[82] *Id*.

[83] Keskys, *supra* note __ at 26. *See also* Ian Goodfellow, *et al*., *Generative Adversarial Networks*, 63 COMMUNICATIONS OF THE ACM 139 (Nov. 2020).

[84] *See* COMMISSION ON ARTIfiCIAL INTELLIGENCE COMPETITIVENESS, INCLUSION, AND INNOVATION, U.S. CHAMBER OF COMMERCE TECHNOLOGY ENGAGEMENT CENTER REPORT AND RECOMMENDATIONS 10 (March 9, 2023) [hereinafter, CHAMBER REPORT] https://www.uschamber.com/technology/u-s-chambers-ai-commission-report-highlights-the-promise-of-ai-while-calling-for-a-risk-based-regulatory-framework ("The development of AI and the introduction of AI-based systems are growing exponentially. Over the next 10 to 20 years, virtually every business and government agency will use AI. This will have a profound impact on society, the economy, and national security.").

[85] *See* Sara Lebow, *Generative AI funding exploded over the past 2 years*, INSIDER INTELLIGENCE (Jan. 20, 2023), https://www.insiderintelligence.com/content/generative-ai-funding-exploded-over-past-2-years.

[86] *Id*.

simply *perceive* and *classify* a photo of a cat, machine learning is now able to *create* an image or text description of a cat on demand."[87]

Generative AI hit the public in a manner seldom seen with new technologies. "[T]he November launch of [ChatGPT,] the conversational robot from start-up OpenAI marked a turning point in its perception by the general public and investors. 'Every so often we have platforms that come along and result in an explosion of new companies. We saw this with the internet and mobile, and AI could be the next platform,' said Shernaz Daver of California-based Khosla Ventures."[88] ChatGPT hit 1 million users in a mere five days[89] and logged over 100 million unique users two months after its beta launch.[90] For a comparison, Twitter required two years to achieve its first million users and even Instagram required 2.5 months.[91]

In addition to the OpenAI service, there is also Stability AI's Stable Diffusion, an open-source generative AI system. But ChatGPT runs on massive processing from Microsoft Azure and Stable Diffusion runs on Amazon's cloud system.[92] These are driving a resurgence in demand for highly specialized processors, particularly those designed by Nvidia as well as those by AMD.[93]

The commitment to specialized graphics processing units (GPUs) in data centers provides another measure of the growth of generative AI. "[A]ccording to research firm Gartner, the share of specialized chips such as GPUs that are used in data centers is expected to rise to more than 15% by 2026 from less than 3% in 2020."[94] "ChatGPT, Silicon Valley's latest app sensation, has investors rushing to find the next big thing in generative AI, the technology that some hail as the beginning of a new era in big tech."[95]

Even a brief introduction should likely include a competitive technology that has been providing natural language responses to difficult questions since 2009. Wolfram|Alpha, created by

[87] *What is generative AI*, MCKINSEY & COMPANY, *supra* note __.

[88] AFP, *ChatGPT sparks AI 'gold rush' in Silicon Valley*, THE NEWS (I'NTL) (Feb. 19, 2023), https://www.thenews.com.pk/latest/1042216-chatgpt-sparks-ai-gold-rush-in-silicon-valley.

[89] Arooj Ahmed, *Chat GPT Achieved One Million Users in Record Time - Revolutionizing Time-Saving in Various Fields*, DIGITAL INFORMATION WORLD (Jan. 27, 2023), https://www.digitalinformationworld.com/2023/01/chat-gpt-achieved-one-million-users-in.html.

[90] *See* Dan Milmo, *ChatGPT reaches 100 million users two months after launch*, GUARDIAN (Feb. 2, 2023), https://www.theguardian.com/technology/2023/feb/02/chatgpt-100-million-users-open-ai-fastest-growing-app.

[91] Ahmed, *supra* note __ (*citing* Statista).

[92] *See* Kenrick Cai and Alex Konrad, *Six Things You Didn't Know About ChatGPT, Stable Diffusion And The Future of Generative AI*, FORBES (Feb. 2, 2023), www.forbes.com/sites/kenrickcai/2023/02/02/things-you-didnt-know-chatgpt-stable-diffusion-generative-ai/.

[93] *See* Chavi Mehta, *Nvidia results show its growing lead in AI chip race*, REUTERS (Feb. 23, 2023), https://www.reuters.com/technology/nvidia-results-show-its-growing-lead-ai-chip-race-2023-02-23/ ("The company got its start in the graphics chip business for PCs by helping video games look more realistic, and then rode the cryptocurrency wave as its chips were used for mining. Now, the next push comes from generative AI.").

[94] *Id*. (Nvidia "controls about 80% of the market for graphic processing units (GPUs)…. Advanced Micro Devices … is the second-biggest player in the GPU industry, with a market share of roughly 20%.").

[95] AFP, *supra* note __.

Stephen Wolfram, has been providing just such a service.[96] As he describes it, the Wolfram Language and Wolfram|Alpha has built a computational language to give AI "what we can think of as computational knowledge superpowers, that leverage the non-human-like power of structured computation and structured knowledge."[97]

The inherent limitations of deep neural networks are that they cannot really discern, ignore, and focus—at least not yet. The power of Wolfram|Alpha's computational language model is that it focuses on accuracy rather than scope. When the processes are combined, however, each improves the other.

> Inside Wolfram|Alpha, everything is being turned into computational language, and into precise Wolfram Language code, that at some level has to be "perfect" to be reliably useful. But the crucial point is that ChatGPT doesn't have to generate this. It can produce its usual natural language, and then Wolfram|Alpha can use its natural language understanding capabilities to translate that natural language into precise Wolfram Language.[98]

The descriptions in this technical introduction are not particularly technical nor likely to be considered accurate to a data scientist. They are approximations that reflect a non-scientific understanding of the technologies as they are developing. They also reflect the popular descriptions at the time of this writing. As computational language models are used to assist LLMs and the wide array of other training structures are added to the mix, the potential for these systems will only increase. This gives rise to both opportunities and limitations. The next sections discuss both.

4. The Opportunities of Generative AI

Generative AI remains in its infancy, but the explosive interest by investors, major tech multinationals, and the general public suggests that the potential for this technology will be more than mere hype. "Since its discrete release in late November, ChatGPT has become one of the fastest growing apps ever and pushed Microsoft and Google to rush out projects that had until now stayed carefully guarded over fears that the technology wasn't yet ready for the public."[99]

NFX, "a venture firm exclusively focused on pre-seed & seed stage startups,"[100] has provided extensive coverage of generative AI since October 2022, primarily by its managing partner, James

[96] *See* Stephen Wolfram, *Wolfram|Alpha as the Way to Bring Computational Knowledge Superpowers to ChatGPT*, STEPHEN WOLFRAM WRITINGS (Jan. 9, 2023), https://writings.stephenwolfram.com/2023/01/wolframalpha-as-the-way-to-bring-computational-knowledge-superpowers-to-chatgpt/.

[97] *Id.*

[98] *Id.*

[99] AFP, *supra* note __.

[100] NFX, https://www.nfx.com/ (last visited March 1, 2023); *James Currier*, SILICON VALLEY OPEN DOORS, https://www.svod.org/james-currier/ (last visited March 1, 2023).

Currier.[101] Currier introduced generative AI in an introductory article: "Some have called it "Generative AI," but AI is only half of the equation. AI models are the enabling base layers of the stack. The top layers will be thousands of applications. Generative Tech is about what will actually touch us – what you can do with AI as a partner."[102]

While generative AI can potentially be incorporated into almost any human activity, there are some key areas where the technology has already been put to use. "[T]he introduction of APIs and open-source tools are allowing entrepreneurs to build upon existing foundation models and narrow in on specific verticals like gaming, graphic design, copywriting, media, and entertainment."[103]

A study on collaboration among people using AI as a catalyst found that using technology as an augmentation to human creative collaborations proved very promising.

> AI may play important roles in influencing social dynamics during creativity by: 1) implicitly seeding common ground at the start of collaboration, 2) acting as a psycho-logical safety net in creative risk-taking, 3) providing a force for group progress, 4) mitigating interpersonal stalling and friction, and 5) altering users' collaborative and creative roles.[104]

Generative AI text, music, video, gaming, design, and software have the power to reshape the world around us and in so doing to also reshape and mediate the ways in which we interact with each other. These areas are ripe for transformational change as AI augmentation and AI creation redefines how media is conceived, developed, and executed.

a. Image Generation

Image generation stands out as one of the key functions of generative AI. An image generator can create a novel image that is functionally indistinguishable from real photographs.[105] Image generators can also be used to create wholly original works of art.[106] "With AI art generators, you can type in a prompt as detailed or vague as you'd like and have the image you were thinking of pop up on your screen instantly. These tools can help with branding, social media content creation,

[101] *See, e.g.*, James Currier, *Generative Tech Begins*, NFX (Oct. 2022), https://www.nfx.com/post/generative-tech#Generative-Tech-will-have-unusual-market-dynamics-because-it%E2%80%99s-already-consensus ("The biggest change to the Internet since crypto just happened. A whole new world of applications opened up to Founders in the last 6 months.")

[102] *Id*.

[103] Clarke Pennington, *Generative AI: The New Frontier For VC Investment*, FORBES (Jan. 17, 2023), www.forbes.com/sites/columbiabusinessschool/2023/01/17/generative-ai-the-new-frontier-for-vc-investment/.

[104] Minhyang (Mia) Suh, *et al.*, *AI as Social Glue: Uncovering the Roles of Deep Generative AI during Social Music Composition*, CHI CONFERENCE ON HUMAN FACTORS IN COMPUTING SYSTEMS (May 8, 2021), https://dl.acm.org/doi/fullHtml/10.1145/3411764.3445219.

[105] *See* Daniel Zhang, *et al.*, *The AI Index 2022 Annual Report*, AI INDEX STEERING COMMITTEE, STANFORD INSTITUTE FOR HUMAN-CENTERED AI, STANFORD UNIVERSITY (March 2022) at 54, https://aiindex.stanford.edu/wp-content/uploads/2022/03/2022-AI-Index-Report_Master.pdf.

[106] Sabrina Ortiz, *The best AI art generators: DALL-E 2 and other fun alternatives to try*, ZDNET (Feb. 27, 2023), https://www.zdnet.com/article/best-ai-art-generator/.

vision boards, and more."[107] The most impactful art generation program is DALL-E 2 by OpenAI (the same company that released ChatGPT).

> Creating cute pictures of a corgi in a house made of sushi isn't exactly a profitable business case, at least not for large enterprises," … said Peter van der Putten, director of the AI Lab at software firm Pegasystems Inc. … And yet, he said, "generative AI startups are popping up left and right, in areas such as marketing, support, service and other content creation."[108]

Generated Photos,[109] an online service, boasts that it can provide "2,677,079 low-res generated photos" to users for free,[110] with the promise that "[g]enerated photos are created from scratch by AI systems. All images can be used for any purpose without worrying about copyrights, distribution rights, infringement claims, or royalties."[111] As discussed in the next section, however, these claims promising no copyright violations and no "infringement" claims (that presumably covers defamation and violations of the rights of publicity) may be overly optimistic.

Image generation can move beyond photorealistic images of people, places, and things. "[C]ompanies like NVIDIA have already used image generators to create virtual worlds for gaming."[112] This has the potential to create ever-expanding videogame and metaverse environments in the manner often depicted in films.[113] Image generation can also be used in fashion to virtualize different clothing patterns and different applications of color and design on those clothing patterns.[114] For example, "Stitch Fix, the online service that uses recommendation algorithms to personalize apparel, says it has experimented with DALL-E 2 to visualize its products based on specific characteristics like color, fabric and style."[115]

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[107] *Id*. (In addition to DALL-E, other services include Dream by WOMBO, Craiyon, Midjourney, and MyHeritage's AI Time Machine).

[108] Angus Loten, *Generative AI Startups Attract Business Customers, Investor Funding*, WALL ST. J. (Oct. 25, 2022), https://www.wsj.com/articles/generative-ai-startups-attract-business-customers-investor-funding-11666736176.

[109] https://generated.photos/ (last visited March 1, 2023).

[110] Generated Photos, https://generated.photos/pricing (last visited March 1, 2023).

[111] Generated Photos, https://generated.photos/ (last visited March 1, 2023).

[112] Zhang, *supra* note __ at 54.

[113] *See* Chris E. Hayner, *21 Virtual Reality Movies, Ranked From Awful To Amazing*, GAMESPOT (May 3, 2021), https://www.gamespot.com/gallery/21-virtual-reality-movies-ranked-from-awful-to-amazing/2900-1874/ (listing the Matrix as the best such film. Others include Ready Player One, Tron, Spy Kids 3-D, Total Recall, and many others.); Ben Wodecki, *AI in video games: From development to design*, AI BUSINESS (Oct. 15, 2021) (discussing the various roles AI can take in game design, development, and game play); Devindra Hardawar. *How 'Microsoft Flight Simulator' became a 'living game' with Azure AI*, ENGADGET (Sept. 25, 2020) https://www.engadget.com/microsoft-flight-simulator-azure-ai-machine-learning-193545436.html ("Microsoft's Azure … was able to push 2.5 petabytes worth of Bing Maps satellite photo data through Azure machine learning to construct the virtual world of *Flight Simulator.* You could say it's really the cloud that brings the game to life. Azure also helps to model real-time weather.").

[114] *See* Zhang, *supra* note __ at 54.

[115] Kyle Wiggers, *Businesses including Stitch Fix are already experimenting with DALL-E 2*, TECHCRUNCH (Aug. 9, 2022), https://techcrunch.com/2022/08/09/businesses-including-stitch-fix-are-already-experimenting-with-dall-e-2/.

"Rowan Curran, an AI and data science analyst at IT research firm Forrester Research Inc., said he expects generative AI to impact enterprises from top to bottom. ... '[T]he use of text-to-image generators for inspiration, ideation and prototyping for marketers, designers and developers has just barely begun.'"[116]

The visual works need not be limited to still images. Meta has already announced "Make-A-Video, a new AI system that lets people turn text prompts into brief, high-quality video clips."[117] The output looks like GIFs, very short animation of generated images, but as the proof of concept, they illustrate the next step in text-to-video generation. Other vendors have already surpassed these efforts, including Synthesia, Pictory, Elai.io, and a growing list.[118]

The same expansion of skill sets is also improving the scope of deepfakes, the ability to revise and reconceptualize other people's video with the editor's content. "Startups like Hour One, Synthesia, Uneeq and D-ID see more prosaic applications for the technology: putting infinite numbers of shiny, happy people in personalized online ads, video tutorials and presentations."[119] The technology can also be used for clever skits, for industrial videos, or more problematically for pornography and political disinformation. "A report last month by misinformation watchdog NewsGuard warned of the dangers of GPT on its own, saying it gives peddlers of political misinformation, authoritarian information operations, and health hoaxes the equivalent of "an army of skilled writers spreading false narratives.""[120]

Advocates, however, see these synthesized media videos as extensions of the individuals being promoted by enterprises. "As the technology gets faster and cheaper, Hour One … hopes to put avatars into real-time video calls, giving users their own "super communicators," enhanced "extensions" of themselves."[121] Natalie Monbiot, head of strategy for One Hour explains that through social media "[w]e already do that every day…. And this is almost just like an animated version of you that can actually do a lot more than a nice photo. It can actually do work on your behalf."[122]

b. Text Generation

While generative art and synthetic media were among the first of the generative AI content to become popular, it was the release of ChatGPT that transformed the growth of generative AI into a popular inflection point.[123] As the Chronicle of Higher Ed recently reported, "[i]t's hard to believe that ChatGPT appeared on the scene just three months ago, promising to transform how

[116] Loten, *supra* note __.

[117] *Introducing Make-A-Video: An AI system that generates videos from text*, META AI (Sept. 29, 2022), https://ai.facebook.com/blog/generative-ai-text-to-video/.

[118] *See* Alex McFarland, *8 "Best" AI Video Generators (March 2023)*, BEST OF (Mar. 5, 2023), https://www.unite.ai/best-ai-video-generators/.

[119] *See* Alex Pasternack, *GPT-powered deepfakes are a 'powder keg,'* FAST COMPANY (Feb. 22, 2023), https://www.fastcompany.com/90853542/deepfakes-getting-smarter-thanks-to-gpt.

[120] *Id*.

[121] *Id*.

[122] *Id*. (*quoting* Natalie Monbiot).

[123] Will Douglas Heaven, *ChatGPT is everywhere. Here's where it came from*, MIT TECH. REV. (Feb. 8, 2023), https://www.technologyreview.com/2023/02/08/1068068/chatgpt-is-everywhere-heres-where-it-came-from/.

we write. The chatbot, easy to use and trained on vast amounts of digital text, is now pervasive."[124] The OpenAI "chatbot exploded into the mainstream almost overnight."[125] Of course, like any overnight success, the effort was based on decades of more systematic research and perseverance.

OpenAI's ChatGPT and Google's Bard are perhaps the two systems garnering the most headlines, but they are not alone. Others recommended by Tech.Co include ChatSonic, OpenAI Playground, YouChat, Perplexity AI, Character AI, and Jasper Chat.[126] Some of these services are closer to search engines, helping find answers on the internet and condensing them as text.[127]

Despite some of the early giddiness surrounding the introduction of ChatGPT, none of the text generators are really ready to be generating new novels based on a simple prompt or input.[128] On the other hand, they are often quite capable of delivering a cleverly numbered list of product or service attributes[129] or drafting a coherent five-paragraph essay.[130] Of course, the systems do not compose in the manner of a human author. Instead, they predict likely appropriate text based on how that text has been used in its training data.

> The software uses complex machine learning models to predict the next word based on previous word sequences, or the next image based on words describing previous images. LLMs began at Google Brain in 2017, where they were initially used for translation of words while preserving context. Since then, large language and text-to-image models have proliferated at leading tech firms including Google (BERT and LaMDA), Facebook (OPT-175B, BlenderBot), and OpenAI, a nonprofit in which Microsoft is the dominant investor (GPT-3 for text, DALL-E2 for images, and Whisper for speech). Online communities such as Midjourney (which helped win the art competition), and open-source providers like HuggingFace, have also created generative models.

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[124] Beth McMurtie, *ChatGPT is Everywhere*, CHRON. HIGHER ED. (Mar. 6, 2023), https://www.chronicle.com/article/chatgpt-is-already-upending-campus-practices-colleges-are-rushing-to-respond?cid=gen_sign_in.

[125] Heaven, *supra* note __.

[126] Aaron Drapkin, *Best ChatGPT AI Alternatives You Need to try in 2023*, TECH.CO (Feb. 20, 2023), https://tech.co/news/best-chatgpt-alternatives.

[127] *See id.* (For example, "YouChat is an AI chatbot and search assistant. It will provide you with similar answers to that of ChatGPT, but will also link you to webpages that relate to whatever query you choose to type in.").

[128] *See* Amira Loutfi, *12 AI Tools to Write your Novel For you*, METASTELLAR, https://www.metastellar.com/nonfiction/on-writing/12-artificial-intelligence-tools-to-write-your-novel-for-you/ (last visited March 8, 2023).

[129] *See* Thomas H. Davenport and Nitin Mittal, *How Generative AI Is Changing Creative Work*, HARV. BUS. REV. (Nov. 14, 2022), https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work (the article opens with a well composed list of attributes for generative AI text. The human authors noted GPT-3 "came up with ideas that we didn't think of. The last point about personalized content [being provided by generative AI], for example, is not one we would have considered."); Ian Bogost, *ChatGPT Is Dumber Than You Think*, THE ATLANTIC (Dec. 7, 2022), https://www.theatlantic.com/technology/archive/2022/12/chatgpt-openai-artificial-intelligence-writing-ethics/672386/ ("In short, it wrote a basic, high-school-style five-paragraph essay. … Treat it like a toy, not a tool.").

[130] *See* McMurtrie, *supra* note __ ("One thing ChatGPT does particularly well, he believes, is help students learn the "basic building blocks" of effective academic writing.").

> These models have largely been confined to major tech companies because training them requires massive amounts of data and computing power. GPT-3, for example, was initially trained on 45 terabytes of data and employs 175 billion parameters or coefficients to make its predictions; a single training run for GPT-3 cost $12 million. Wu Dao 2.0, a Chinese model, has 1.75 trillion parameters. Most companies don't have the data center capabilities or cloud computing budgets to train their own models of this type from scratch.[131]

The consequence of learning to write based on massive but historical training data is discussed in the following sections. But the difference between structuring an argument and anticipating the next phrases to come is a very important distinction. The current systems utilize only the prompts in front of them to build their arguments. Additional training and modeling will be needed to be able to provide the generative AI an outline of a paper and have it make the connections that generate the flow from one building-block of the paper to the next.

