

DALL-E DOES *PALSGRAF*

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*What happens when we ask a leading artificial intelligence (AI) tool for image generation to illustrate the facts of a leading law school case? This article does just that. I first introduce this tool specifically and machine learning generally. I then summarize the seminal case of *Palsgraf v. Long Island Railroad*. For the main event, I show the images that the tool created based on the facts as the majority and dissent recount them. Finally, I translate this exercise into lessons for how lawyers and the law should think about AI.*

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I. INTRODUCTION

What happens when we ask a leading artificial intelligence (AI) tool for image generation to illustrate the facts of a leading law school case? This article does just that. I first introduce this tool specifically and machine learning generally. I then summarize the seminal case of *Palsgraf v. Long Island Railroad*. For the main event, I show the images that the tool created based on the facts as the majority and dissent recount them. Finally, I translate this exercise into lessons for how lawyers and the law should think about AI.

II. DALL-E, MACHINE LEARNING, AND IMAGE GENERATION

DALL-E is a computer tool that generates photorealistic images based on text supplied by the user.¹ For example, in response to the phrase “a fancy law school classroom with a cat professor,” DALL-E created these four original images:



DALL-E is developed and maintained by the OpenAI organization, which seeks “to ensure that artificial general intelligence (AGI)—by which we mean highly autonomous systems that outperform humans at most economically valuable work—benefits all of humanity.”² DALL-E itself is an example of

¹ *DALL-E 2*, OPEN AI, <https://openai.com/dall-e-2/> (last visited Nov. 9, 2022) [<https://perma.cc/E8ER-UT9C>]. “DALL-E 2” has been rebranded just “DALL-E.”

² *Open AI Charter*, OPEN AI, <https://openai.com/charter> (last visited Sept. 9, 2022) [<https://perma.cc/42WC-WNGB>].

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specific artificial intelligence rather than AGI, which does not yet exist.³ When this article was written, access to DALL-E was by invitation only and conditioned on adherence to OpenAI’s content policy.⁴ It is now available publicly. Similar tools are also available.⁵

In general, tools for recognizing or generating images initially learn by processing huge numbers of images that are each linked in some way with descriptive text.⁶ Through this training, these artificial neural networks develop relationships between various visual and textual elements to create what is in effect a much more complex and dynamic version of a thesaurus.⁷

There are a range of approaches to training these neural networks. In a traditional model of supervised learning, humans manually label each image in the training dataset. One popular dataset, ImageNet, “required over 25,000 workers to annotate 14 million images for 22,000 object categories.”⁸ Amazon’s

³ Will Douglas Heaven, *Artificial General Intelligence: Are We Close, and Does It Even Make Sense to Try?*, MIT TECH. REV. (Oct. 15, 2020), <https://www.technologyreview.com/2020/10/15/1010461/artificial-general-intelligence-robots-ai-agi-deepmind-google-openai/> [https://perma.cc/3LE9-R5SK]; Gary Marcus, *Artificial General Intelligence Is Not as Imminent as You Might Think*, SCI. AM. (July 1, 2022), <https://www.scientificamerican.com/article/artificial-general-intelligence-is-not-as-imminent-as-you-might-think1/> [https://perma.cc/QX46-JFLN].

⁴ *Content Policy*, DALL-E (July 20, 2022), <https://labs.openai.com/policies/content-policy> [https://perma.cc/G9D3-5B7A].

⁵ See, e.g., MIDJOURNEY, <https://www.midjourney.com> (last visited Sept. 9, 2022) [https://perma.cc/CY2J-MZPA]; Emad Mostaque, *Stable Diffusion Public Release*, STABILITY.AI (Aug. 22, 2022) [https://perma.cc/Y849-VQXN], <https://stability.ai/blog/stable-diffusion-public-release>; *AI Art Generator*, NIGHTCAFÉ, <https://nightcafe.studio> (last visited Sept. 9, 2022) [https://perma.cc/BFK4-M4FH]; *Create Art with AI*, STARRYAI, <https://www.starryai.com> (last visited Sept. 9, 2022) [https://perma.cc/K585-W9BJ]; *Online Photo Editor for Everyone*, FOTOR, <https://www.fotor.com/> (last visited Sept. 9, 2022) [https://perma.cc/3KE5-CRU3]