Instead, "[t]he first true "killer application" for generative text, in terms of commercial adoption, has proven to be copywriting: that is, AI-generated website copy, social media posts, blog posts and other marketing-related written content."[132] While this may not be as dynamic as writing poems, novels, or legal briefs, it represents a very large and somewhat tedious market, attributes that make it perfect for AI support.[133]

As these tools continue to improve, they will expand into more business transactions and more components of those transactions. Contracts will not just be assembled by smart systems, they will likely be drafted from information gleaned directly by the AI about the parties to that transaction.[134]

"[M]ake no mistake … AI-powered text generation will create many orders of magnitude more value than will AI-powered image generation in the years ahead. Machines' ability to generate language—to write and speak—will prove to be far more transformative than their ability to generate visual content."[135] The marketing is shifting to personalized email generation, customer follow-up regarding products and services, and may soon include "real-time coaching and feedback to human sales agents on calls; summarize sales discussions and suggest next steps."[136]

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[131] *See* Davenport and Mittal, *supra* note __.

[132] Rob Toews, *The Biggest Opportunity in Generative AI is Language, Not Images*, FORBES (Nov. 6, 2022), https://www.forbes.com/sites/robtoews/2022/11/06/the-biggest-opportunity-in-generative-ai-is-language-not-images/?sh=6674bcae789d.

[133] *See id.*

[134] *See* Beverly Rich, *How AI Is Changing Contracts*, HAR. BUS. REV. (Feb. 12, 2018), https://hbr.org/2018/02/how-ai-is-changing-contracts.

> AI software, however, can easily extract data and clarify the content of contracts. (It could quickly pull and organize the renewal dates and renegotiation terms from any number of contracts.) It can let companies review contracts more rapidly, organize and locate large amounts of contract data more easily, decrease the potential for contract disputes (and antagonistic contract negotiations), and increase the volume of contracts it is able to negotiate and execute.

[135] Rob Toews, *The Biggest Opportunity in Generative AI is Language, Not Images*, FORBES (Nov. 6, 2022), https://www.forbes.com/sites/robtoews/2022/11/06/the-biggest-opportunity-in-generative-ai-is-language-not-images/?sh=6674bcae789d.

[136] *Id*.

These incremental improvements, along with the emerging skills of personalization will lead to AI services that can talk with people in a genuinely companionable manner. This will go beyond marketing to socialization—or socialization with marketing hidden in its center.

Eventually—and perhaps quite quickly—these systems will be able to generate longer blocks of text, building the connection that goes from simple marketing to complex narrative. At least one system, Dramatron, claims to have already cracked this code.[137] "Fundamental to Dramatron is the so-called "prompt chaining." The method chains prompts at lower hierarchy levels with prompts including output from higher hierarchy levels."[138] Rather than following the traditional LLM model of stream of consciousness text flow, Dramaton using the common Hollywood strategy of starting with a log line and fleshing out the story from the preexisting architecture of the story. "After a human enters the log line, Dramatron generates a list of characters, the plot, and locations along with their descriptions. All these parameters should be consistent with the log line. Finally, the system generates the dialogs for each scene."[139] But even here, this is not—at least yet—a substitute for AI authored works. "Dramatron is a co-writing system that has only been used in collaboration with human writers and was not conceived or evaluated to be used autonomously."[140]

At the moment, therefore, the text generation still has a way to go. Like any learner, the systems are limited by the training data. An inherent problem when collecting massive terabytes of data is that the data is not necessarily vetted or accurate. As a result, the current systems available are not necessarily reliable for their facts. This will change over time. Enterprises seeking to license generative AI systems will be able to manage the training data and control the output for factual errors, at least to some degree. One possible corporate arms race may well be the speed and depth companies seek to control, train, and exploit proprietary data sets for the best answers and most correct insights from their generative text systems. For fields such as law, medicine, business, and finance, accuracy and depth are the key metrics. Highly accurate, proprietary text engines in these fields will transform these industries and the enterprises controlling these systems will become the leaders in each field.

c. Audio, including Music, Voice, and Sound

Friedrich Nietzsche explained simply, "[w]ithout music, life would be a mistake."[141] "For thousands of years, music has been a form of human expression. Music production has always been an innate pursuit of human beings, and a product of creativity and collaboration."[142] Yet,

[137] *See* Matthias Bastian, *Deepmind's "Dramatron" can write film and theater scripts*, THE DECODER (Dec. 10, 2022), https://the-decoder.com/deepminds-dramatron-can-write-film-and-theater-scripts/.

[138] *Id*.

[139] *Id*.

[140] *About Dramatron*, DRAMATRON, https://deepmind.github.io/dramatron/details.html (last visited March 9, 2023). *See generally* Piotr Mirowski, Kory W. Mathewson, Jaylen Pittman, Richard Evans, *Co-Writing Screenplays and Theatre Scripts with Language Models: An Evaluation by Industry Professionals*, ARXIV (Sept. 29, 2022), https://arxiv.org/abs/2209.14958.

[141] FRIEDRICH NIETZSCHE, TWILIGHT OF THE IDOLS, OR, HOW TO PHILOSOPHIZE WITH THE HAMMER 9 (1894), https://www.google.com/books/edition/Twilight_of_the_Idols_or_How_to_Philosop/sdo6J4S_hhwC?hl=en&gbpv=1&bsq=without%20music.

[142] Weiming Liu, *Literature survey of multi-track music generation model based on generative confrontation network in intelligent composition*, 79 J. SUPERCOMPUTING 6560 (2023).

despite the highly personal nature of music, algorithmic composition and digitized music are among the earlier areas of generative success, with early experiments dating back to the 1950s.[143] Those early experiments, however, were human labor intensive and extremely limited in scope. But those days are behind us.[144]

Much like the visual and text training models, music AI is built upon deep learning neural networks. "If you're feeding it different types of music, it will be able to differentiate things like tempo, chords, length, the relationship between notes, and use all of those details to generate new melodies."[145] Music, however, is more inherently structured so "[s]ome AI frameworks are even trained to use musical theory to guide the end result."[146]

One particularly interesting recent example is "The Lost Tapes of the 27 Club," an AI memorial to some of the many music artists who died early, in the height of their careers, remembered through an AI generated song in the artist's voice and musical style, produced by Over the Bridge.[147] "Over the Bridge's The Lost Tapes of the 27 Club project fed an AI songwriting algorithm with existing songs to generate pretty convincing new compositions and lyrics based on the inputs [for] Amy Winehouse, Jimi Hendrix, and Kurt Cobain."[148]

As explained in one research paper on generative AI music, music composition problem solving is a form of design thinking.[149] "Automatic composition is essentially a note sequence prediction problem, and recurrent neural networks are good at solving this type of problem."[150] The music problem-solving or design thinking strategy will eventually also serve to inform the text generation as well, since the recurrent neural networks utilize both the input of the network at

[143] *See* Nick Collins, *The Analysis of Generative Music Programs*, 13 ORGANISED SOUND, 237 (2008), http://journals.cambridge.org/abstract_S1355771808000332 ("Composers have spent more than fifty years devising computer programs for the semi-automated production of music.").

[144] *See* Eric Sunray, *Sounds of Science: Copyright Infringement in Ai Music Generator Outputs*, 29 CATH. U.J.L. & TECH. 185, 191 (2021) ("Applying AI technology to music is nothing new. Automatic music generation can be traced back to the earliest days of AI research. Further, AI already aides the modern music industry by performing functions ranging from talent discovery to playlist curation.").

[145] *Id*.

[146] *Id*.

[147] *Lost Tapes of the 27 Club*, SPOTIFY, https://themix.musixmatch.com/post/ai-in-songwriting-4-practical-applications (last visited March 8, 2023); *AI in songwriting: 4 practical applications*, THE MIX (July 1, 2022), https://themix.musixmatch.com/post/ai-in-songwriting-4-practical-applications.

[148] *AI in songwriting: 4 practical applications*, *supra* note __.

[149] Luo Luo, *Practical Exploration on the Construction of Theoretical Courses of Composition Technology in the Age of Artificial Intelligence*, 2022 MOBILE INFORMATION SYSTEMS (Aug. 31, 2022), https://www.researchgate.net/publication/363177503_Practical_Exploration_on_the_Construction_of_Theoretical_Courses_of_Composition_Technology_in_the_Age_of_Artificial_Intelligence#fullTextFileContent. *See also* Rikke Friis Dam and Teo Yu Siang, *What is Design Thinking and Why Is It So Popular?*, INTERACTION DESIGN FOUNDATION, https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular (last visited March 13, 2023) ("Design thinking is an iterative process in which you seek to understand your users, challenge assumptions, redefine problems and create innovative solutions which you can prototype and test. The overall goal is to identify alternative strategies and solutions that are not instantly apparent with your initial level of understanding.").

[150] *Id*.

each layer and also the output from the previous moment.[151] As a result, in principle, the recurrent neural network can "map from the entire history of previous inputs to each output."[152] This enables the music to be much more coherent and allows for the intersection between melody, composition, and the various components of discrete instrument orchestrations.

Analogizing this to the text problem, future iterations of the large language model learning systems for text may be able to "start at the end," and train the model to fill in the narrative that ends with a story's resolution and recursively predict the steps leading up to that story.[153] Such approaches in music composition and production are leading to a "golden age" in AI music.[154] The uses go beyond the creation of new works. Artists are using the analytical tools to identify what makes compositions popular or impactful, unlocking some of the science behind the magic of music.[155] AI can also help AR (artists and repertoire – the music industry's talent scouts) discover the next generation of talent "by combing through music and trying to identify the next breakout star."[156]

The selection of which artists to promote; the decision of which tracks to feature; the choices of how to shape beat, melody, and orchestration; and even the entire creative process for making music is being influenced and occasionally reproduced using AI. The future of music is rapidly moving into the hands of the machine.

The use of generative AI has also seen great success, made famous by one of the most iconic voices on stage and screen—that of James Earl Jones.[157] "During the creation of the Obi-Wan Kenobi TV series, James Earl Jones signed off on allowing Disney to replicate his vocal

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[151] *Id*.

[152] *Id*.

[153] *But see* Mirowski, Mathewson, Pittman, and Evans, *supra* note __ at 3 ("we use log lines to start the hierarchical story generation process because it contains plot elements in the answers to questions: Who? What? When and Where? How? Why?").

[154] Bernard Marr, *How Artificial Intelligence (AI) Is Helping Musicians Unlock Their Creativity*, FORBES (May 14, 2021), https://www.forbes.com/sites/bernardmarr/2021/05/14/how-artificial-intelligence-ai-is-helping-musicians-unlock-their-creativity/?sh=29ab2f667004 ("AIVA uses AI and deep learning algorithms to help mainstream users compose their own soundtrack music and scores. It's the perfect tool for content creators on YouTube, Twitch, Tik Tok, and Instagram who need a steady supply of music but don't have an endless budget for royalties.").

[155] *Id*.

> Grammy-nominated producer Alex da Kid used IBM Watson to analyze five years' of hit songs, as well as cultural data from films, social media, and online articles to figure out a theme for an AI-generated song that fans would enjoy. The final song, "Not Easy," reached number four on the iTunes Hot Tracks chart within 48 hours after its release.

[156] *Id*. ("Warner Music Group acquired a tech start-up last year that uses an algorithm to review social, streaming, and touring data to find promising talent.").

[157] *See* Anthony Breznican, *Darth Vader's Voice Emanated From War-Torn Ukraine*, VANITY FAIR (Sept. 23, 2022), https://www.vanityfair.com/hollywood/2022/09/darth-vaders-voice-emanated-from-war-torn-ukraine.

performance as Darth Vader in future projects using an AI voice-modeling tool called Respeecher."[158]

Generative AI can reproduce speech from other speakers, such as the example where a stand-in delivers the line and that performance is then recreated using the preferred actor's voice characteristics or it can be generated from written text.[159] Engineers for Vall-E, the latest generation of voice software, claim that they can train the voice modeling software off a mere three seconds of a speech sample and use it to largely replicate that speaker.[160]

Improvements in voice software will enable generative AI characters to come alive in video games and metaverse experiences, to improve customer service experience when speaking to chatbots, and to add creative flexibility in film and television production. But the prevalence, accuracy, and access to these systems are already being exploited for impersonation scams. "Technology is making it easier and cheaper for bad actors to mimic voices, convincing people, often the elderly, that their loved ones are in distress."[161] Federal Trade Commission data from 2022 tallies "over 36,000 reports of people being swindled by those pretending to be friends and family."[162] The ability to fake one's true voice will only make distinguishing fact from fraud harder.

Another social challenge for the use of voice remodeling software is the ethical considerations when call centers use the software to synthesize away the accents of their call centers.[163] A new entrant in the call center industry, Sanas, hopes to ease away the challenges accents place on the customer experience. "Using data about the sounds of different accents and how they correspond to each other, Sanas's AI engine can transform a speaker's accent into what passes for another one – and right now, the focus is on making non-Americans sound like white Americans."[164] In advocating for the use of the technology, Sanas points to the effort demanded by call center workers in India and the Philippines to reduce regional accents and drop British pronunciation of

[158] Benj Edwards, *Darth Vader's voice will be AI-generated from now on*, ARS TECHNICA (Sept. 26, 2022), https://arstechnica.com/information-technology/2022/09/james-earl-jones-signed-darth-vader-voice-rights-to-disney-for-ai-use/. ("Jones, who is 91, has voiced the iconic Star Wars villain for 45 years, starting with *Star Wars: Episode IV—A New Hope* in 1977 and concluding with a brief line of dialog in 2019's *The Rise of Skywalker."*). *See* Breznican, *supra* note __.

[159] *See* Benj Edwards, *Microsoft's new AI can simulate anyone's voice with 3 seconds of audio*, ARS TECHNICA (Jan. 9, 2023), https://arstechnica.com/information-technology/2023/01/microsofts-new-ai-can-simulate-anyones-voice-with-3-seconds-of-audio/.

[160] *Id*. ("While using VALL-E to generate those results, the researchers only fed the three-second "Speaker Prompt" sample and a text string (what they wanted the voice to say) into VALL-E.")

[161] Pranshu Verma, *They thought loved ones were calling for help. It was an AI scam*, WASH. POST (March 5, 2023), www.washingtonpost.com/technology/2023/03/05/ai-voice-scam/.

[162] *Id*.

[163] *See* Wilfred Chan, *The AI startup erasing call center worker accents: is it fighting bias – or perpetuating it?*, GUARDIAN (Aug. 24, 2022), https://www.theguardian.com/technology/2022/aug/23/voice-accent-technology-call-center-white-american.

[164] *Id*.

words as well as learn common American terms.[165] "They have to mimic the culture as well as neutralize their own culture…."[166]

> The danger, Aneesh said, was that artificially neutralizing accents represented a kind of "indifference to difference", which diminishes the humanity of the person on the other end of the phone. "It allows us to avoid social reality, which is that you are two human beings on the same planet, that you have obligations to each other. It's pointing to a lonelier future."[167]

Other critics of accent neutralization point out that "Accents can connect consumers to places, products and history in culturally nuanced ways that, at times, general "neutral-accented standard American English" cannot. … Multicultural audiences are substantial across the country, and ignoring their presence does a brand no good."[168] What is best for marketing may nonetheless have a corrosive effect on the broader society and a long-term reinforcement of normalcy driven by algorithm rather than society.

Despite these ethical concerns, however, the expansion of conversational AI driven by generative AI chatbots and the reengineered call centers those chatbots are being used to replace will continue to be a growing component of the customer experience as the costs continue to drop and the quality continues to rise. "Rapid tech advancements and lower barriers have made AI increasingly popular. Among successful AI-powered technologies such as big data and analytics, conversational voice AI is showing considerable promise."[169]

In addition to customer service, the improvements in voice are likely to reignite issues over control of audiobook rights for authors, add voice to most publications, and blur the creative lines among blogs and podcasts. The increased presence of digital voices from chatbots and from people will undoubtedly be growing as fast as the imagination will allow.

d. Code

Another area in which generative AI has exceptional potential is that of software. Generative AI has been incorporated into dozens of tools that "can analyze patterns in existing code and generate new lines of code that are optimized for readability, efficiency, and error-free execution."[170] In addition to writing new code, the AI systems are also good as code editors and

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[165] *See id.*

[166] *Id*. (*quoting* A Aneesh, a sociologist and the incoming director of the University of Oregon's School of Global Studies and Languages).

[167] *Id*.

[168] Antonio Francisco Lewis, *The Ethical Challenge of AI Accent Neutralization vs. Sonic Diversity*, ADWEEK, https://www.adweek.com/partner-articles/the-ethical-challenge-of-ai-accent-neutralization-vs-sonic-diversity/ (last visited March 10, 2023) ("The Linguistic Society of America highlights a truth that is increasingly important to acknowledge: Everyone who speaks English does so with an accent.").

[169] Sourabh Gupta, *Why Growing Organizations Should Consider Voice AI*, FORBES (June 22, 2022), https://www.forbes.com/sites/forbestechcouncil/2022/06/22/why-growing-organizations-should-consider-voice-ai/?sh=408310837df2.

[170] *Top 17 Generative AI-based Programming Tools (For Developers)*, TOWARDS AI (March 7, 2023), https://pub.towardsai.net/top-17-generative-ai-based-programming-tools-for-developers-652977ac47b4.

reviewers, "identifying potential issues and helping teams maintain high-quality codebases."[171] Given the potential to both write new code and improve the efficiency of existing code, it is no surprise that the potential for using AI has gained traction among software developers. "Use cases for software developers are also exploding — as of September, over 1.2 million developers had used GitHub Copilot's technical preview. ChatGPT has also proven surprisingly adept at coding applications — from generating full code from text prompts (albeit often with many bugs) to bug-fixing code."[172] Microsoft launched GitHub Copilot in June 2022 and had over 400,000 subscribers in the first month of operation.[173] The following January, "Microsoft Chief Executive Satya Nadella said that more than 1 million people had used Copilot to date."[174]

As with other areas of AI interaction, the debate about AI in software is not focused on whether it will continue to be an increasingly significant aspect of the field, but the extent to which it will enhance the human coding profession or supplant it. Codex (yet another product from OpenAI) and similar tools are very good at solving complex coding problems.[175] One software expert working with Codex even described its ability as "spooky to watch."[176] That same expert, however, does not believe that the tool is a direct threat to employment. Instead, Codex was viewed "as a tool that will end up boosting human productivity. It may even help a whole new generation of people learn the art of computers, by showing them how to write simple pieces of code, almost like a personal tutor."[177]

Generative AI has an increasingly important place in new software code generation, in documenting the functions of the code that is created, in revising code for greater efficiency, in reviewing code for vulnerabilities and errors, and in other more technical situations.[178] "Generative AI tools for code completion are becoming increasingly popular among developers, as they reduce the time and effort required to write complex code."[179] According to GitHub's own research, "[b]etween 60–75% of users reported they feel more fulfilled with their job, feel less frustrated

[171] *Id*.

[172] *Id*.

[173] *Microsoft attracting users to its code-writing, generative AI software*, ECON. TIMES (INDIA) (Jan. 23, 2023), https://economictimes.indiatimes.com/tech/technology/microsoft-attracting-users-to-its-code-writing-generative-ai-software/articleshow/97298152.cms?utm_source=contentofinterest&utm_medium=text&utm_ campaign=cppst.

[174] *Id*.

[175] *See* Cade Metz, *A.I. Can Now Write Its Own Computer Code. That's Good News for Humans*, N.Y. TIMES (Sept. 10, 2021), https://www.nytimes.com/2021/09/09/technology/codex-artificial-intelligence-coding.html.

[176] *Id*. (*quoting* Tom Smith, "a seasoned programmer who oversees an A.I. start-up called Gado Images.").

[177] *Id*. ("This is a tool that can make a coder's life a lot easier," Mr. Smith said.").

[178] *See Generative AI for Code: what you need to know in 2023*, TURINTECH (Feb. 6, 2023), https://www.turintech.ai/generative-ai-for-code-what-you-need-to-know-in-2023/ ("During the process of writing code, developers are able to use AI-based tools to have suggestions for the code they write. These tools use natural language processing to analyse code, suggest relevant code snippets or keywords, and complete partial code with the full, syntactically correct language.")

[179] *Id*.

when coding, and are able to focus on more satisfying work when using GitHub Copilot."[180] The self-reported study also identified that developers using GitHub Copilot finished a task in 55 percent less time than those developers completing the same task without the virtual assistant.[181]

The code being developed by the generative AI is helpful to the human developers, but like the other fields being discussed, as of this writing, the output remains a work in progress. "In the current generative AI landscape, code produced by generative tools is often far from ideal …. Code created by generative AI tools can even be faulty."[182] As with other areas, the ability of generative AI tools to seem accurate creates an additional danger that its human users do not review it carefully enough. As a result, "StackOverflow temporarily banned answers generated by ChatGPT to be posted on the site, since it could flood the site with answers that may seem true at the surface level, but are incorrect."[183]

Despite the concerns, adoption is moving ahead at an accelerating pace. Take the example of CarMax. CarMax CIO Shamim Mohammad explains that his team continues to explore GitHub Copilot, estimating that the tool "could potentially generate up to 40% of their code."[184] In an interview, he explained the benefits and the concerns. "This is evolving quickly… [Y]ou have to make sure there's no copyright infringement, fake content or malware embedded if you're using it to create software. You can't just plug that code in without oversight."[185]

Google is also moving forward with more autonomous code strategies. It has two complementary products. Alphabet's Deepmind has launched Alphacode which is intended to assist developers in the same manner as Microsoft's GitHub Copilot.[186] Separately, Google has launched Project Pitchfork, as part of the Google AI Developer Assistance Program, with the goal to provide more autonomous code production.[187] "Pitchfork will be able to learn, write and rewrite code from scratch itself, learn different programming styles, and generate new code based on them, according to an internal project description."[188]

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[180] Eirini Kalliamvakou, *Research: quantifying GitHub Copilot's impact on developer productivity and happiness*, GITHUB BLOG (Sept. 7, 2022), https://github.blog/2022-09-07-research-quantifying-github-copilots-impact-on-developer-productivity-and-happiness/.

[181] *Id*. (The experiment "timed how long it took them to write an HTTP server in JavaScript. … [D]evelopers using GitHub Copilot took on average 1 hour and 11 minutes to complete the task, while the developers who didn't use GitHub Copilot took on average 2 hours and 41 minutes.").

[182] *Generative AI for Code: what you need to know in 2023*, *supra* note __.

[183] *Id*.

[184] Robert Mitchell, *Enterprise IT moves forward — cautiously — with generative AI*, CIO (Mar 07, 2023), https://www.cio.com/article/463750/enterprise-it-moves-forward-cautiously-with-generative-ai.html.

[185] *Id*.

[186] Matthias Bastian, *Google looks into AI for code, but not everyone thinks it's a good idea*, THE DECODER (Nov. 24, 2022), https://the-decoder.com/google-looks-into-auto-acting-ai-for-code/.

[187] *Id*.

[188] *Id*.

The predictions for the impact on code development range, but "Github CEO Thomas Dohmke expects up to 80 percent of code to be written by AI systems in the next five years."[189] Dohmke suggests that through GitHub, its AI service has already "written 40 percent of the code."[190] Undoubtedly then, in the area of code generation, review, and documentation, AI has already transformed the landscape and will likely do so again as increasingly autonomous systems refine the relationship or even the conception of software authorship.

e. Product Design and Drug Design

Generative AI has also found a home in the development of virtual and rapid prototyping systems that allow the AI to provide a range of iterative and complex design recommendations across industries.

> The machine-inspired approach of generative design depends on input parameters (such as materials, size, weight and constraints), from which design combinations are created to reach a desired output. This process of telling a computer the outcome you want to see, and providing input parameters to get there is a very different from sketching ideas and coming up with solutions in your head based mainly on your experience, and the capacity of the human mind.[191]

> Digital simulation and analysis are now so fast that designs can be evaluated in seconds—or even less. Algorithms can automatically adjust the geometry of a part between simulations, with no manual refinement required. Using artificial-intelligence techniques, these new generative design systems can explore a much larger universe of possible solutions, comparing the results of thousands of simulations to close in on a design that delivers the most favorable combination of attributes.[192]

Generative AI has been used to help designers with the aesthetic look of products, user interface designs, marketing effectiveness, lighter weight components, and much more.[193]

Although generative design services have already been proven to reduce the cost of production for some items or to achieve redesign goals such as to reduce the weight of an existing product, there remains reluctance to throw open the design process to these new techniques. "One of the first barriers is likely to be stakeholder acceptance of the resulting parts and products: generative algorithms produce designs that may be radically different from their human-designed predecessors. Some observers even find them "alien" or disturbing."[194] The second common challenge is the danger that the AI disturbs the institutional culture among its designers and relies

[189] Matthias Bastian, *Github CEO thinks AI will write majority of code in just five years*, THE DECODER (Oct. 15, 2022), https://the-decoder.com/github-ceo-thinks-ai-will-write-majority-of-code-in-just-five-years/.

[190] *Id*.

[191] Graeme Fulton, *Generative UI Design: Einstein, Galileo, and the AI Design Process*, PROTOTYPR (Feb. 16, 2023), https://prototypr.io/post/generative-ai-design.

[192] Mickael Brossard, *et al.*, *How generative design could reshape the future of product development*, MCKINSEY & COMPANY 2 (Feb. 2020).

[193] Fulton, *supra* note __.

[194] Brossard, *supra* note __.

on know-how that comes from the AI system rather than the gained wisdom of the engineers.[195] Even if there is an openness for adoption, the third challenge remains that AI strategies need to be integrated into the broader design, procurement, and construction strategies of organizations.[196]

One particular area for potential success already stands out. This is in the field of pharmaceutical research, where the constraints and costs of design and engineering are often prohibitive. Research has shown that generative AI may play a role in creating "de novo drug design." "De novo drug design (DNDD) refers to the design of novel chemical entities that fit a set of constraints using computational growth algorithms."[197] Using a wide range of AI techniques, including generative AI, new molecules can be designed and then tested through simulation to identify where the bioactivities meet the goals for the potential drug or treatment.[198]

> Deep learning models utilized powerful knowledge and generative capabilities to introduce a new structure with appropriate properties. In the De novo drug design process, the deep learning models acts as autoencoder to generate an appropriate format for new chemical entities (NCE's). Therefore, an embedment of autoencoder with multilayer perceptron classifier is also a value-added technique in the generation of NCE's with predefined physicochemical properties.[199]

The capacity of generative AI to develop new medical treatments as well as medical devices and devices of all kinds demonstrates the powerful potential for generative design products to become increasingly ubiquitous in the planning and development of products.

5. Intellectual Property Issues Emerging from AI-Generated Content

While the uses to which generative AI can be put are essentially unlimited, the focus of the ChatGPT revolution emphasizes the role that generative AI plays in text, image, audiovisual, and related user-interface designs. In other words, the buzz centers on the potential transformation to popular culture; the AI tools that collectively may reshape the internet and emerging metaverse as an entirely new medium.[200] There are clear lessons from the development of other communications-based technologies, so this section will highlight the concerns that should be raised when adopting these new technologies as strategies to work with existing staff creators or in replacing staff creators. These include general considerations regarding intellectual property

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[195] *See id.*

[196] *See id.*

[197] Varnavas D. Mouchlis, *et al.*, *Advances in De Novo Drug Design: From Conventional to Machine Learning Methods*, 22 INT'L J. MOL. SCI. 1676 (Feb. 2021), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7915729/.

[198] *See id.* ("A shape-based generative approach for de novo drug design was developed using [a convolutional neural network] to generate novel molecules from a seed compound, its three-dimensional shape, and its pharmacophoric features.").

[199] Suresh Dara, *et al.*, *Machine Learning in Drug Discovery: A Review*, 55 ARTIF. INTELL REV. 1947 (2022), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8356896/ (internal citations omitted).

[200] MARSHALL MCLUHAN & QUENTIN FIORE, THE MEDIUM IS THE MASSAGE: AN INVENTORY OF EFFECTS (1967). *See* Jon M. Garon, *Towards a Conceptual Framework of Entertainment Law for the Twenty-First Century*, 102 J. PAT. & TRADEMARK OFF. SOC'y 203 (2022).

rights, speech-based torts such as defamation, and obligations regarding the use of new technologies in the workplace or educational environments.

a. Copyright in the Dataset

Under §106 of the Copyright Act, copyright owners have the exclusive rights to "reproduce the copyrighted work in copies" and "to prepare derivative works based upon the copyrighted work."[201] "Copyright infringement is established when the owner of a valid copyright demonstrates unauthorized copying."[202]

In January 2023, Getty Images brought suit against Stability AI for copyright infringement in the High Court of Justice in England for doing just that.[203] Getty followed that claim with a similar lawsuit in the U.S. District Court for the District of Delaware.[204]

As alleged by Getty, "Stability AI has copied at least 12 million copyrighted images from Getty Images' websites, along with associated text and metadata, in order to train its Stable Diffusion model."[205] These 12 million images were gleaned from among the "hundreds of millions" of images owned by Getty.[206] The lawsuit itself is limited to 7,216 works-in-suit that are each registered with the U.S. copyright office, a requirement for bringing suit in the U.S. to enforce the rights to the work.[207] In addition to the 7,216 works-in-suit, Getty also claims copyright for the detailed title and caption that accompany many of the works. Although copyright law does not permit the registration of titles, slogans, or short phrases,[208] the illustrations provided by Getty are rather substantial in length.[209] The sea lion image described in the complaint includes a caption

[201] 17 U.S.C. §106 (2022).

[202] Repp v. Webber, 132 F.3d 882, 889 (2d Cir.1997).

[203] *See Getty Images Statement*, GETTY IMAGES (Jan. 17, 2023), https://newsroom.gettyimages.com/en/getty-images/getty-images-statement (announcing litigation against Stability AI).

[204] *See* Getty Images (US) Inc. v. Stability AI, Inc., Case 1:23-cv-00135-UNA (Filed 02/03/23).

[205] *Id*. at Para. 8.

[206] *Id*. at Para 18. *See also* Para 21 ("Getty Images has more than 500,000 contributors (80,000 of which are exclusive to Getty Images), over 300 premium content partners, more than 115 staff photographers, videographers, and other content experts…").

[207] *Id*. at Para. 24. *See* 17 U.S.C. § 411 (2022) (requiring preregistration or registration of a work as a condition of suit.).

[208] See17 U.S.C. § 102(b) (2022); COPYRIGHT CIRCULAR 33 ("Words and short phrases, such as names, titles, and slogans, are uncopyrightable because they contain an insufficient amount of authorship.")

[209] Getty Images (US) Inc. v. Stability AI, Inc., *supra* note __ at Para. 25.

> For example, for the image below, the accompanying title reads, "Malnourished Sea Lions Continued To Be Rescued Off California Shores" and the accompanying caption reads: "A sick and malnourished sea lion pup sits in an enclosure at the Marine Mammal Center on March 18, 2015 in Sausalito, California. For the third winter in a row, hundreds of sick and starving California sea lions are washing up on California shores, with over 1,800 found and treated at rehabilitation centers throughout the state since the beginning of the year. The Marine Mammal Center is currently caring for 224 of the emaciated pups."

that is 90 words in length, an amount that is likely well beyond the minimum authorial creativity necessary for copyright to protect the writing.[210]

"There are two main components of this prima facie case of infringement: "a plaintiff must first show that his work was actually copied and then must show that the copying amounts to an improper or unlawful appropriation.""[211] The claim by Getty seems to meet the prima facie requirements. First, it alleges valid registrations for the works-in-suit as well as millions more that it has not included in the litigation. Second, presuming the accuracy of the images shown in the complaint, the Stable Diffusion illustrations include the actual watermarks and trademarks of Getty in some of their reproductions. Whether or not the mark is itself copyrightable does not matter. It provides substantial direct evidence of copying.

As a result, unless Stability AI can establish that the massive copying of the Getty images constitutes fair use, Stability AI will be liable for copyright infringement.

The copyright fair use test originated as a common law constraint upon the exclusive rights conveyed to copyright holders and was codified as part of the 1976 Copyright Act. The statute provides:

> Notwithstanding the provisions of sections 106 and 106A, the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—
>
> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
>
> (2) the nature of the copyrighted work;
>
> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
>
> (4) the effect of the use upon the potential market for or value of the copyrighted work.
>
> The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors.[212]

"From the infancy of copyright protection, some opportunity for fair use of copyrighted materials has been thought necessary to fulfill copyright's very purpose, "[t]o promote the Progress of Science and useful Arts...."[213] Yet despite the importance of fair use, since its inception, the

[210] *See, e.g.*, Feist Publications, Inc. v. Rural Tel. Serv. Co., 499 U.S. 340 (1990) (requiring merely a modicum of creativity for copyright protection.).

[211] Castle Rock Ent., Inc. v. Carol Pub. Group, Inc., 150 F.3d 132, 137 (2d Cir. 1998) (*quoting* Laureyssens v. Idea Group, Inc., 964 F.2d 131, 139–40 (2d Cir.1992) (internal emendations, quotation marks and citations omitted).

[212] 17 U.S.C. §107 (2022).

[213] Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 575 (1994) (*quoting* U.S. Const., Art. I, § 8, cl. 8.).

emphasis has been on the importance that "one must not put manacles upon science."[214] Justice Joseph Story, who first articulated the fair use doctrine had explained that "[e]very book in literature, science and art, borrows, and must necessarily borrow, and use much which was well known and used before."[215]

The challenge for Stability AI is that to prove the reproduction of 7,261 copyrighted images—or the billions it is alleged to have actually copied in order to train the generative AI—is not necessarily the same as the knowledge one must glean in another work to justify its copying.

In applying the fair use test, the preamble and all four prongs must be considered and weighed wholistically. Here Getty alleges that Stability AI has raised in excess of $1 billion in equity investment, so that even if it is not charging the general public for the use of the image generation, the company itself is undertaking a for-profit, highly commercial enterprise. Secondly, the nature of the copyrighted works are highly creative photographs rather than fact based works with merely thin copyright protection.[216]

The first factor, however, has been given an independent role. Under *Campbell v. Acuff-Rose Music, Inc*., a separate inquiry must be made regarding the extent to which "the allegedly infringing work "merely supersedes" the original work "or instead adds something new, with a further purpose or different character, altering the first with new ... meaning [ ] or message," in other words "whether and to what extent the new work is 'transformative.'"[217]

The elusiveness of the term "transformative" has become a moving target among the circuits and has recently been the subject of Supreme Court review.[218] Like the dispute involving Getty and Stable Diffusion, the conflict between the estate of Andy Warhol and photographer Lynn Goldsmith involves the misuse of photographs. At the heart of the transformative use debate is the extent to which widespread copying for a purpose other than to supplant the original should constitute fair use.[219]

While the importance of the transformative use test cannot be overstated, it might not prove dispositive in the litigation between Getty and Stability AI. This is because the other three fair use factors appear to strongly favor Getty, at least based on the allegations contained in the complaint.

Factor two looks to the nature of the copyrighted work. A work that is highly creative in nature, fictional like a poem or novel, or a work of art is generally entitled to broad copyright protection,

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[214] *Id*. at 575 (*quoting* Carey v. Kearsley, 4 Esp. 168, 170, 170 Eng.Rep. 679, 681 (K.B.1803) (Lord Ellenborough).

[215] *Id*. (*quoting* Emerson v. Davies, 8 F.Cas. 615, 619 (No. 4,436) (CCD Mass.1845) (Joseph Story).

[216] *See* Blanch v. Koons, 467 F.3d 244 (2d Cir. 2006) ("As we recently explained, although "the creative nature of artistic images typically weighs in favor of the copyright holder," "the second factor may be of limited usefulness where the creative work of art is being used for a transformative purpose." *quoting* Bill Graham Archives v. Dorling Kindersley Ltd., 448 F.3d 605, 612 (2d Cir.2006) Bill Graham Archives).

[217] Castle Rock Ent., Inc. v. Carol Pub. Group, Inc., 150 F.3d 132, 142 (2d Cir. 1998) (*quoting* Campbell, 510 U.S. at 579.)

[218] *See* Andy Warhol Foundation for the Visual Arts, Inc. v. Goldsmith, 142 S. Ct. 1412 (Mar. 28, 2022) (granting cert.).

[219] The nature of the transformative use standard is beyond the scope of this article and will be addressed, at least in part, by the forthcoming Supreme Court opinion.

while a work that is largely descriptive or factual in nature generally receives only thin copyright protection.[220] Photographs, in general, are typically understood to receive broad copyright protection,[221] and many of the images in the Getty catalog are highly creative in form, content, or subject matter.

Factor three addresses the amount of the work taken both qualitatively and quantitatively. Here each image was copied completely, indexed, and reproduced as part of the training process. Stability AI "has copied entire works. Though this conclusion does not preclude a finding of fair use, it militates against such a finding."[222]

The final factor is the potential and actual impact on the market for the plaintiff's copyrighted works. "Fair use, when properly applied, is limited to copying by others which does not materially impair the marketability of the work which is copied."[223] "It requires courts to consider not only the extent of market harm caused by the particular actions of the alleged infringer, but also "whether unrestricted and widespread conduct of the sort engaged in by the defendant ... would result in a substantially adverse impact on the potential market" for the original."[224]

Getty alleges that the purpose of releasing Stable Diffusion into the marketplace is to compete directly for sales with Getty. Undoubtedly, Stability AI will respond that its images are not sold but rather provided free to the public without charge. It has not, thus far, detailed how the investors in Stability AI will receive a return on their investment, but it is certainly plausible that Stability AI's revenue will come from licensing aspects of its generative AI for other commercial uses or provide services that do not include charging the public for the images generated by Stable Diffusion. A similar argument was made and rejected in *A&M Records v. Napster, Inc*.[225] The lack of direct sales has not proven sufficient to allow wholesale copying of a company's copyrighted library in order to give those works away for free.

While the Getty case against the present output of Stable Diffusion should be relatively straight forward for the plaintiff, improvements to the Stable Diffusion training model should enable the company to prohibit works with actual watermarks or artist signatures from appearing in the finished results. The generative AI can be trained to identify such indicia of ownership and remove such artifacts from the images it creates. Without those elements of striking similarity, it may be much harder to demonstrate that any particular image created by a generative AI was copied directly from a particular image among the billions included in the archival database.

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[220] *See* Stewart v. Abend, 495 U.S. 207, 237 (1990) ("In general, fair use is more likely to be found in factual works than in fictional works.")

[221] *See* Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884).

[222] Am. Geophysical Union v. Texaco Inc., 60 F.3d 913, 926 (2d Cir. 1994).

[223] Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S. 539, 566–67, 105 S. Ct. 2218, 85 L.Ed.2d 588 (1985).

[224] Campbell, 510 U.S. at 590 (*quoting* Nimmer § 13.05[A] [4], p. 13–102.61).

[225] A&M Records, Inc. v. Napster, Inc., 239 F.3d 1004, 1017 (9th Cir. 2001), as amended (April 3, 2001), aff'd sub nom. A&M Records, Inc. v. Napster, Inc., 284 F.3d 1091 (9th Cir. 2002), and aff'd sub nom. A&M Records, Inc. v. Napster, Inc., 284 F.3d 1091 (9th Cir. 2002) ("Having digital downloads available for free on the Napster system necessarily harms the copyright holders' attempts to charge for the same downloads."). *See also* L.A. Times v. Free Republic, 54 U.S.P.Q.2d 1453, 1469–71 (C.D. Cal. 2000).

The copyright claim for the next generation of generative AI, therefore, will turn less on the striking similarity between plaintiff's works and defendant's works and more on the fair use for the intermediate copying of the images ingested to train the model.

Copyright law has developed the term "intermediate copying" to describe potential infringers that copy works but do not then reproduce those works for the public.[226] In *Sega Enterprises, Ltd. v. Accolade, Inc*.,[227] the Ninth Circuit addressed the question regarding whether the copying during an intermediary step of creating computer software could violate the copyright even if the copyrighted work did not ultimately appear in the final product.[228] The court found that it did. "[I]ntermediate copying of computer object code may infringe the exclusive rights granted to the copyright owner in section 106 of the Copyright Act regardless of whether the end product of the copying also infringes those rights."[229]

In *Sega*, the court treated the intermediate copying of the protected computer code for the purpose of extracting the non-copyrightable aspects of the functional computer code to be fair use. In the case of the database training, Stability AI and other generative AI training companies will assert that they are not copying for the purposes of reproduction but only for the purpose of labeling, deconstruction, and training.

There may be an important distinction between the training databases for software, natural language, and images. In the case of software, *Sega* and similar cases recognize that the code incorporates unprotected functions that cannot be masked by the overlay of copyrighted works. In the case of natural language processing, it is likely that the software deconstructs longer texts into short phrases to help predict the words and phrases that tend to follow a series of earlier words and phrases. Although the entirety of a work is being copied, the use of the natural language generative AI should result in the AI "speaking." While an AI that reproduced or recited the works of authors still under copyright would undoubtedly be copyright infringement, such an AI that selected only short words or phrases from popular literature would not be infringing the copyright by its output and could arguably be acting within the scope of fair use by deconstructing the text for training purposes.

In the context of natural language training, the process for developing the massive training databases and the legal test of fair use began with the Google Book Project, wherein Google promised to benevolently scan all the world's books.[230] "It was the most ambitious library project of our time—a plan to scan all of the world's books and make them available to the public

[226] Sega Enterprises Ltd. v. Accolade, Inc., 977 F.2d 1510, 1518 (9th Cir. 1992), as amended (Jan. 6, 1993) ("On its face, that language unambiguously encompasses and proscribes "intermediate copying."). *See* Walker v. U. Books, Inc., 602 F.2d 859, 864 (9th Cir. 1979) ("That an infringing copy may be produced in a medium different than that of the protected work is not, in itself a bar to recovery, nor does the fact that the blueprints themselves were never sold for profit eliminate the possibility of an award of statutory damages for infringement under the Act.").

[227] Sega Enterprises Ltd. v. Accolade, Inc., 977 F.2d 1510 (9th Cir. 1992), as amended (Jan. 6, 1993).

[228] Sega Enterprises Ltd. v. Accolade, Inc., 977 F.2d at1519.

[229] *Id*.

[230] *See* Tim Wu, *What Ever Happened to Google Books?*, THE NEW YORKER (Sept. 11, 2015), https://www.newyorker.com/business/currency/what-ever-happened-to-google-books.

online."[231] The project eventually scanned at least 30 million books,[232] which is an impressive corpus from which to begin a natural language training model, a use that was never explicitly part of the litigation. The works that were in the public domain were never at issue, since Google and all others are free to reproduce those works.

For the works protected by copyright, the Second Circuit asked two very narrow questions, "whether Google's search and snippet views functions satisfy the first fair use factor with respect to Plaintiffs' rights in their books" and "whether these functions might infringe upon Plaintiffs' derivative rights…."[233] In answer to this question, the Second Circuit found that making a text available to the public through its search function was a highly transformative use.[234] The court also emphasized that to the extent that facts were then published from the database, those facts, such as the year Franklin D. Roosevelt contracted polio, are outside of copyright protection.[235]

As a practical matter, the potential for copyright infringement liability for natural language search will likely depend on the extent to which the texts are substantially reproduced by the generative AI rather than on the widespread copying that went into the training. Nonetheless, the Google decisions ignored the billions of dollars that Google was going to earn from its natural language voice assistant. In the current economic climate, the values being ascribed to generative AI will mandate that the courts recognize the significant value of the copyrighted works that are being used without authorization to earn profits by parties copying without authorization. Copyright and fair use are not really equipped to regulate such sweeping wealth transfers, so it may again be time for Congress to consider mechanisms for the blanket licensing of copyrighted works to reflect the value they are giving to the tech industry and the public that relies on these services.[236]

The question for image generation, however, is somewhat different. There is less functionality in a deconstructed image than in software or natural language text. There remains the factual depiction that a picture of a cat contains a cat, but each cat depicted retains its unique artistic

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[231] *Id*.

[232] *Id*.

[233] Authors Guild v. Google, Inc., 804 F.3d 202, 216 (2d Cir. 2015). *See also* Authors Guild, Inc. v. HathiTrust, 755 F.3d 87 (2d Cir.2014).

[234] Authors Guild v. Google, Inc., 804 F.3d at 216; Authors Guild, Inc. v. HathiTrust, 755 F.3d at 98.

[235] Authors Guild v. Google, Inc., 804 F.3d at 224.

> By entering "Roosevelt polio" in a Google Books search, the student would be taken to (among numerous sites) a snippet from page 31 of Richard Thayer Goldberg's The Making of Franklin D. Roosevelt (1981), telling that the polio attack occurred in 1921. This would satisfy the searcher's need for the book, eliminating any need to purchase it or acquire it from a library. But what the searcher derived from the snippet was a historical fact. Author Goldberg's copyright does not extend to the facts communicated by his book. It protects only the author's manner of expression.

[236] *See* Yu, *supra* note __ ("a federal judge sided with the critics and threw out the 2008 settlement, adding that aspects of the copyright issue would be more appropriately decided by the legislature. "Sounds like a job for Congress," James Grimmelmann, a law professor [now at Cornell Law School] ….). *See* generally, Jonathan Band, *The Google Library Project: Both Sides of the Story*, PLAGIARY (2006), https://quod.lib.umich.edu/p/plag/5240451.0001.002/--google-library-project-both-sides-of-the-story?rgn=main;view=fulltext.

expression. More importantly, the production of new works of imagery are often quite recognizable as being reproductions or derivate works from pre-existing works. So unlike software and natural language content, the imagery databases will remain the most susceptible to claims of copyright infringement.

The copyright concerns about implications of training the generative AI using unauthorized content only exist to the extent the publisher has done so. Among the services becoming available are generative AI engines that can be trained using the licensee's own content. If a large database holder such as Getty, Bloom, Thomson Reuters, RELX Group (formerly Reed Elsevier), or another large content holder were to start using its proprietary content on its AI, there would be far less likelihood that the resulting work would violate copyright, but ultimately this result would depend on the particular licenses under which the various rights were gathered by that publisher.

b. Copyright by the End User and the Commercial Licensee

Although there is likely recourse for Getty against Stability AI for its current and rather blatant publications of Getty images, the question remains whether the hosts of embedded generative AI services obtained from Stability AI or OpenAI will be liable for copyright infringement or whether the users of those services, in turn, will be liable in the event that the AI creates a work that is substantially similar to that of a registered copyright holder.

The potential infringement scenario will be fairly common. For example, assuming that web design companies can survive the automation services, such a company builds a website for a florist. In this hypothetical, Acme Florist contracts with Zenith Web Design, LLC to redesign its website to feature images of Seattle where the florist is based and flower arrangements for each of the types of flowers sold by Acme. Zenith uses a free generative AI to iterate two dozen potential website layouts and selects four to send to the client. Zenith also generates 100 photographs to populate the website in the manner requested. Acme rejects a few of the images because they do not look like the products Acme sells and authorizes the use of the remainder. None of the images are based on the actual bouquets and arrangements made and sold by Acme.

Among the 100 photographs published to the Acme Florist website, one of those pictures looks strikingly similar to an image of flowers taken by commercial photographer Gloria Ramirez, which she published as part of a gallery photography show. The work, entitled The Bouquet, was registered with the copyright office. The Bouquet, as exhibited, was a signed, single copy.[237]

In this scenario, Ramirez will have a cause of action against both Acme Florist and Zenith Web Design for the violation of her exclusive rights in her copyrighted image and for failing to provide attribution to the work as protected under §106A.[238] Copyright law does not require that a party's *mens rea* or intent is relevant to the liability, but instead provides that in the measure of statutory

[237] A photograph will meet the definition as a "work of visual art" when "(2) a still photographic image produced for exhibition purposes only, existing in a single copy that is signed by the author, or in a limited edition of 200 copies or fewer that are signed and consecutively numbered by the author. 17 U.S.C. §101. *See also* 17 U.S.C. §106A.

[238] *See* 17 U.S.C. §501(a) ("Anyone who violates any of the exclusive rights of the copyright owner as provided by sections 106 through 122 or of the author as provided in section 106A(a), … is an infringer of the copyright or right of the author, as the case may be.").

damages, the damages can be reduced.[239] As a practical matter, if a copyright infringer responds expeditiously to a takedown request, then the copyright owner is unlikely to sue for what could be very modest damages.

There is also the notice and takedown systems under § 512 of the Copyright Act,[240] but these would not apply in this situation. An ISP can limit its liability for the content published on its site by third parties.[241] In this hypothetical, however, the content is being selected and published at the direction of the website owner rather than by third parties. If instead, customers of the florist were able to publish their pictures, and a customer published a photograph protected by the copyright of a third person, then the florist could avoid liability by adhering to the safe harbor requirements of § 512.[242]

As between Acme Florist and Zenith Web Design, the liability will likely depend on the contractual representations and warranties as well as the limits on liability placed in the written agreements. Savvy web design companies will likely expressly waive any obligation to determine the copyright ownership of the works provided to their clients and obligate the clients to conduct such due diligence. These contracts may also include limitations on liability to the contracting party and indemnification and defense provisions to require that the client pay any fees resulting from the publication of unauthorized third-party works.

The copyright litigation scenario is not significantly different than the present situation for small businesses who rely on third-party vendors to populate their websites with imagery. The only significant difference is the extent to which the parties inaccurately believe that simply because the image was created by a generative AI, that image must be in the public domain and free to use. As the Getty Image litigation highlights, there will be continuing concerns that particular works created by the generative AI are actually near reproductions of works that were placed into the training database and will therefore still be subject to copyright infringement actions when used as output.

c. Trade Secrets and Nonpublic Information

While much of the focus on generative AI has focused on the copyright aspects of the databases and the uses, there are also business concerns regarding the impact the service has on trade secret protection for enterprises. Generative AI has consequences for the discovery of existing trade secrets and the maintenance of trade secrets that exist in a company's current enterprise.

> A trade secret is confidential, commercially valuable information that provides a company with a competitive advantage, such as customer lists, methods of production, marketing strategies, pricing information, and chemical formulae. (Well-known examples of trade secrets include the formula for Coca-Cola, the

[239] 17 U.S.C. §504(c)(2) "In a case where the infringer sustains the burden of proving, and the court finds, that such infringer was not aware and had no reason to believe that his or her acts constituted an infringement of copyright, the court in its discretion may reduce the award of statutory damages to a sum of not less than $200."

[240] *See* 17 U.S.C. §512(c) (2022) (providing that an internet service provider will not be liable for monetary or equitable relief for copyright infringement resulting from the posting or storage of content at the direction of a user of the service provider's network or system).

[241] *See id.*

[242] *See* 17 U.S.C. §512.

> recipe for Kentucky Fried Chicken, and the algorithm used by Google's search engine.) To succeed in the global marketplace, U.S. firms depend upon their trade secrets, which increasingly are becoming their most valuable intangible assets.[243]

The Restatement of Torts §757 provides that "[a] trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it."[244] To be a trade secret under the state and federal protection, the information must be generally kept secret from the public, have economic value because of its secrecy, and be protected through the reasonable efforts of the party asserting the trade secret.[245] State law has long recognized trade secret protection and in 2016, the state law protection was augmented by the Defend Trade Secrets Act (DTSA),[246] a federal statute that largely duplicates and expands upon the widely adopted Uniform Trade Secrets Act. The DTSA provides a private right of action for "[a]n owner of a trade secret that is misappropriated ... if the trade secret is related to a product or service used in, or intended for use in, interstate or foreign commerce."[247]

As a general matter, a natural language and design system that answers users' questions without restriction and iteratively generates new explanations and designs is likely to regularly "reinvent" or "rediscover" information treated as trade secrets on a regular basis. As soon as the information is created and divulged by the generative AI, that information is available to the public and the essential component of secrecy will be lost.

While this is no different than the threat that exists from competitors and from academics who strive to find and publish new knowledge, the scope of the generative AI content has the potential to be staggering. Still, this concern is a natural byproduct of increased general knowledge in the world. Indeed, new trade secrets are as likely to be found through improvements in the know-how as are lost because the older, protected ways of doing business are no longer secret.

Trade secrets are also lost, however, when the information is made public by the party holding the trade secret or when it fails to reasonably protect the trade secret information from disclosure. Here the exuberance for generative AI may come to plague large enterprises that seek to manage their trade secret portfolios.

Whenever an employee or other individual with access to a trade secret discloses that information without having taken steps to assure the information will be treated as confidential by the recipient, that information may lose its trade secret status. While courts generally look for

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[243] Brian Yeh, *Protection of Trade Secrets: Overview of Current Law and Legislation*, CONG. RES. SCV. 7-5700, R43714 (April 22, 2016), https://sgp.fas.org/crs/secrecy/R43714.pdf.

[244] RESTATEMENT OF TORTS §757 (1939). *See generally* E. I. duPont deNemours & Co. v. Christopher, 431 F.2d 1012 (5th Cir. 1970).

[245] *See* Uniform Trade Secrets Act §5.1.2

> "Trade secret" means information, including a formula, pattern, compilation, program, device, method, technique, or process, that: (i) derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use, and (ii) is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

[246] 18 U.S.C. § 1831 et. seq. (2016).

[247] 18 U.S.C. § 1836(b)(1).

patterns rather than mere instances of inadvertent disclosure, the public disclosure of a trade secret generally ends it secrecy. As a result, if an employee uses proprietary information in a natural language query, that disclosure has the effect of uploading the information regarding the trade secret into the AI's database for future training and usage.

Contractual limitations, therefore, are essential, at a minimum, to create legal protection for the information being provided to the generative search engine.[248] The particular language of each service varies considerably and there is likely little or no ability of the enterprise to police the information being uploaded into the natural language database. Worse, the practice of sharing trade secret information with the query engine renders the trade secret public, even if the AI does not republish that information in answers to third parties.

For employers, this requires quick and aggressive training to remind staff and vendors that external generative AI tools cannot be used for sensitive data. For example, a public company that is considering a merger or acquisition of another company might well be prohibited from disclosing such information under the Securities Exchange Act and the associated requirements for specified disclosures in advance of any acquisition. The employees should treat the natural language generator like an outside analyst and provide to it only that information that one could provide to such analysts. While the information that could potentially be gleaned from the massive database available to a generative AI would be useful, such inquiries could also constitute disclosure or even announcements and should be avoided.

The intersection of trade secret protection and content design creates a unique challenge. Interactive sites often rely on nonpublic data to help inform the software as to the public information that should be presented. Potentially, this nonpublic information can be protected by trade secret if it otherwise meets the definitional test. Then, assuming that the hidden data are trade secrets, third-party efforts to acquire such information in violation of the Terms of Service should constitute trade secret theft.[249]

Nonpublic information also includes all customer, client, employee, student, and patient data subject to one or more privacy regimes including protected health records or academic records. A college coach using a natural language search algorithm should not provide it—or the public—private information regarding the student-athlete information despite the potential to use the algorithm to model player performance.[250] Such concerns are not merely hypothetical. "For example, in February 2023 an AI-based chatbot was prohibited by the Italian data protection

[248] *See* UAB "Planner5D" v. Facebook, Inc., 19-CV-03132-WHO, 2020 WL 4260733, at *7 (N.D. Cal. July 24, 2020) ("Planner 5D's combined effect of structural and legal barriers "consistently walls off both the location and content of the trade secrets at issue here, and under its Terms of Service, separately prohibits circumventing these protections via crawling, scraping, or otherwise accessing its data files.").

[249] *See* UAB "Planner5D" v. Facebook, Inc., 19-CV-03132-WHO, 2020 WL 4260733, at *8 (plaintiff alleges that Princeton used data scraping techniques to acquire the data protected as trade secrets. Plaintiff's allegations that it took steps to hide "the locations and contents of its data files," defendant "had to design and deploy hacking software to obtain this information," and the Terms of Service prohibited access, the prima facie case for trade secret theft was established.).

[250] *See* The Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. § 1232g; 34 CFR Part 99 (2023).

authority from further processing of personal data of Italian users."[251] The Italian authority had to step in "after the authority found that the service put children and vulnerable people at risk, did not comply with requirements to provide users with certain information, and lacked a valid legal basis for its processing of personal data."[252]

Even if there is a general statement of confidentiality in the contract between the AI service provider and the user, that confidentiality provision may fall short of the requirements for specified records of students,[253] health care patients,[254] minors,[255]data subjects in the EU,[256] or customers in states such as California.[257] Each of the various regulations differs in form and content[258] so that a simple provision in a clickwrap terms of service agreement is unlikely to satisfy statutory requirements or regulators. Instead, enterprises need clear policies on what may and may not be shared with natural language systems, and these policies need to be enforced with trainings and testing.

Given the potential fines under privacy regulations such as the European General Data Protection Regulation and California Privacy Rights Act, the obligations to provide data minimization strategies, and other obligations to provide data subjects copies of information relating to the use of personal information, companies should be very wary of mixing protected personal information into broader arrays of training data.[259]

d. Trademarks

Trademark protection is also an essential part of any business enterprise, and the early stages of generative AI services suggest that small but important steps should be taken by trademark holders as well as by the database services regarding the exploitation of trademarks.

As an early experiment with DALL-E 2, "Heinz had DALL-E 2 generate a series of images of ketchup bottles using natural language terms like "ketchup," "ketchup art," "fuzzy ketchup," "ketchup in space" and "ketchup renaissance." The company invited fans to send their own prompts, which Heinz curated and shared across its social channels."[260]

In most of the "ketchup" designs, DALL-E 2 utilized the Heinz trade dress of its bottle and iconic label shape. This is a victory for the branding power of Heinz ketchup (and perhaps a nod

[251] Giles Pratt *et al.*, *Generative AI: Five things for lawyers to consider*, FRESHFIELDS BRUCKHAUS DERINGER LLP (Feb. 21, 2023), https://technologyquotient.freshfields.com/post/102i82i/generative-ai-five-things-for-lawyers-to-consider.

[252] *Id*.

[253] *See id.*

[254] *See* Health Insurance Portability and Accountability Act of 1996 (HIPAA), 42 U.S. Code § 1320d–9 (2023).

[255] Children's Online Privacy Protection Act of 1998 (COPPA), 15 U.S.C. 6501–6505; CFR Part 312 (2023).

[256] *See* Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

[257] *See* California Privacy Rights Act of 2020 (CPRA), Cal. Gov.§§ 7920.000, et seq. (2023).

[258] *See generally*, JON M. GARON, A SHORT AND HAPPY GUIDE TO PRIVACY AND CYBERSECURITY (West 2021).

[259] *See* Pratt *supra* note __.

[260] Wiggers, *supra* note __.

to the power of alternative spellings that ignore the traditional catsup), but if those images are used for purposes other than promoting Heinz products, then the company may have new challenges policing its trademark.

> Text-to-image tools like DALL-E 2 are "trained" by crawling the Web and "learning" hundreds of millions of text and image associations. Earlier this year, a TechCrunch report noted that DALL-E 2 maker OpenAI "filtered out" pornography and duplicates from that learning process. But the tool can produce images that include logos, trademarked characters, and other intellectual property—such as, SpongeBob shopping at Best Buy, Homer Simpson in Psycho, ancient Rome Spider-Man, Santa shopping on Amazon, or an "angry mob" of Ronald McDonalds protesting working conditions, in the style of Caravaggio.[261]

Cartoon characters pose a particular challenge. Many of the training models have intentionally avoided presentations of real individuals but few have policed their training libraries for the ever-popular characters from Marvel, DC, Star Wars, and the rest of the Disney or Loony Toons libraries. These images are appearing in many of the early experiments.[262]

For famous marks, which are the marks most likely to be broadly incorporated into the training data, there is the potential risk that the appearance of the mark in association with mash-ups posted by third parties or generally incorporated into unrelated images of products and environments could lead to the dilution of those trademarks.[263]

For example, in the context of the litigation between Getty and Stability AI, Getty has alleged that the copying and distortion of its trademarks and watermarks by Stable Diffusion violates its trademark rights. Getty alleges that much of the Stable Diffusion content is of "lower quality and at times ranges from the bizarre to the grotesque. Stability AI's incorporation of Getty Images' marks into low quality, unappealing, or offensive images dilutes those marks in further violation of federal and state trademark laws."[264]

A more common problem may arise if free images and natural language searches result in the adoption of marks that are not properly and traditionally cleared for their potential likelihood of confusion. Among small businesses, for example, the promise of royalty free images from generative AI might suggest that those images are cleared from any claims of trademark rights. But this more mundane form of trademark infringement could readily result from the overexuberance to which generative AI output is being put.

If a business were to ask a natural language AI for suggested product names, then unless the AI had been specifically designed to exclude from its answers all the product names already in use for that particular field of use and related fields of use, the answers would likely tend to rely heavily

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[261] Rob Walker, *What will AI do to branding?*, FAST COMPANY (Oct. 14, 2022), https://www.fastcompany.com/90794674/ai-dalle2-branding-copyright-infringement.

[262] *Id*.

[263] *See Section* 15 U.S.C. 1125 (2022) (Section 43(c) of the Lanham Trademark Act of 1946) ("The owner of a famous mark shall be entitled, … to an injunction against another person's commercial use in commerce of a mark or trade name, if such use begins after the mark has become famous and causes dilution of the distinctive quality of the mark, and to obtain such other relief as is provided in this subsection.").

[264] Getty Images (US) Inc. v. Stability AI, Inc., *supra* note __ at Para. 11.

on the marks in use. Simply put, the same neural network that makes a natural language AI know what to say next is very likely to provide to a user the most likely infringing marks rather than marks that are not in use. Similarly, as the Heinz example highlighted, certain image generation requests will invariably emphasize the existing stylized marks and trade dress that are common in popular culture and therefore likely to result in marks that will cause a likelihood of confusion if adopted.[265]

A related concern may exist for trademark holders who are the target of deliberate competitive campaigns to blur, tarnish, or free-ride on those marks. In the context of trademarks, it is reasonable to expect that the AI relies heavily on the public internet for brand information. In such cases, a sophisticated attack could use bots and mass disinformation campaigns to cybersquat on the training data in order to boost a competitors product using the target's marks.[266] In existing click fraud, 36 percent of display ads and 11 percent of search ads are fraudulently identified as viewed by target audience members when in fact they are "clicked" by automated bots.[267] In the likely variation on this fraud, unauthorized third parties will hijack the brands to associate with the competitors goods and promote strategies to encourage the AI to make inaccurate recommendations. Trademark holders will be required to invest heavily in countermeasures to take down or disrupt the campaigns that will themselves be made simple to mount through the use of generative content.

Beyond the risks of relying on generative AI for improperly cleared marks and generative trademark dilution, there may also be a more existential threat to trademarks and brands more generally. Analysts are beginning to ask whether AI will replace marks in the public consciousness as the source identifier for goods and services.

In a report written to an Emerging Issues Committee at the International Trademark Association,[268] its authors suggest "AI may assume responsibility for setting brand or default purchase preferences, which in turn makes it increasingly difficult for companies to target customers at the critical point of sale."[269] The report also notes "the risk that AI may eliminate brand preferences altogether, for example, by allowing customers to set default preferences entirely unrelated to brand."[270] At the same time, the report recognizes that generative AI tools

[265] *See, e.g.*, In re Majestic Distilling Co., 315 F.3d 1311, 1316 (Fed. Cir. 2003) ("the . . . mistaken belief that [a good] is manufactured or sponsored by the same entity [as another good] . . . is precisely the mistake that §2(d) of the Lanham Act seeks to prevent.").

[266] *See, e.g.*, Ben Elgin, Michael Riley, David Kocieniewski, and Joshua Brustein, *How Much of our Audience is Fake?*, BLOOMBERG (Sep. 24, 2015), https://www.bloomberg.com/features/2015-click-fraud/?leadSource=uverify%20wall.

[267] *The Global PPC Click Fraud Report 2020-21*, SEARCH ENGINE JOURNAL (Jan. 19, 2021), https://www.searchenginejournal.com/the-global-ppc-click-fraud-report-2020-21/391493/ ("Only 13% of accounts monitored had little to no fraudulent or invalid activity.").

[268] *See* Renee Keen, Sherry Rollo, Matt Stratton, Victor Caddy, Celia Lerman, *Artificial Intelligence (AI) and the Future of Brands: How will AI Impact Product Selection and the Role of Trademarks for Consumers?*, INTA (October 2019) (Emerging Issues Committee, Artificial Intelligence and Decisions by Machines Subcommittee) https://www.inta.org/wp-content/uploads/public-files/advocacy/committee-reports/AI-and-the-Future-of-Brands-Report-2019-010-18.pdf.

[269] *Id*. at 2.

[270] *Id*.

have the potential to help police the marketplace for unauthorized uses of marks and previously unknown examples of new marks that could engender a likelihood of confusion.[271]

More generally, however, there are increasing concerns among brand owners and their legal counsel that AI-generated product recommendations in online platforms and predictive tools that anticipate consumer needs are disintermediating the role of trademarks and brand management in the marketing relationship.[272] Trademarks "allow cognitively limited humans to simplify decisions by ignoring the context in which trademarks appear."[273] AI does not necessarily need this simplification, or it may use a very different set of parameters by which to simplify its contextualization of the environment. As a result, "AI's advantage lies in its ability to sort through context, [reducing] the importance of maintaining stable trademark meanings…."[274] As a result, "trademarks would be left with less to do."[275]

While this remains a long-term or theoretical concern, at least as demonstrated thus far, there is little evidence to suggest trademarks and brands are diminishing in value. To the contrary, the core attribute of generative AI is an increase in information. At present, the total amount of human knowledge doubles "every twelve months and in the near future is expected every twelve hours.[276] Strategies to simplify the information storm through tools such as brands and trademarks will be more important than ever. At the same time, however, brands will be unable to compete directly with AI for the delivery of factual information. Instead, the evolution of branding will likely further accelerate its drive to provide emotionally and psychographically relevant information to consumers to overcome objective decision-making and promote brands based on emotional responsiveness.[277]

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[271] *See id.* at 6.

[272] Michael Grynberg, *AI and the Death of Trademark Law*, 108 KENT. L.J. 199 (2019-2020).

[273] *Id*. at 205.

[274] *Id*.

[275] *Id*.

[276] Duli Pllana, E*xpanding Entire Volume of Knowledge Influences on Incrementing Individual Knowledge*, 19 GLOBAL J. HUMAN-SOCIAL SCIENCE (H) 33 (2019). *See also* Scott Sorokin, *Thriving in a World of "Knowledge Half-Life"*, CIO (April 5, 2019), https://www.cio.com/article/219940/thriving-in-a-world-of-knowledge-half-life.html.

> In 1982, futurist and inventor R. Buckminster Fuller estimated that up until 1900, human knowledge doubled approximately every century, but by 1945 it was doubling every 25 years. And by 1982, it was doubling every 12-13 months. In retrospect, this may sound a little quaint since experts now estimate that by 2020, human knowledge will double every 12 hours.

[277] *See* Bhumika Dutta, *A Guide to Psychographics for Marketing*, ANALYTIC STEPS (Nov. 29, 2021), https://www.analyticssteps.com/blogs/guide-psychographics-marketing ("People understood that merely demographics are insufficient for any effective marketing techniques after the development of psychographic segmentation. … This field extends beyond demographics such as age, gender, race, geography, and so on to analyze customer behavior over purchasing."). *See generally, What is psychographics?*, CB INSIGHTS (May 6, 2020), https://www.cbinsights.com/research/what-is-psychographics/ ("Psychographics seeks to understand the cognitive factors that drive consumer behaviors. This includes emotional responses and motivations; moral, ethical, and political values; and inherent attitudes, biases, and prejudices.").

Psychographic targeting uses psychological variables and personality traits to predict and shape consumer behavior[278] (as well as electoral voting support).[279] To develop the psychographic determinants for individuals, researchers and marketers often use self-identification surveys, but these prove unreliable. So instead, researchers and marketers tap the power of generative AI to use natural language markers from the conversations among individuals and increasingly with the chatbots and generative AI services.[280] Psychographic research "demonstrates the utility of relying on natural language markers of abstract psychological phenomena, including values and personality, and present significant opportunities to better predict and understand their connection to consumers' behaviors and thoughts in a broader sense."[281] In this brave new world of psychographic targeting, trademarks will become more prominent than ever, but will likely represent a very different brand strategy than those of the twentieth century.

A final trademark consideration is the potential to see a significant change in the role for Lanham Act §43(a) false advertising claims.[282] The federal cause of action provides:

> (1) Any person who, … uses in commerce any word, term, name, symbol, or device, or any combination thereof, or any false designation of origin, false or misleading description of fact, or false or misleading representation of fact, which—
>
> (A) is likely to cause confusion, or to cause mistake, or to deceive as to the affiliation, connection, or association of such person with another person, or as to the origin, sponsorship, or approval of his or her goods, services, or commercial activities by another person, or
>
> (B) in commercial advertising or promotion, misrepresents the nature, characteristics, qualities, or geographic origin of his or her or another person's goods, services, or commercial activities,
>
> shall be liable in a civil action by any person who believes that he or she is or is likely to be damaged by such act.[283]

As noted earlier, the first iterations of natural language chats have proven to be highly inconsistent in their accuracy.[284] For open environment natural language systems that rely on the information generally available on the internet, misinformation will continue to inform the responses from generative AI chatbots. In one potential situation, a response system has "learned"

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[278] Hui Liu, *et al., Personality or Value: A Comparative Study of Psychographic Segmentation Based on an Online Review Enhanced Recommender System,* APPLIED SCI. 1992 (May 15, 2019), https://www.mdpi.com/2076-3417/9/10/1992.

[279] *See* CB INSIGHTS, *supra* note __. A discussion of the use of generative AI and psychographic modeling is beyond the scope of this article.

[280] *See* Liu, *supra* note __ at 2.3 ("Research indicates cases in which natural language data have provided a clearer picture of people's cognitive and behavioral processes than data collected from a traditional and widely used self-report survey.")

[281] *Id*.

[282] *See* Grynberg, *supra* note __ at 212-13.

[283] 15 U.S.C. § 1125 (2023).

[284] *See* Section 4.b., *infra* at __.

that the most popular automobile on the market today is the Pacer by American Motors Car.[285] Since the AMC Pacer was thankfully put to rest in 1980, such information will not affect any prospective car buyers. But if instead, the AI had been coached to promote a particular brand in the marketplace using factually inaccurate information, then such information could meet the standard for false marketing under Section 43(a).[286]

Like many of the challenges to generative AI, the question remains who is responsible for this misinformation. At a minimum, complainants will need to establish that they have a "commercial interest in reputation or sales" harmed by the chatbot.[287]

Certainly, if a competitor could be proven to have falsely trained the AI to promote its brand with factually inaccurate information, that would give rise to liability. But in the absence of such proof, could an AI host be obligated to "remove" such information? Indeed, what does the removal look like, particularly if the site providing access to the chatbot is merely a licensee from the source of the training data?

As between the host website and the provider of the natural language service, Communications Decency Act §230 might provide an answer.[288] Section 230(c) of the CDA provides: "No provider or user of an interactive computer service shall be treated as the publisher or speaker of any information provided by another information content provider."[289] Unlike copyright and patent laws, CDA §230 does not use the term individual,[290] and because it is written in the negative, the law potentially sweeps much more broadly to include content that is created by generative AI.

At the same time, however, it cannot provide immunity for the generative AI itself.[291] When Simplicity AI or OpenAI create and train their models, they are not using an interactive service, putting them outside the framework of the safe harbor. In addition, Professor Matt Perault writes that given the definition of interactive service provider, "courts will likely find that ChatGPT and other [systems] are information content providers."[292]

In contrast, the service creating and generating the generative AI is likely an interactive computer service. The content is coming from third parties. Further, the interactive computer service is not substantially modifying or controlling the content. In this situation, the hosting service will likely be able to shield itself from the direct liability for the content provided by the

[285] *See AMC Pacer*, WIKIPEDIA, https://en.wikipedia.org/wiki/AMC_Pacer ("The AMC Pacer is a two-door compact car produced in the United States by American Motors Corporation (AMC) from the 1975 through the 1980 model years.").

[286] *See* Quentin J. Ullrich, *Is This Video Real? The Principal Mischief of Deepfakes and How the Lanham Act Can Address It*, 55 COL. J.L & SOCIAL PROBLEMS 1, 16 (2023).

[287] Lexmark Int'l, Inc. v. Static Control Components, Inc, 572 U.S. 118, 131–34 (2014).

[288] *See* 47 U.S.C. § 230(c) (2023).

[289] *Id*.

[290] *Id*. at §230(f)(3) ("Information content provider" means "any person or entity that is responsible, in whole or in part, for the creation or development of information provided through the internet or any other interactive computer service.").

[291] Matt Perault, *Section 230 Won't Protect ChatGPT*, LAWFARE BLOG (Feb. 23, 2023), https://www.lawfareblog.com/section-230-wont-protect-chatgpt.

[292] *Id*.

natural language generator. Of course, if the website engages more directly with the content in some manner, then it may lose the protection of the safe harbor as a result.

Separately, to the extent the claim is based on violations of the Lanham Act, CDA §230 should not serve as a bar to the cause of action. "Subsection (e) ensures several legal domains remain unaffected by § 230(c). Most relevant here, § 230 has "[n]o effect on intellectual property."[293] In *Universal Communication Systems, Inc. v. Lycos, Inc.*,[294] the plaintiff alleged that the defendant message board providers allowed posts contained "false, misleading" content about the company's financial status and position.[295] The plaintiff brought claims for both state and federal trademark violations and the court refused to dismiss the claims based on § 230. Contrast this with a narrower interpretation in *Perfect 10, Inc. v. CCBill LLC*,[296] where the court found that § 230 barred the state intellectual property claims and construed the limitation of § 230(e)(2) to federal claims.[297] While such a limitation may have made some public policy sense in the context of an earlier understanding of potential internet liability, the Third Circuit recognition of the state right of publicity likely reflects the current concerns over internet immunity and the loss of confidence that courts have found the right balance between § 230 and other laws.[298]

e. Rights of Publicity in the Data Set and the Output

As noted in *Hepp v. Facebook*, state rights of publicity claims are also intellectual property claims. The term "right of publicity" was first used by Judge Jerome Frank in 1953 in *Haelan Laboratories, Inc. v. Topps Chewing Gum, Inc*.[299] As the field has evolved in the context of online influencer culture and collegiate athlete brand endorsements, today, it is very common to refer to publicity rights as "name, image, and likeness (NIL) licensing."[300]

> The right of publicity is an intellectual property right of recent origin which has been defined as the inherent right of every human being to control the commercial use of his or her identity. The right of publicity is a creature of state law and its

[293] Hepp v. Facebook, 14 F.4th 204, 209 (3d Cir. 2021) (*quoting* § 230(e)(2)). *See also* Universal Communication Systems, Inc. v. Lycos, Inc., 478 F.3d 413 (1st Cir. 2007).

[294] 478 F.3d 413 (1st Cir. 2007).

[295] *See id.* at 415–16.

[296] 488 F.3d 1102 (9th Cir. 2007).

[297] *Id*. at 1118.

[298] Hepp, 14 F.4th at 209.

[299] 202 F.2d 866 (2d Cir. 1953). *See* Melville Nimmer, *The Right of Publicity*, 19 LAW & CONTEMP. PROBS. 203, 204 (1954).

[300] *See, e.g.*, Ted Tatos, *The NCAA Goes After College Athletes' NIL Money—Here are the Antitrust Implications for Workers and Consumers*, PROMARKET (May 20, 2022), https://www.promarket.org/2022/05/20/ncaa-goes-after-college-athletes-nil-antitrust/ ("the NCAA has signaled its intent to renew its efforts to suppress competition – this time in the nascent, but rapidly growing market for college athlete Name, Image, and Likeness (NIL) licensing."); Nathan Rubbelke, *How the NCAA's name, image and likeness licensing policies are creating a new type of company*, ST. LOUIS BUSINESS JOURNAL (June 9, 2022), https://www.bizjournals.com/stlouis/news/2022/06/09/ncaa-nil-policies-creating-new-type-of-company.html ("So-called "NIL collectives" are a new phenomenon, and type of business entity, that pool together money from a college's boosters and supporters to fund name, image and likeness deals with student-athletes.").

> violation gives rise to a cause of action for the commercial tort of unfair competition.[301]

For purposes of taxonomy, the right of publicity shares certain attributes with privacy rights from which it was originally derived,[302] trademark law[303] because it requires a commercial exploitation of the name, image, or likeness, and even copyright because of its communicative impact.[304]

Each of these attributes helps describe the potential for liability that can arise from the use of a person's recognizable name, image, or likeness in the output of a generative AI response, image, or video. In addition, any potential litigation should take into account the ability of an individual to control whether a person can object to having their information collected into the database[305] as distinct from whether the output of a person's name, image, or likeness requires permission.

Thus far, claims regarding the inclusion of a person's identity have not proven actionable under state publicity rights law. For example, in *Verde v. Confi-Chek, Inc.*,[306] a plaintiff sued the operators of the website peoplefinders.com, claiming that the Illinois Right to Publicity Act[307] was violated as a consequence of being included in the peoplesfinder.com database. The district court refused to find Article III standing because the inclusion in the database did not, in and of itself, constitute a harm under the statute.[308] However, in more recent motions to dismiss, other Illinois district courts are finding that the use of a person's information in the database used to help sell subscriptions is sufficient to provide a cause of action.[309]

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[301] ETW Corp. v. Jireh Pub., Inc., 332 F.3d 915, 928–29 (6th Cir. 2003).

[302] *See* Samuel Warren and Louis Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193 (1890).

[303] *See* Stacey L. Dogan and Mark A. Lemley, *What the Right of Publicity Can Learn from Trademark Law*, 58 STANFORD L. REV. 1161 (2006). *But see* Daniel Gervais and Martin L. Holmes, *Fame, Property & Identity: The Purpose and Scope of the Right of Publicity*, 25 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 181 (2014), https://ir.lawnet.fordham.edu/iplj/vol25/iss1/4 ("Rationales that are used to justify trademark law should not be offered to justify the right of publicity simply because the two rights seem similar. … [T]rademark law reduces search costs for consumers and incentivizes quality through accountability; the right of publicity, meanwhile, allows an individual to profit from and exercise control over the commercial use of his name and likeness…."" But, of course, this analysis ignores all anti-dilution and false endorsement provisions of the Lanham Act).

[304] *See* Comedy III Productions, Inc. v. Gary Saderup, Inc., 25 Cal. 4th 391 (2001) (incorporating the transformative use test from copyright fair use into California's right of publicity laws).

[305] *See* Madeline Lamo and Jeff Landis, *Spike in Right of Publicity Cases Against Online Providers*, ZWILLGENBLOG (Dec. 2, 2021), https://www.zwillgen.com/privacy/spike-right-publicity-cases-online-providers/.

[306] Verde v. Confi-Chek, Inc., 21 C 50092, 2021 WL 4264674, at *1 (N.D. Ill. Sept. 20, 2021).

[307] 765 ILCS 1075/1 et seq. (2023) ("the IRPA provides that "[a] person may not use an individual's identity for commercial purposes during the individual's lifetime without having obtained previous written consent." 765 ILCS 1075/30. A person who violates Section 30 may be liable for the greater of "(1) actual damages, profits derived from the unauthorized use, or both; or (2) $1,000."" 765 ILCS 1075/40.).

[308] Verde v. Confi-Chek, Inc., 21 C 50092, 2021 WL 4264674, at *5 ("plaintiff fails to allege a concrete injury because she does not allege defendant disclosed any of her information to any third party. "[T]he retention of information lawfully obtained, without further disclosure, traditionally has not provided the basis for a lawsuit in American courts…." *quoting* TransUnion LLC v. Ramirez, 141 S. Ct. 2190, 2209 (2021).)

[309] Hoffower v. Seamless Contacts, Inc., 22 C 2079, 2022 WL 17128949 (N.D. Ill. Nov. 22, 2022); Siegel v. ZoomInfo Technologies, LLC, No. 21 C 2032, 2021 WL 4306148 (N.D. Ill. Sept. 22, 2021).

In *Hoffower v. Seamless Contacts, Inc.*, for example, the court found that the plaintiff "has sufficiently alleged unconsented commercial use of her identity. Specifically, she alleges that her identity (like those of other class members) is used to advertise Seamless's subscription service. To the extent the product or service advertised has to be separate from the plaintiff's identity itself, that's satisfied here."[310]

In much the same way, many of the free generative AI systems provide a limited number of free searches and then the consumer is offered or encouraged to purchase increased access. Under this free-to-try model, the *Hoffower* explanation of commercial use would mean that the information is now being used to promote the paid service.

In the more typical case, the commercial activity requires the association of the individual's identity with some product or service, as opposed to a news story or other communicative work. To the extent that advertising agencies and commercial websites take advantage of the generative AI content to produce materials that could be construed as marketing materials, those uses will require licenses from any persons who are identifiable. For example, in *Hepp*, the complaint was that without her consent, a photograph of the plaintiff standing "in a convenience store, smiling in the center of the frame's foreground … [was] used in online advertisements for erectile dysfunction and dating websites."[311] If that image commonly found on the internet was closely reproduced in an AI generation, it would still have the same basis for liability. Moreover, as noted earlier § 230 may no longer bar claims under state rights of publicity statutes[312] and it would not bar federal causes of action for false endorsement under § 43(a) of the Lanham Act.[313]

Identity rights are not limited to photographic representations of an individual. Likenesses are generally included in the panoply of rights granted to each individual, and likenesses should reasonably be understood to include avatars.[314] Thus far, DALL-E 2 and Stable Diffusion have addressed the rights of publicity and privacy concerns by obscuring and distorting the images of human characters. But this strategy is not universal, structural nor comprehensive. The choice for any particular generative AI to provide facial information can be made by the operator and changed as market conditions dictate. Generated Photos,[315] Fotor,[316] and other services offer very lifelike photos "generated completely by AI."[317] If those images are trained on a database of preexisting photographs, then a person bearing a striking likeness to one of the images might have a valid claim that the person's image is being commercially exploited without permission.

In addition, since avatars are widely generated, there may be nothing that restricts the generative AI from learning the most popular of avatars and basing its output on these. To the

[310] Hoffower v. Seamless Contacts, Inc., 22 C 2079, 2022 WL 17128949, at *2.

[311] Hepp, 14 F.4th at 206.

[312] *Id*.

[313] 15 U.S.C. § 1125.

[314] *See* Dhruva Krishna, *Dawn of the Dead: Virtual Avatars & New York's Right of Publicity*, HARV. J. SPORTS & ENT. L. (Sept. 29, 2021), https://harvardjsel.com/2021/09/dawn-of-the-dead-virtual-avatars-new-yorks-right-of-publicity/.

[315] https://generated.photos/.

[316] https://www.fotor.com/features/ai-face-generator/.

[317] *Id*.

extent that these derivative avatars rely too heavily on the source material and they are used for commercial exploitation, then they will invade the rights of publicity for the owners of those avatars and create legal liability as a consequence.

6. Emerging Civil Liability Issues from AI-Generated Content

In addition to the intellectual property constraints on the development and deployment of generative AI systems, there is a range of other legal issues that are generally ascribed to content industries. Among these, the need to adhere to contractual community standards when generating content, the risks of defamatory content, and the liability that may attach to inaccurate and dangerous advice are key issues for every publisher. The enterprises that train, proffer, or republish generative AI content will likely face the same types of liability that traditional publishers and content distributors have faced throughout the modern media age.

a. Digital Redlining and the Duty to Adherence to Civil Rights Laws

Perhaps the most widely discussed concern about the expansion of artificial intelligence has been its propensity to replicate or even exacerbate preexisting human biases in the criteria it develops when using unstructured data.[318] AI facial recognition software has been notoriously poor in facial recognition for dark-skinned individuals rather than for Caucasian individuals.[319] "NIST's tests and other studies repeatedly have found that the algorithms have a harder time recognizing people with darker skin. … Many top performers in that report show … [a] 10-fold difference in error rate for black and white women."[320] Another area plagued by inequities has been in algorithmic decision-making in housing. "[U]sing algorithms to generate decisions on loan pricing have discriminated against borrowers of color, resulting in a collective overcharge of $765 million each year for home and refinance loans."[321] As a result of the predictive tools, "lenders rejected a total of 1.3 million creditworthy applicants of color between 2008 and 2015."[322]

"A black box model could be either (i) a function that is too complicated for any human to comprehend, or (ii) a function that is proprietary. Deep learning models, for instance, tend to be

[318] *See* CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY 123 (2016); Kristin N. Johnson, *Automating the Risk of Bias*, 87 GEO. WASH. L. REV. 1214, 1218 (2019) ("Civil rights activists warn that the integration of learning algorithms marks the creation of a new class of enterprise risks.").

[319] *See* Tom Simonite, *The Best Algorithms Struggle to Recognize Black Faces Equally*, WIRED (Jul 22, 2019), https://www.wired.com/story/best-algorithms-struggle-recognize-black-faces-equally/ ("US government tests find even top-performing facial recognition systems misidentify blacks at rates five to 10 times higher than they do whites.").

[320] *Id*.

[321] Patrick Sisson, *Housing discrimination goes high tech*, CURBED (Dec. 17, 2019), https://archive.curbed.com/2019/12/17/21026311/mortgage-apartment-housing-algorithm-discrimination (*citing* Robert Bartlett, *et al*., *Consumer-Lending Discrimination in the FinTech Era*, UC BERKELEY PUBLIC LAW RESEARCH PAPER, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3063448).

[322] *Id*. (The analysis covered "roughly 7 million 30-year mortgages also found that both in-person and online" credit applications).

black boxes of the first kind because they are highly recursive."[323] As a consequence, even well-intended efforts to receive nonbiased outcomes are thwarted because the researchers and implementers of black box systems do not know what is needed to affect their choices.

> Many of the ML models are black boxes that do not explain their predictions in a way that humans can understand. The lack of transparency and accountability of predictive models can have (and has already had) severe consequences; there have been cases of people incorrectly denied parole, poor bail decisions leading to the release of dangerous criminals, ML-based pollution models stating that highly polluted air was safe to breathe, and generally poor use of limited valuable resources in criminal justice, medicine, energy reliability, finance, and in other domains.[324]

Some such biases are even translating into robotics. According to a study by Johns Hopkins University, Georgia Institute of Technology, and University of Washington researchers, a "robot operating with a popular Internet-based artificial intelligence system consistently gravitates to men over women, white people over people of color, and jumps to conclusions about peoples' jobs after a glance at their face."[325]

The increasingly commonplace failures to avoid racial and gender discrimination in AI systems is not a foregone conclusion, however, and carefully crafted implementations can both minimize this harm and help reduce the human bias inherent in pre-algorithmic decision-making.[326] "A not-so-hidden secret behind the algorithms mentioned above is that they actually *are* biased. But the humans they are replacing are *significantly more biased*."[327] As a result of the clear patterns in both algorithmic and nonalgorithmic decision making is that enterprises must do a much better job at managing the inherent biases that are well known.

> The risk that AI may reflect, and even compound, existing biases and stereotypes in society is a commonly discussed risk that those developing or using AI systems will need to consider. First, patterns of systemic discrimination may be reflected in the training data. For example, one of the key variables may be based on historical data that could reflect biases due to historically unfair practices. Secondly, bias may be present in the algorithm itself if it engages in proxy discrimination as a result of its reliance on correlation. Users and developers of AI therefore need to be careful that the output of AI systems does not demonstrate any

[323] Cynthia Rudin, *Stop Explaining Black Box Machine Learning Models for High Stakes Decisions and Use Interpretable Models Instead*, 2019 NAT. MACH. INTELL. 206 (May 2019), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9122117/ (internal citations omitted).

[324] *Id*.

[325] Jill Rosen, *Flawed AI makes robots racist, sexist*, HUB, JOHNS HOPKINS UNIV. (June 21, 2022), https://hub.jhu.edu/2022/06/21/flawed-artificial-intelligence-robot-racist-sexist/ (*citing* Andrew Hundt, *et al., Robots Enact Malignant Stereotypes*, PROCEEDING OF 2022 ACM CONFERENCE ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY 743 (June 2022), https://dl.acm.org/doi/10.1145/3531146.3533138).

[326] *See* Alex P. Miller, *Want Less-Biased Decisions? Use Algorithms*, HARV. BUS. REV. (July 26, 2018), https://hbr.org/2018/07/want-less-biased-decisions-use-algorithms ("There is a large body of research on algorithmic decision making that dates back several decades. And the existing studies on this topic all have a remarkably similar conclusion: Algorithms are less biased and more accurate than the humans they are replacing.").

[327] *Id*.

> biases that risk them breaching anti-discrimination laws, or (to the extent processing personal data) data protection laws.[328]

Consider a non-AI example regarding gender discrimination in professional orchestras. "As late as 1970, the top five orchestras in the U.S. had fewer than 5% women."[329] To help address these biases, "[i]n the 1970s and 1980s, orchestras began using blind auditions. Candidates are situated on a stage behind a screen to play for a jury that cannot see them."[330] Unfortunately, little changed. The trick to using blind auditions was to combine the use of the screen with a requirement that the candidates removed their shoes when walking across the stage. "The sound of the women's heels as they entered the audition unknowingly influenced the adjudicators. Once the musicians removed their shoes, almost 50% of the women made it past the first audition."[331]

As the popular computer science maxim explains, "garbage in, garbage out," meaning biased inputs (source data) will lead to biased or erroneous outputs.[332] Even if the express terms of discrimination such as race and gender are excluded from the training set, there remains considerable risk that surrogate data will provide a proxy for those same criteria. Just as the clicking of a heel predicted gender, the use of zip code data may serve as an alternative for race and ethnic information.[333] Empirical studies substituting "White" names for "African American" names resulted in evidence that "White names receive 50 percent more callbacks for interviews."[334] This was not based on algorithmic decision-making; this was the unconscious bias of humans in the human resource decision processes.[335] In another study, researchers "drafted a research memo from a hypothetical third year litigation associate."[336] "While all of the partners

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[328] Pratt, *supra* note __.

[329] Curt Rice, *How blind auditions help orchestras to eliminate gender bias*, GUARDIAN (Oct. 14, 2013), https://www.theguardian.com/women-in-leadership/2013/oct/14/blind-auditions-orchestras-gender-bias. *See also* Claudia Goldin and Cecelia Rouse, *Orchestrating Impartiality: The Impact of" Blind" Auditions on Female Musicians*, 90 AMERICAN ECONOMIC REVIEW 715 (2000) ("In the years after these changes were instituted, the percent of female musicians in the five highest-ranked orchestras in the nation increased from 6 percent in 1970 to 21 percent in 1993. Given the low turnover found in most symphony orchestras, the increase in female musicians is significant.").

[330] Rice, *supra* note __.

[331] Cassie Sellars, *Fighting Unconscious Bias*, LINKEDIN (May 13, 2019), https://www.linkedin.com/pulse/fighting-unconscious-bias-cassie-sellars.

[332] Johnson, *supra* note __ at 1222.

[333] *See*, *e.g.*, *See* Michael Carl Tschantz, *What is Proxy Discrimination?*, 2022 ACM CONFERENCE ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY (June 21, 2022), https://doi.org/10.1145/3531146.3533242; Kevin D. Long and Steven M. Albert , *Use of Zip Code Based Aggregate Indicators to Assess Race Disparities in COVID-19*, 31 ETHNICITY & DISEASE 399 (Summer 2021), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8288471/.

[334] Marianne Bertrand & Sendhil Mullainathan, *Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*, NAT'L BUREAU OF ECON. RESEARCH (July 2003), http://www.nber.org/papers/w9873 (Working Paper 9873).

[335] *Id*.

[336] Arin N. Reeves, *Written in Black & White, Exploring Confirmation Bias in Racialized Perceptions of Writing Skills*, NEXTONS (2014), https://www.ncada.org/resources/CLE/WW17/Materials/Wegner%20_%20Wilson--Confirmation%20Bias%20in%20Writing.pdf ("This memo was then distributed to 60 different partners (who had

received the same memo, half the partners received a memo that stated the associate was African American while the other half received a memo that stated the associate was Caucasian."[337] Again, the human results showed a systematic implicit bias to the association of race by the author. "The exact same memo, averaged a 3.2/5.0 rating under our hypothetical "African American" Thomas Meyer and a 4.1/5.0 rating under hypothetical "Caucasian" Thomas Meyer."[338]

AI decision making often builds on these implicit biases.[339] For example, Amazon attempted to use AI for its recruiting in 2014 but the AI learned to replicate the recommendations to the training data and reproduce the very hiring biases Amazon was hoping to eliminate.

> Amazon had used historical data from the last 10-years to train their AI model. Historical data contained biases against women since there was a male dominance across the tech industry and men were forming 60% of Amazon's employees. Therefore Amazon's recruiting system incorrectly learnt that male candidates were preferable. It penalized resumes that included the word "women's," as in "women's chess club captain."[340]

Unable to correct the system, Amazon dropped its AI recruiting process one year after it started.[341]

These examples paint a clear picture that issues of digital redlining and the potential for systematic algorithmic bias are not overstated but neither are they new. Instead, generative AI systems need to be carefully monitored at both the training stage and in the development of output parameters to control for the historical biases in the data sets and the artifacts in the data that can lead to replication of unintended bias.[342] The very structure of a neural network assumes that the weights of decisions in each layer of the network will influence the values in other layers of the network, so systems used for employment decisions, credit valuation, medical resources, incarceration, and similar field need extra screening to remove unnecessary predictors.[343]

There are specific steps that can be taken. Assess the data "where the risk of unfairness is high. … Examine the training dataset for whether it is representative and large enough to prevent common biases such as sampling bias [and] [m]onitor the model over time against biases."[344] Such

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previously agreed to participate in a "writing analysis study" from 22 different law firms of whom 23 were women, 37 were men, 21 were racial/ethnic minorities, and 39 were Caucasian.").

[337] *Id*. at 3.

[338] *Id*. at 4. (Comments on the allegedly African American writing sample includes statements such as "needs lots of work," "can't believe he went to NYU," and "average at best," while the supposedly Caucasian version elicited the statements "has potential" and "good analytical skills.").

[339] *See* Hundt, *supra* note __ at 743 ("Stereotypes, bias, and discrimination have been extensively documented in Machine Learning (ML) methods such as Computer Vision (CV), Natural Language Processing (NLP), or both, in the case of large image and caption models such as OpenAI CLIP") (citations omitted).

[340] Cem Dilmegani, *Bias in AI: What it is, Types, Examples & 6 Ways to Fix it in 2023*, AI MULTIPLE (Dec. 26, 2022), https://research.aimultiple.com/ai-bias/.

[341] *Id*.

[342] *See id.*

[343] *See id.*

[344] *Id*. ("Conduct subpopulation analysis that involves calculating model metrics for specific groups in the dataset. This can help determine if the model performance is identical across subpopulations.")

systems need a debiasing strategy that involves "technical, operational and organizational actions."[345]

Another proposal to address AI bias is to require "explainable AI" or XAI.[346] "'XAI' is quickly growing as an area of research. We can train models that 'tell' us why they have reached a decision, or we can trick 'black-box' models into revealing how they reached a conclusion."[347] Through XAI, "[i]f the reasoning is faulty – or biased – we're then equipped with the ability to not only override the decision on a case-by-case basis but to correct the data and the methodology, so the mistake is not repeated."[348]

Another technique may include intentionally altering training data to provide counterfactual (inaccurate) training data to simulate the societal goal.[349] Had Amazon falsified its training data to arbitrarily assign gender tags to its employees, then the system would have learned a different set of gender attributes. "As another text source enhancement technique, gender tagging is proven to be effective in some learning tasks …."[350]

In addition, there may be many more approaches to adjusting the training data in an effort to control for biases in the data sets, including use of synthetic data and over-selection of preferential data to promote the nonbiased content in adversarial training models.[351] For enterprises, the important lesson is that there are a variety of steps that can be taken, and therefore there is an expectation that any generative AI enterprise contract should include those obligations. When used in commerce, there is a legal obligation to avoid the structural bias of early AI systems, and contracting parties must be mindful to assure that these steps are taken.

b. Terms of Service and Community Standards

The promise of the internet began with a euphoria that the elimination of content gatekeepers would free creativity, improved communication would improve knowledge, and the flow of information would topple dictators and flatten out the world's inequities.[352] Unfortunately, the rise

[345] *Id*.

[346] *See* Nigel Cannings, *How To Tackle AI Bias*, SPICEWORKS (Sept. 22, 2022), https://www.spiceworks.com/tech/artificial-intelligence/guest-article/how-to-tackle-ai-bias/.

[347] *Id*.

[348] Nigel Cannings,, *How Can We Debias AI?*, INNOVATION IN BUSINESS (Nov. 8 2022), https://www.innovationinbusiness.com/how-can-we-debias-ai/.

[349] *See* Adarsh Agrawal, Snigdha Bhardwaj, and Anuj Gupta, *Mitigating Bias in AI Using Debias-GAN*, WORLD WIDE TECHNOLOGY (Nov. 9, 2021), https://www.wwt.com/article/mitigating-bias-in-ai-using-debias-gan.

[350] *Id*. This research paper, however, is not directly addressing the dataset used by Amazon. That example is exclusively the suggestion of this author.

[351] *See id.*

[352] *See* Prachi Juneja, *How the Promised Utopia of Technology is Turning into a Perilous Dystopian Nightmare*, MANAGEMENT STUDY GUIDE, https://www.managementstudyguide.com/promised-utopia-of-technology-is-turning-into-a-perilous-dystopian-nightmare.htm (last visited March 12, 2023). *See generally*, THOMAS L. FRIEDMAN, THE WORLD IS FLAT: A BRIEF HISTORY OF THE TWENTY-FIRST CENTURY 9-10 (2005); PHILIP EVANS & THOMAS WURSTER, BLOWN TO BITS 24-25 (2000); Jon M. Garon, *Revolutions and Expatriates: Social Networking, Ubiquitous Media and the Disintermediation of the State*, 11 J. INT. BUS. L. 293 (2012).

of online trolling,[353] international conflict,[354] state-sponsored disinformation,[355] and similar threats have made the internet a challenging environment. It is not an environment where unfiltered information can be blithely accepted as true and unbiased. Disinformation abounds. Nor is it an environment where interactions are presumed benign. Instead, the ecosystem of the internet relies on private contractual and consensual relationships among the infrastructure providers, backed by national laws and international treaties to allow the safe flow of information and goods.[356]

In the online and digital economy, contractual relations among the consumers, website hosts, publishers, and ISPs dominate the legal framework in which the parties engage with one another. In the United States, the powerful protections of the First Amendment, which severely limit the power of governmental authority to regulate speech, is nonetheless limited to those situations in which there is a state actor.[357] In addition, CDA § 230 adds additional immunity to website operators and other online activity by reducing the potential for legal liability as a result of the content posted online by third parties.[358]

As a consequence of the lack of governmental involvement and the concomitant need for a workable, commercially reasonable, and largely inviting consumer experience, the institutions that constitute the modern internet in fact coordinate through contracts and voluntary associations to establish community standards and social norms that govern much (though certainly not all) of the speech and information on the highly used internet platforms. These companies have filled the void created by the constitutional restrictions and statutory safe harbors. "Social media and

[353] *See* Emily Vogels, *The State of Online Harassment*, PEW RESEARCH CENTER (Jan. 13, 2021), https://www.pewresearch.org/internet/2021/01/13/the-state-of-online-harassment/ ("A Pew Research Center survey of U.S. adults in September finds that 41% of Americans have personally experienced some form of online harassment in at least one of the six key ways that were measured.").

[354] *See* Yaqiu Wang, *In China, the 'Great Firewall' Is Changing a Generation*, HUMAN RIGHTS WATCH (Sept. 1, 2020), https://www.hrw.org/news/2020/09/01/china-great-firewall-changing-generation ("the internet in China was seen as a channel for new thinking, or at least greater openness;. …That has changed sharply in recent years as a crackdown on the internet and civil society has become more thorough and sophisticated—and the government's messaging has grown more nationalistic."); by James Dobbins, David C. Gompert, David A. Shlapak, Andrew Scobell, *What's the Potential for Conflict with China, and How Can It Be Avoided?*, RAND CORP. (March 2, 2023) https://www.rand.org/pubs/research_briefs/RB9657.html.

[355] *See, e.g.*, U.S. DEPT. OF STATE, GEC SPECIAL. REPORT: PILLARS 01' RUSSIA 'S DISINFORMATION AND PROPAGANDA ECOSYSTEM 3 (Aug. 2020), https://www.slale.gov/wpcon1ent/uploads/2020/08/Pil1ars-of-Russia%E2%80%99s-Disinforma1ion-andPropaganda-Ecosys1em_08-04-20.pdf; TODD C. HELMUS ET AL.., RUSSIAN SOCIAL. MEDIA INFLUENCE: UNDERSTANDING RUSSIAN PROPAGANDA IN EASTERN EUROPE x (RAND Corp. 2018), https://www.rand.org/content/dam/rand/pubs/research_reports/RR2200/RR2237/RAND_RR2237.pdf.

[356] *See* Matthias C. Kettemann, *Law and Governance of the Internet, The Normative Order of the Internet: A Theory of Rule and Regulation Online*, OXFORD ACADEMIC (Feb.18 2021), https://doi.org/10.1093/oso/9780198865995.003.0003 ("International law plays an important role… as a foundational body of rules within the normative order of the internet. The military–academic history of the internet and the private sector-led development of key architectural elements (through government-financed projects and on government grants) have contributed to a state of disorganized normativity.").

[357] Manhattan Community Access Corp. v. Halleck, __ U.S. __, 139 S. Ct. 1921 (2019) ("The Free Speech Clause of the First Amendment constrains governmental actors and protects private actors. To draw the line between governmental and private, this Court applies what is known as the state-action doctrine.").

[358] *See* Valerie C. Brannon and Eric N. Holmes, *Section 230: An Overview*, R46751 CONG. RESEARCH SCVS (April 7, 2021), https://crsreports.congress.gov/product/pdf/R/R46751.

messaging platforms are de facto regulators of online speech and therefore key decisionmakers in combating online influence operations. In recent years, major platforms have begun maintaining public "community standards"—written policies on a wide range of problematic activity like hate speech, violence, and influence operations."[359]

The range of variety among community standards strategies, inconsistent terminology, the tendency to update such policies frequently, and similar constraints make it difficult to easily summarize these policies. Nonetheless, there are broad commonalities. "Unsurprisingly, platforms seem to converge toward common approaches in areas where society as a whole has achieved greater agreement. For example, nearly every platform bans spam, and most platforms have explicit terrorism-related prohibitions. Other areas of relative consensus include contraband, copyright violations, violent threats, and impersonating specific individuals."[360] Another such area may be "hate speech," though the term is only loosely defined.[361] "'Hate speech' is a major of issues for social media, particularly as they strive to provide 'safe' environments for their users and are pressured by governments and the public to address 'hate' online."[362]

Beyond these generalizations, each platform has its own discrete set of rules regarding appropriate and inappropriate content. These often include prohibitions or filters for the use of profanity,[363] but some platforms tolerate or even court more controversial language.[364] Similar variations exist for sexist language[365] as well as for racist language.[366] To use such systems in work environments, the licensor of the trained system would likely be required to meet guidelines regarding the content of the training data, restrictions on the output of that data, and also to provide representations and warranties regarding the nature of that output.

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[359] Jon Bateman, Natalie Thompson, and Victoria Smith, *How Social Media Platforms' Community Standards Address Influence Operations*, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE (April 1, 2021), https://carnegieendowment.org/2021/04/01/how-social-media-platforms-community-standards-address-influence-operations-pub-84201.

[360] *Id*.

[361] *See* Chris Demaske and John R. Vile, *Hate Speech*, THE FIRST AMENDMENT ENCYCLOPEDIA (June 2017), https://www.mtsu.edu/first-amendment/article/967/hate-speech ("The term "hate speech" is generally agreed to mean abusive language specifically attacking a person or persons because of their race, color, religion, ethnic group, gender, or sexual orientation.").

[362] *Side-stepping rights: Regulating speech by contract*, ARTICLE 19 13 (2018) (policy briefing funded by the Government of Sweden), https://www.article19.org/wp-content/uploads/2018/06/Regulating-speech-by-contract-WEB-v2.pdf.

[363] *See e.g*., James Batchelor, *Microsoft introduces swear filters for Xbox*, GAMES INDUSTRY BIZ (Oct. 15, 2019), https://www.gamesindustry.biz/microsoft-introduces-swear-filters-for-xbox.

[364] *See* Shang Cheong, Phoey Lee Teh, and Chi-Bin Cheng, *How Different Genders Use Profanity on Twitter?*, RESEARCHGATE (April 2020), https://www.researchgate.net/publication/340999573_How_Different_Genders_Use_Profanity_on_Twitter.

[365] *See* Stanley Elias, and Nubar Gurbanova, *Relocating Gender Stereotypes Online: Critical Analysis of Sexist Hate Speech in Selected Social Media*, SPRINGER NATURE (July 2018), https://www.atlantis-press.com/proceedings/klua-18/25900116.

[366] *See* Ariadna Matamoros-Fernández and Johan Farkas, *Racism, Hate Speech, and Social Media: A Systematic Review and Critique*, 22 TELEVISION & NEWS MEDIA 205 (2020), https://orcid.org/0000-0003-2149-3820.

Enterprises hoping to use such systems should bear in mind that most of the services in place in the first quarter of 2023 remain in "beta" stage, and few such products are actually available in the marketplace that meet these obligations.[367] Nonetheless, this has not seemed to slow business. "Business leaders already using ChatGPT told ResumeBuilder.com that their companies already use ChatGPT for a variety of reasons, including 66% for writing code, 58% for copywriting and content creation, 57% for customer support, and 52% for meeting summaries and other documents."[368] As more and more users test and stress ChatGPT, Stable Diffusion, and other systems, the lack of customization and controls could lead to violations of the contractual obligations that companies face.

Operators training generative AI systems can limit the offensive language for those tools that require sanitized professional language. This will be essential for workplace uses where there is a very low tolerance for language that could constitute a hostile work environment,[369] violate labor agreements, and breach agreements with vendors and service providers. For smaller businesses, the contractual obligations between the website operator and its service providers will itself incorporate by reference service legal agreements between the service provider and its host that could also include content and usage restrictions.[370]

For open systems, however, such language is a material part of literature and everyday interactions. A system trained on public domain books will include Mark Twain's controversial *Adventures of Huckleberry Finn*, and other literature that uses offensive language and discussions.[371] They will include the casual racism and sexism depicted in popular literature throughout most of the nineteenth and twentieth centuries.

Since the generative AI systems can be constrained both by limiting the input and by establishing the output parameters, generative AI systems can be improved to constrain unwanted content without necessarily scrubbing the training data. For creative expression intended for an adult audience, for example, profanity is likely a requirement to reflect a real-world ethos for the characters. One cannot think of modern American theatre without including David Mamet. But consider: "'Glengarry Glen Ross' won the Pulitzer Prize for drama in 1984, and in its 107 pages,

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[367] *See* Trey Williams, *Some companies are already replacing workers with ChatGPT, despite warnings it shouldn't be relied on for 'anything important'*, FORTUNE (Feb. 25, 2023), https://fortune.com/2023/02/25/companies-replacing-workers-chatgpt-ai/.

[368] *Id*.

[369] *See, e.g.*, *Harassment*, U.S. Equal Employment Opportunity Commission, https://www.eeoc.gov/harassment (last visited March 1, 2023) ("To be unlawful, the conduct must create a work environment that would be intimidating, hostile, or offensive to reasonable people. Offensive conduct may include, but is not limited to, offensive jokes, slurs, epithets or name calling, physical assaults or threats, intimidation, ridicule or mockery, insults or put-downs, offensive objects or pictures, and interference with work performance.").

[370] *See generally*, Dennis Thankachan, *Guide to Business Internet Service Level Agreements (SLAs)*, LIGHTYEAR, https://lightyear.ai/blogs/business-internet-sla (last visited March 1, 2023); Peter Svensson, *Fine print on ISP contract leave few rights for subscribers*, ABC NEWS, https://abcnews.go.com/Technology/story?id=4596193&page=1 (last visited March 1, 2023).

[371] *See generally*, JAMES S. LEONARD, THOMAS TENNEY, THADIOUS M. DAVIS, SATIRE OR EVASION?: BLACK PERSPECTIVES ON HUCKLEBERRY FIN (DUKE UNIVERSITY PRESS 1992) (including essays from prominent African American Scholars on the implications of the racist depictions in the novel with various discussions, including essays addressing whether such depictions effectively attacked such racism or perpetuated racist language through the later teaching of the novel.).

the play contains 219 words that cannot be printed in [a] newspaper. OK, so 145 of them are variations on one word. And it starts with 'f.'"[372] Story-telling AI's should not be presumptively G-rated, but it will be the contractual parameters on which these services operate that will determine the appropriate level of adult content. Neither the internet nor its generative content providers will be regulated by the government for content.[373]

c. Defamation by Algorithm

A large body of journalism literature has explored the potential implications of the field being augmented—or even overrun by automation.[374] The concern is not merely hypothetical. "In journalism today, algorithms are responsible for producing tens of thousands of stories that fill online news sites, even from leading news organizations such as the Associated Press."[375] In early 2023, "internet sleuths discovered… that CNET had quietly published dozens of feature articles generated entirely by artificial intelligence, the popular tech site acknowledged that it was true—but described the move as a mere experiment."[376] Shortly after the first admission, there was a second. "[I]t turns out the bots are no better at journalism — and perhaps a bit worse — than their would-be human masters. … CNET began appending lengthy correction notices to some of its AI-generated articles after. Futurism, another tech site, called out the stories for containing some "very dumb errors.""[377] Potentially more troubling, "CNET also identified several other stories with "minor issues such as incomplete company names, transposed numbers, or language that our senior editors viewed as vague.""[378]

Had the errors resulted in actual harm, then as publisher of this content, CNET could be liable for the errors, the only question being at what level.[379] For example, in Europe, the trend is to treat faulty AI as subject to strict products liability standards.[380] "The current revision of the Product Liability Directive 85/374/EEC includes AI, software, and even digital services in the IoT space in the scope of "products" that fall under strict product liability."[381]

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[372] John Moore, *Does Mamet eat with that (expletive) mouth?*, THE DENVER POST (Oct. 9, 2008), https://www.denverpost.com/2008/10/09/does-mamet-eat-with-that-expletive-mouth/.

[373] *See* Ashcroft v. ACLU, 542 U.S. 656 (2004); Reno v. ACLU, 521 U.S. 844 (1997).

[374] *See* Seth C. Lewis, Amy Kristin Sanders, and Casey Carmody, *Libel by Algorithm? Automated Journalism and the Threat of Legal Liability*, 2018 JOURNALISM & MASS COMM. Q. 1 (2018), https://journals.sagepub.com/doi/pdf/10.1177/1077699018755983 (reviewing the scholarship).

[375] *Id*. at 3.

[376] Paul Farhi, *A news site used AI to write articles. It was a journalistic disaster*, WASH. POST (Jan. 17, 2023), https://www.washingtonpost.com/media/2023/01/17/cnet-ai-articles-journalism-corrections/.

[377] *Id*.

[378] Catherine Thorbecke, *Plagued with errors: A news outlet's decision to write stories with AI backfires*, CNN (Jan. 26, 2023), https://www.cnn.com/2023/01/25/tech/cnet-ai-tool-news-stories/index.html.

[379] *See* Lewis, Sanders, and Darmody, *supra* note __ at 5.

[380] *See* Directive 85/374/EEC (1985), 1999/34/EC (amended 1999) (liability for defective products); Kristina Ehle and Stephan Kreß, *AI Trends For 2023 - Increasing Product Liability For AI And Software In The EU*, Morrison & Foerster (Dec. 12, 2022), https://www.jdsupra.com/legalnews/ai-trends-for-2023-increasing-product-1515288/.

[381] Kristina Ehle and Stephan Kreß, *supra* note __.

In contrast, within the United States, there is little doubt that the communicative content produced by generative AI, such as synthetic journalism, will be subject to traditional First Amendment protections.[382] Certainly, the Supreme Court has never suggested that computer generated content in videogames or in commercial speech is somehow in a different category of speech than other methods of generating content for purposes of First Amendment protection.[383]

First, of course, the plaintiff in such an action would also need to meet all the common law requirements for liability.

> To create liability for defamation there must be:
>
> (a) a false and defamatory statement concerning another;
>
> (b) an unprivileged publication to a third party;
>
> (c) fault amounting at least to negligence on the part of the publisher; and
>
> (d) either actionability of the statement irrespective of special harm or the existence of special harm caused by the publication.[384]

The laws will vary in each state, but they largely adhere to the Restatement formulation. Restatement §558(c) provides a correct but highly underinclusive explanation of the level of culpability required for tort liability. The Supreme Court First Amendment jurisprudence merely establishes the legal standards by which the content will be adjudicated. As a result, the synthetic speech will likely be considered like other journalism and newsworthy publications in the context of *New York Times Co. v. Sullivan*.[385]

Under the *New York Times* standard, a publisher will not be liable for the libels it publishes provided the publication was not made with "actual malice," meaning "knowledge that it was false or with reckless disregard of whether it was false or not."[386] The reckless disregard standard sets a very high bar before there can be culpability. "To have acted with constitutional or actual malice, the defendant must be shown to have had "a high degree of awareness of [the statement's] probable

[382] *See generally*, Eugene Volokh & Donald M. Falk, *Google: First Amendment Protection for Search Engine Search Results*, 8 J. of LAW, ECONOMICS & POLICY 883 (2012): Tim Wu, *Machine Speech*, 161 U. PA. L. REV. 1495 (2013); Seema Ghatnekar, *Injury by Algorithm: A Look Into Google's Liability For Defamatory Autocompleted Search Suggestions*, 33 LOY. L.A. ENT. L. REV. 171 (2013); Lin Weeks, *Media Law and Copyright Implications of Automated Journalism*, 4 J.IP. & ENT. L. 67 (2014).

[383] *See* Brown v. Entm't Merchants Ass'n, 564 U.S. 786 (2011) (videogame content protected by the First Amendment; Sorrell v. IMS Health Inc., 564 US 552 (2011) (pharmaceutical data protected by First Amendment); Austin, Texas v. Reagan Nat'l Advert. of Austin, LLC, 596 U.S. ___ (2022), 2022 WL 1177494 (U.S. Apr. 22, 2022) (treating digital signs as speech).

[384] Restatement (Second) of Torts § 558 (1977).

[385] New York Times Co. v. Sullivan, 376 U.S. 254 (1964).

[386] *Id*. at 280.

falsity," or to have "in fact entertained serious doubts as to the truth of his publication."[387] The standard is not nearly so protective for private individuals.[388]

Nonetheless, at the moment, synthetic journalism may not be out of the woods. First, as noted elsewhere, most of the generative AI tools have not been commercially released, certainly not for widespread production of factually correct journalistic content.[389] Where they have been used, it has often been in much more restrictive environments. "At the moment, these news articles are restricted mostly to topics that have well-structured datasets associated with them, such as sports results and quarterly financial earnings reports—data that can be fed into an algorithm and transformed into a narrative."[390]

While generative AI tools remain in beta, publishing articles that are not fact-checked by humans would certainly be negligent and could potentially meet the reckless disregard standard. The twin failures of publishing using a tool that was not deemed sufficiently accurate by its publishers to make that tool commercially available and failing to restrict the content to that information that had been independently verified could certainly be found to meet the reckless disregard standard in a sufficiently egregious situation.

If an algorithmically generated news story falsely reported corporate earnings, for example, such a misstatement could have substantial and measurable harm on the company, particularly if it were fed by the same generative AI service across multiple platforms. If instead, the mistake involved corporate officials who were not public figures, then the legal standard would be whether the mistake was negligent, and when published about that individual to third parties resulted in harm. Given the present state of journalistic standards, the expectation likely remains that all content is fact-checked by humans such that the failure to do so is per se negligent. This will change over time as the accuracy of the synthetic journalism improves, but since negligence is compared to the probable risks of harm,[391] this standard will likely move more slowly.

Even once generative AI publications become mainstream, there remains a requirement for traditional fact-checking and reasonable care.[392] "Investigative journalism goes hand in hand in fact checking, especially when facts that can be key to public interest are often buried …."[393] Assertions of factual information should be fact checked. "Category One includes the core facts

[387] Lerman v. Flynt Distribg. Co., Inc., 745 F.2d 123, 139 (2d Cir. 1984) (*quoting* Garrison v. Louisiana, 379 U.S. 64, 74 (1964) and St. Amant v. Thompson, 390 U.S. 727, 731 (1968)).

[388] *See* Gertz v. Robert Welch, Inc., 418 U.S. 323 (1974) (applying negligence action for a case involving a non-public figure).

[389] *See* Thorbecke, *supra* note __.

[390] Lewis, Sanders, and Darmody, *supra* note __ at 3.

[391] *See* United States v. Carroll Towing Co., 159 F.2d 169 (2d. Cir. 1947).

[392] *See* Laura Starita, *Best Practices for Fact-Checking AI-Generated Content*, CONTENTLY (Jan. 17, 2023), https://contently.com/2023/01/17/best-practices-for-fact-checking-ai-generated-content/. *See generally* Brooke Borel, *The Fact-Checking Process*, KSJ SCIENCE EDITING HANDBOOK, https://ksjhandbook.org/fact-checking-science-journalism-how-to-make-sure-your-stories-are-true/the-fact-checking-process/.

[393] *Fact Checking & Investigative Journalism Tools*, PUBLIC MEDIA ALLIANCE, https://www.publicmediaalliance.org/tools/fact-checking-investigative-journalism/ (last visited March 7, 2023).

central to the piece's argument. Content teams should fact-check all category one facts of every piece of content that runs through their process—this is a level one fact check."[394]

While it is true that fact-checking is time consuming and demanding, non-news services can develop a triage system regarding investment in its fact-checking procedures. At a minimum, whenever the error of fact could result in an adverse statement about a person—whether libelous or not—that fact needs careful fact checking. The same is true about any company or entity which particularly focuses on competitors in the industry.[395] As discussed in the next section, fact checking is also essential for factual advice published in warnings and instruction manuals or their online equivalents, where such information can reasonably be relied upon.

d. Dangerous and Unethical Advice

As noted in the previous section, Europe has indicated that it may treat generative AI as a product subject to strict scrutiny regulation, while interpretations of laws in the United States require that it is treated as receiving protection from the First Amendment,[396] but there may be an important caveat to the United States position. Broadly speaking, the First Amendment jurisprudence treats the speech as protected by the First Amendment to the extent that it is communicative in nature,[397] even if it is proposing a commercial transaction.[398] In addition, the law begins with a generally protective stance in regard to publishers. "So long as the publisher has neither authored nor guaranteed the accuracy of the publication, injuries sustained by plaintiff acting in reliance on information contained in the publication have not been redressable under a negligence theory."[399]

To the extent that the generative AI content constitutes a publication such as a magazine or book, it will likely be treated as a communicative work and given First Amendment protections. The same is true whether the work is generally communicative or can be construed as commercial speech because it involves the promotion of a commercial transaction.[400] "Commercial expression not only serves the economic interest of the speaker, but also assists consumers and furthers the

[394] Starita, *supra* note __.

[395] *See e.g.*, Polygram Records, Inc. v. Superior Court, 170 Cal.App.3d 543, 548 (1985). A materially harmful false statement regarding a business entity is known as trade libel but is otherwise substantially similar to common law libel. Causation for financial harm may be an additional element for trade libel whereas general damages may be available to an individual.

[396] *See* Directive 85/374/EEC (1985), *supra*, note __ and accompanying text.

[397] Pooley v. Nat'l Hole-In-One Ass'n, 89 F. Supp. 2d 1108, 1113 (D. Ariz. 2000) (distinguishing between "communicative" speech, which "wins over the right of publicity" and "is entitled to the highest level of First Amendment protection," and "commercial" speech, against which "the right of publicity generally wins"). *See also* Robert C. Post & Jennifer E. Rothman, *The First Amendment and the Right(s) of Publicity*, 130 YALE L.J. 1 (2020).

[398] *See* Central Hudson Gas and Electric Corp. v. Public Service Commission, 447 U.S. 557 (1980).

[399] Terri R. Day, *Publications That Incite, Solicit, or Instruct: Publisher Responsibility or Caveat Emptor?*, 36 SANTA CLARA L. REV. 73. 92 (1995). *See also* Birmingham v. Fodor's Travel Publications, Inc., 833 P.2d 70, 75 (Haw. 1992) (no liability for Fodor's travel book when honeymooning travel was injured following some of the tourist suggestions); Winter v. G.P. Putnam's Sons, 938 F.2d 1033 (9th Cir. 1991) (no liability for misdescriptions in THE ENCYCLOPEDIA OF MUSHROOMS).

[400] *See* Central Hudson, 447 U.S. at 562.

societal interest in the fullest possible dissemination of information."[401] As such, even if there is no speaker interest because the speaker is an automated system that cannot present its own speech interest, the listeners and the publishers have their independent speech interests that need to be protected by the First Amendment.

Where the work is not communicative and is commercial, however, the courts may be willing to entertain the approach suggested by Europe. Specifically, in the context of instructional materials and how-to advice that proves dangerously wrong, the lack of any protection for the speaker combined with a need to protect the consumer of the information may result in a much greater willingness for courts to find that errors are subject to liability either for strict products liability or for negligent publication.

The arguments regarding such claims are not new and generally speaking, courts have been reluctant to extend Uniform Commercial Code Article 2 warranties to publisher liability.[402] But this is not the case for manufacturers who are under a duty to disclose warning information and provide adequate instructions.[403]

> A product is defective when, at the time of sale or distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings. A product:
>
> …
>
> (c) is defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller or other distributor, or a predecessor in the commercial chain of distribution, and the omission of the instructions or warnings renders the product not reasonably safe.[404]

The comments to the Restatement distinguish instructions from warnings. "Instructions inform persons how to use and consume products safely. Warnings alert users and consumers to the existence and nature of product risks so that they can prevent harm either by appropriate conduct during use or consumption or by choosing not to use or consume."[405] The duty to warn and the duty to provide adequate instructions do not rest solely with a manufacturer. "In most instances the instructions and warnings will originate with the manufacturer, but sellers down the chain of distribution must warn when doing so is feasible and reasonably necessary."[406]

Comment O to the Restatement also clarifies the obligation:

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[401] *Id*.

[402] *See* Cardozo v. True, 342 So. 2d 1053, 1056 (Fla. 2d Dist. App. 1977) (denying liability under § 2-316 (Section 672.314, Florida Statutes) for merchantable goods). *See also* Yuhas v. Mudge, 129 N.J.Super. 207, 322 A.2d 824 (1974) (Popular Mechanics Corp. could not be held liable for an advertisement in the magazine for fireworks that were later found to be defective.)

[403] *See* Restatement (Third) of Torts: Products Liability § 2 (1998). *See also* Daniels v. Prevost Car U.S., Inc., Civil Case No. 13-13774, 8 (E.D. Mich. Feb. 4, 2015).

[404] Restatement (Third) of Torts: Prod. Liab. § 2 (1998).

[405] *Id*. at comment I.

[406] *Id*.

> [O]nce it is determined that a reasonable alternative design or reasonable instructions or warnings could have been provided at or before the time of sale by a predecessor in the chain of distribution and would have reduced plaintiff's harm, it is no defense that a nonmanufacturing seller of such a product exercised due care.[407]

In the context of generative AI, the standard concerns about products liability for design defects (which are generally to the use of AI tools in all design processes) may include the additional risks associated with those situations in which the AI tools are not merely providing the previously vetted and published instructions provided by the manufacturer but are instead being supplemented or replaced with content generated by the AI system. Consumers have often complained about the obtuseness with which many instruction manuals are written. It is natural to ask for instructional guidance in the construction of furniture, do-it-yourself projects, or other activities. But given the direct liability that attaches to warnings and instruction manuals, if a generative AI replaces the manufacturer's content with inadequate content of its own, the First Amendment is unlikely to provide a meaningful bar to liability.

In addition, although the courts have generally found that the publisher has no duty to confirm the accuracy of the author's work, that is not necessarily true for the author.[408] "Author liability for errors in the content of books, designs, or drawings is not firmly defined and will depend on the nature of the publication, on the intended audience, on causation in fact, and on the foreseeability of damage."[409] Where an author negligently provides dangerous advice, courts are more likely to be willing to apply traditional tort liability. Taking the obligations to provide adequate instructions and the obligation for authors to publish non-negligent content where that content could lead to physical harm by the author's readers, it is not unreasonable to expect that there is a duty of care for the use of generative AI when giving how-to advice that could result in personal injury.

Some courts may find that there is no "author" available for such a cause of action, but it is more likely that the provider of the generative AI, or perhaps the person who initiated the answer and then promulgated those answers to the public, could be the person responsible. Since courts generally do not extend author liability to publishers, however, this is an area that will take time for courts or legislatures to develop legal standards.

e. Success

Although this article is focused on practical considerations of generative AI, there remains an elephant in the room when exploring the potential of robots and systems that can paint pictures, tell stories, make movies, create video games, compose music, and teach our children. Earlier sections identified legal considerations that these systems might fail. They might violate preexisting legal rights of third parties. And they might exacerbate preexisting cultural and normative faults that already exist in society.

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[407] *Id*. at comment O.

[408] *See, e.g.*, Alm v. Van Nostrand Reinhold Co., Inc., 480 NE 2d 1263 (1985) (dismissing the case against the publisher for claims arising from injuries that occurred as a result of following advice in a book, but allowing the case to proceed against the author).

[409] Jones v. JB Lippincott Co., 694 F. Supp. 1216 (D. Maryland 1988).

Just perhaps, however, the greater threat is not this list of potential failures but rather the threat of success. Not from the singularity in which these machines become self-aware and determine that humanity has become an unnecessary drain on a fragile world, but from a success that reduces the need, opportunity, and conflict essential for art and culture to thrive.[410] The information economy has already upended the creative economy. In an ad-driven social media environment, Amazon circumvents publishers, TikTok renders touring clubs superfluous, and YouTube has brought broadcast networks to their knees. In today's economy it is "easier than ever to share your creativity with the world, and harder than ever to make a living doing so."[411]

William Deresiewicz captures the present-day irony. "[A]ll the tools are at your fingertips. And if Production is cheap, distribution is free. It's called the Internet. Everyone's an artist; just tap your creativity and put it out there."[412] This is the illusion. The reality is that good art in every genre is hard work, combined with a smattering of dumb luck. "Making art takes years of dedication, and that requires a means of support. If things don't change, a lot of art will cease to be sustainable."[413] Wherever AI generated content replaces paying content, more creators will lose their wings.[414] Since the situation is already precarious for professional artists, it won't take tremendous AI success to knock the bottom out of the creative industries.

The same consequence goes for investigative journalism. AI generated newspaper stories filled with box scores and corporate earnings reports are already eliminating jobs.[415] In 2019, journalists were hopeful that the technology would not catch up to the writers. "Previous technological advances have rendered moot a number of jobs that were once essential to the journalism industry, such as Linotype operator. But reporters and editors have not yet been tempted to smash the programs now taking care of some of the busy work that once fell to them."[416] The adopters of ChatGPT see a very different future in the office, if not in the newsroom.[417]

What truly cannot be replicated by AI is the investigation that occurs before a news story breaks. Interviews cannot be spontaneously conducted, clandestine meetings cannot be arranged, nor hard questions be asked by AI systems reliant on what is already present in their training data sets. Although the support tasks can be automated, the probing questions and relentless pursuit of those answers will only occur if there remain trained professional journalists to do the work. The

[410] *See*, Lauren Bruce, *Why WALL-E is Maybe the Most Politically Radical Pixar Movie*, MOVIEWEB (Dec. 9, 2022), https://movieweb.com/wall-e-pixar-movie/.

[411] By Hua Hsu, How Can we Pay for Creativity in the Digital age, New Yorker (Sept. 7, 2020) (*citing* WILLIAM DERESIEWICZ, THE DEATH OF THE ARTIST: HOW CREATORS ARE STRUGGLING TO SURVIVE IN THE AGE OF BILLIONAIRES AND BIG TECH 7-8 (Holt 2020)).

[412] Deresiewicz, *supra* note __ at 7.

[413] *Id*. *See also* Jon M. Garon, *Playing in the Virtual Arena: Avatars, Publicity and Identity Reconceptualized through Virtual Worlds and Computer Games*, 11 CHAP. L. REV. 465 (2008).

[414] *Cf*, It's A Wonderful Life (directed by Frank Capra, 1946) ("Look daddy, teacher says, every time a bell rings an angel gets his wings," spoken by Zuzu Bailey, played by Karolyn Grimes).

[415] *See* Jaclyn Peiser, *A.I. Reporters Arrive, The Other Kind Hangs In.*, N.Y. TIMES (Feb. 5, 2019) at B1, https://www.nytimes.com/2019/02/05/business/media/artificial-intelligence-journalism-robots.html.

[416] *Id*.

[417] *See* Bakshi, *supra* note __.

same is true of the practice of law where much of the lawyering is client counselling, fact investigation, risk assessment, and good judgment.[418]

This is not merely a concern that like the legend of John Henry,[419] new technology will drive out the old. The meaning of computer, after all, was a job title before it was a device.[420] Concord, NH was once a manufacturing hub known for the Concorde Buggy.[421] "Cars and horses shared the road, not always happily, for decades. … But the automobilizing of America was inevitable, especially because it soon became cheaper to keep a car. In 1900, only 4,192 cars were sold in the U.S.; by 1912, it was 356,000."[422] Unlike most technological revolution in which lower wage workers were displaced with knowledge work and the demand for new skills, the potential of generative AI is to come for the knowledge workers themselves, inverting the very nature of progress since the industrial revolution.

The predictions are for the future, but the future is essentially upon us. "ChatGPT appears ready to upend the staid book industry…, demonstrating how to make a book in just a few hours. Subjects include get-rich-quick schemes, dieting advice, software coding tips and recipes."[423]

Mary Rasenberger, executive director of the Author's Guild, has begun to raise the alarm about the emerging trend. "There's no question that the rise of AI technology capable of "writing" poses risks to the future of writing as a profession, as it does for many other professions. … We are confronting serious policy issues about the future of creativity: Do we want humans or AI creating our literature and other arts?"[424] Separately, Rasenberger added, "'[t]his is something we really

[418] *See* Robert S. Redmount, *An Inquiry Into Legal Counseling* 104 J. LEGAL PROF. 181 (2008) ("Legal counseling does not occur in a vacuum. It operates in a context and it is not just legal. … The lawyer, in one sense, is an instrument for the translation and utilization of law, and of appropriate response to it, by citizens otherwise engaged in the pursuit of their private affairs."); Mark Roellig & David M. Love III, *So You Want to be a General Counsel?*, ACC DOCKET (Jan./Feb. 2012), https://www.spencerstuart.com/research-and-insight/so-you-want-to-be-a-general-counsel-how-to-maximize-your-chances ("By The most important attribute sought in or expected of a strong general counsel candidate is good and tested judgment. This quality involves the sophistication to properly evaluate and weigh multiple inputs and impacts of any particular decision or course of action."). For an interesting experiment involving ChatGPT's own take on the legal profession, see Andrew Perlman, *The Implications of ChatGPT for Legal Services and Society* (December 5, 2022). Available at SSRN: https://ssrn.com/abstract=4294197 or http://dx.doi.org/10.2139/ssrn.4294197.

[419] Sources differ as to the source and location from which the myth and ballad were born. *See, e.g.*, *The Legend of John Henry: Talcott, WV*, NATIONAL PARK SERVICE, https://www.nps.gov/neri/planyourvisit/the-legend-of-john-henry-talcott-wv.htm (last visited March 10, 2023) ("*The Ballad of John Henry* … tells of a boy born with a "hammer in his hand." … It tells us that this man took a hammer in each hand to face down a steam-powered drilling machine. John Henry promised, "*If I can't beat this steam drill down, I'll die with this hammer in my hand!*"").

[420] *See Computer (occupation)*, WIKIPEDIA, https://en.wikipedia.org/wiki/Computer_(occupation) (last visited March 9, 2023).

[421] *See* John Thuline, *The Horse And Buggy: A Brief (But Fascinating) History*, CHARLESTON CARRIAGE WORKS (June 12, 2017), https://mycharlestoncarriage.com/blog/the-horse-and-buggy-a-brief-but-fascinating-history/.

[422] Jim Motavalli, *When Will Electric Cars Really Take Off? Maybe We Should Ask a Horse*, TREEHUGGER (Feb. 10, 2021), https://www.treehugger.com/horses-horsepower-rocky-transition-4867999.

[423] *These authors are using ChatGPT to write books and sell them on Amazon*, *supra* note __.

[424] By Mary Rasenberger, *How Will Authorship Be Defined in an AI Future?*, AUTHORSGUILD (Oct. 4, 2022), https://authorsguild.org/resource/how-will-authorship-be-defined-in-an-ai-future/.

need to be worried about, these books will flood the market and a lot of authors are going to be out of work.'"[425]

The expansion of AI may be inevitable, but the replacement of artists, journalists, or perhaps lawyers and educators is neither intended nor desired. Unfortunately, the increase in efficiency and reduction of price might have that unintended consequence. Since becoming an expert requires training while a novice,[426] the elimination of the novices will eventually mean that society runs out of experts. The artists will go first, followed by the journalists. And perhaps even the teachers and lawyers will eventually disappear as well, as each industry becomes more efficient and subject to automation. The true existential threat of generative AI is not that the robots will try to take control from the humans but simply that the humans will cede control in all the ways that matter.

7. How to Develop Partnerships for Safe AI Practices

As noted throughout this article, there are many requirements for enterprises to protect themselves and the public from inappropriate and unintended consequences of generative AI while still taking advantage of the efficiency and creativity that generative AI can provide. Many of these suggestions will likely read as common sense. This is not surprising. Generative AI is still just another tool and new content strategy that should benefit from the traditional content management strategies that have been in place since the introduction of the phonograph.

These suggestions reflect the approach that a commercial enterprise should consider when engaging in transactions to utilize generative AI. Although the U.S. Chamber of Commerce has called for federal regulation, the shape of such legislation is beyond the recommendations of this article.[427] The focus here remains the pragmatic but essential steps that an enterprise should undertake when incorporating the opportunities and risks of generative AI to its core functions.

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[425] *These authors are using ChatGPT to write books and sell them on Amazon*, *supra* note __.

[426] *See* Adam M. Persky & Jennifer D. Robinson, *Moving from Novice to Expertise and Its Implications for Instruction*, 81 AM. J. PHARM EDUC. 72 (Nov. 2017), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5738945/ ("We develop expertise through years of experience …. The development of expertise occurs over several stages.8 As a rule, a learner cannot directly move from novice to expert; he or she must progress through each stage and may demonstrate characteristics of two stages simultaneously.").

[427] *See*, CHAMBER REPORT, *supra* note __ at 11.

> [T]he Commission also determined that the following five pillars should be at the core of AI regulatory policy making:
>
> [1] **Efficiency**. Policymakers must evaluate the applicability of existing laws and regulations. … Moreover, lawmakers should focus on filling gaps in existing regulations to accommodate new challenges created by AI usage.
>
> [2] **Neutrality**. Laws should be technology neutral and focus on applications and outcomes of AI, not the technologies themselves. … AI regulation allows for the development of flexible, industry-specific guidance and best practices.
>
> [3] **Proportionality**. When policymakers determine that existing laws have gaps, they should attempt to adopt a risk-based approach to AI regulation.
>
> [4] **Collegiality**. Federal interagency collaboration is vital to developing cohesive regulation of AI across the government.

At the outset, it is rather axiomatic that enterprises should not deploy as commercial products those generative AI tools that are not yet ready to be deployed by their vendors.[428] Brand reputations are fragile, particularly in the age of social media. Launching a service that risks large reputational harm because a company wants to be first is often a bad strategy. When combined with the potential for legal liability as a result of rushing to the market, that strategy should be avoided.

Closely related to the first point is the consideration that enterprises should receive commitments backed by binding contracts regarding any critical assurances regarding the policies regarding the training data, data retention policies, and output restrictions, as well as the terms of service, usage policies, and limitations on warranties and liability.

Consider, for example, that in March 2023, OpenAI made some significant improvements to its policies. These include:

- Data submitted through the API is no longer used for model training or other service improvements, unless you explicitly opt in
- Implementing a default 30-day data retention policy for API users, with options for shorter retention windows depending on user needs
- Removing our pre-launch review – unlocked by improving our automated monitoring
- Simplifying our Terms of Service and Usage Policies, including terms around data ownership: users own the input and output of the models[429]

While each of these policies reduces the risk for users, the changes also highlight that these terms are not contractually binding when they are merely posted policies subject to the ongoing changes in development by the vendor. These policies need to be incorporated into non-amendable contract provisions so that the enterprise can meet its compliance and contractual obligations regarding its own data and the use to which the enterprise puts the generative AI output.

Moreover, enterprises must remember that generative AI is a field rather than a product. Stability AI has a different business model and different contractual offerings than that of OpenAI, and these are just two of an increasingly competitive field of vendors. Each provider will have its own terms and conditions. While there may be a good deal of standardization in some aspects of the AI field, the only enforceable policies are those with contractual commitments.

When contracting with a generative AI partner, the enterprise should understand that the business model underlying generative AI is a data-sharing model. As a result, any privacy and data

> [5] **Flexibility**. Laws and regulations should encourage private sector approaches to risk assessment and innovation. Policymakers should encourage soft law and best practice approaches developed collaboratively by the private sector, technical experts, civil society, and the government. …

[428] *See*, *e.g.*, Lucas Mearian, *How enterprises can use ChatGPT and GPT-3*, COMPUTERWORLD (Feb. 14, 2023), https://www.computerworld.com/article/3687614/how-enterprises-can-use-chatgpt-and-gpt-3.html. ("ChatGPT is also not connected to the internet, and it can occasionally produce incorrect answers. It has limited knowledge of world events after 2021 and may also occasionally produce harmful instructions or biased content, according to an OpenAI FAQ.").

[429] *API Updates: ChatGPT, Whisper, and Developer Policies*, OPENAI <noreply@email.openai.com> (received March 6, 2023) (on file with author). *See* https://platform.openai.com/docs/data-usage-policies.

security requirements must be specified in written agreements in provisions that survive the termination of those contracts. The OpenAI platform decision to exclude customer data from the training model (except in those situations where the customer has opted into the sharing of that information) significantly mitigates the risks associated with unintended publication of personal information. Provided such a policy is incorporated into a contractual duty and the duty survives as long as customer data resides with the AI platform, then the business will have likely met its obligations regarding the protection of the content. Of course, there are heightened obligations regarding certain industries such as in health care and finance, so each sector must be assessed based on that sector's specific requirements.

Since the business model is a data sharing model, it is equally important that the sharing goes both ways. As discussed above, the transparency promised in XAI[430] should be the prerequisite for most large-scale commercial uses of generative AI.[431] If the vendor cannot explain how the generative AI has been trained and constrained in its responses, that system should simply not be used commercially.

There is an even greater need for XAI when it comes to sensitive fields of use. As noted above, there have already been numerous examples of AI showing bias in facial recognition, which can exacerbate bias in policing and law enforcement,[432] access to financial services,[433] and which can negatively impact housing and employment, job search,[434] and similar fields. To the extent that the generative AI conclusions or selections will affect a fundamental right, then the vendor using that service has a heightened duty to control for bias and get the system right. This duty stems from both the panoply of civil rights laws and the public sentiment that valued brands need to operate honorably.

Moving from the general duties to the narrower duties, enterprises employing generative AI need to remain vigilant for the errors in the data. As noted in the discussions on defamation and dangerous activities, authors of content owe a duty of care in their publications and enterprises generating content using generative AI should therefore have operational fact-checking systems in place to meet these obligations.[435] NPR offers a simple strategy that corporate authors should find useful:

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[430] *See* Cannings, *How to Tackle AI Bias*, *supra* note __ and accompany text (discussing explainable AI).

[431] *See* Bathaee, *supra* note __ at 928; Rudin, *supra* note __.

[432] *See* Michael Gentzel, *Biased Face Recognition Technology Used by Government: A Problem for Liberal Democracy*, 34 PHILOS TECHNOL. 1639 (2021), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8475322/ "[F]ace recognition technology… programs used by law enforcement in identifying crime suspects are substantially more error-prone on facial images depicting darker skin tones and females as compared to facial images depicting Caucasian males.").

[433] *See* Sonja Kelly and Mehrdad Mirpourian, *Algorithmic Bias, Financial Inclusion, and Gender*, WOMEN'S WORLD BANKING (February 2021), https://www.womensworldbanking.org/wp-content/uploads/2021/02/2021_Algorithmic_Bias_Report.pdf; Sisson, *supra* note __.

[434] *See* Bertrand & Mullainathan, *supra* note __; Reeves, *supra* note __.

[435] *See* Starita, *supra* note __. *See* Borel, *supra* note __. *See also* Holly J. Morris and Jerome Socolovsky, *Triage your fact-checking: a method (and board game)*, NPR TRAINING/SOURCES (Feb. 19, 2020) ("Fact-checking triage doesn't mean not checking certain facts. It's a framework for making quick decisions about what to confirm, cut and/or attribute.").

- **Non-controversial, easy to verify:** The spelling of someone's name, for instance. Check it against a primary source. Check it again. Check it one more time for good measure.
- **Controversial, easy to verify:** This is the same as above. Gun statistic from a new study? Check it against a primary source. Check it again. Check it one more time for good measure. (That is, assuming you've done your due diligence and it's a robust study, a reliable source, and so on.) And attribute it.
- **Non-controversial, hard to verify:** Here falls stuff like "Holly got straight smiley-faces in kindergarten." If you're writing a general profile of Holly, decades later, go with "Holly said she got straight smiley-faces in kindergarten." If the story is about Holly's pattern of fibbing about academic performance, or grade inflation in kindergarten, then ask to see the report card, contact the elementary school, etc.
- **Controversial, hard to verify:** If Barry tells you his niece is an off-the-grid civet farmer in Maine, decide if this information is worth plunging into the Maine wilderness to prove, or whether you should just cut it. As above, it depends on what your story is about….
- **Who disagrees, and how much?** The controversy metric is relative. "Naked mole rats are violent in the wild" is both controversial (to a naked mole rat researcher) and exceedingly difficult to prove (as naked mole rats live underground).
- **How unimpeachable is your primary source?** Example: The Smithsonian tells you such-and-such Basque word means "ceiling fan." Do you trust the nation's preeminent museum system, or do you call a Basque speaker?[436]

All facts should be checked and double-checked. If the generative AI provides the citations for its information, then that will help the process. At present, however, the state of the art is a far cry from providing plausible citations for its output.

> Meta … launched a science-specific text generator called Galactica. It was withdrawn three days later. Among the howlers it produced was a fictitious history of bears travelling in space.
>
> Professor Michael Black of the Max Planck Institute for Intelligent Systems in Tübingen tweeted at the time that he was "troubled" by Galactica's answers to multiple inquiries about his own research field, including attributing bogus papers to real researchers. "In all cases, [Galactica] was wrong or biased but sounded right and authoritative. I think it's dangerous."
>
> The peril comes from plausible text slipping into real scientific submissions, peppering the literature with fake citations and forever distorting the canon.[437]

Until generative AI vendors train their systems to quote and cite in the manner of a journalist or researcher, there is an extra obligation on users of the systems to start from a position of distrust when it comes to specific pieces of factual content. This is not an aspersion on the tool, it is merely a reflection that the systems are not designed to incorporate a valuation as to the quality and

[436] *Id*.

[437] Anjana Ahuja, *Generative AI is sowing the seeds of doubt in serious science*, FINANCIAL TIMES (March 1, 2023), https://www.ft.com/content/e34c24f6-1159-4b88-8d92-a4bda685a73c.

primacy of the content being used in the search process. Undoubtedly, future iterations of generative AI will be able to distinguish primary sources from trusted secondary sources and distinguish those from casual posts or sources of suspect content. Systems incorporating generative AI and computational language models will even be able to discern between scientific data that has been replicated and validated from that which is not untrustworthy but has yet to be satisfactorily replicated. But that day is in the future. When it comes, those operational parameters should be incorporated into performance guarantees by the vendor. When an enterprise can contract for such services, and only then, can it let the AI do its own due diligence.

Similar due diligence is necessary in the areas of intellectual property discussed earlier. Enterprises obtaining generative AI to create new content must remain diligent so that the current generative AI may have been trained on proprietary content such that its generation could run afoul of third-party rights. This is more likely the case with images and audiovisual works, and the defense of fair use is less likely to be successful in those fields.

Nothing in the generative AI process accounts for the duties a user of generative AI content has regarding trademarks. As illustrated by the Heinz experiment,[438] there are many famous trademarks that will appear in fiction, literature, and pop culture. Nonetheless, when those marks are redeployed for commercial purposes, the trademark rights remain enforceable by the rightsholder and the fact that the intermediary source was the generative AI does not change that basic trademark infringement action.

The same concern regarding trademarks applies equally to the commercial exploitation of real person's names, images, or likeness. As noted earlier, biographical stories about individuals, images, graphics, and other forms of content that can be produced for communicative works cannot be exploited for commercial purposes without the person's consent.[439] Some systems avoid human likenesses, but that does not address the problems of avatars and it applies only those systems that rely on facial distortion as a strategy. Ultimately, the obligation will be on the users of the AI systems to screen content very carefully before using names, images, or likenesses—even virtual likenesses—in commercial settings. As a result, vendors may still find it preferential to hire models and obtain releases rather than struggle to determine if rights have been violated.

8. Conclusion

Generative AI has captured the imagination of the public, motivated significant investments of capital, moved securities markets, and lit a fire within industry. And it does not yet even work. As the irrational exuberance of the pre-release ChatGPT bubble deflates, it will likely be replaced with a much more serious and systematic revision to the global economy and every sector that relies on text, data, imagery, or design for its economic wellbeing. This is not an overstatement.

The promises seem magical: The power to automate routine tasks; the ability to create AI-driven but authentic-feeling interactions in marketing and customer service; the power to obtain free art, music, and narrative that can be incorporated into commercial displays; the ability to improve software while reducing its price and speeding its production; the ability to explore new

[438] *See* Wiggers, *supra* note __.

[439] *See* Dogan and Lemley, *supra* note __ and accompany text.

designs almost instantly; and the potential to invent new chemicals, molecules, and medicinal cures. While the list is not infinite, the potential may be limitless.

For companies hoping to jump on the bandwagon, however, there is a significant gulf between the promise and the practice. Enterprises that fail to adhere to common sense practices of fact checking, testing new systems before deploying them, and respecting the intellectual property of the underlying rights holders will find themselves on the wrong side of the AI revolution. Perhaps more importantly, the developers of these tools and the enterprises that adopt them have both a legal and ethical responsibility to understand the broader consequences implicated by adopting these tools. They need to be diligent and transparent in mitigating bias, discrimination, and social harms. And they need to recognize that the creators and adopters of these technologies bear the obligation to help manage the social disruption upon which they hope to profit. Even if change is inevitable, the costs of change need not be borne by those who have already lost everything else.

If the change is managed well, then the opportunities for creativity, efficiency, and expanded resources will support the new economy that emerges from the transformation. It is incumbent upon everyone involved in the generative AI explosion that transparency, diligence, and responsibility are core values of the deployment.

Vive la révolution!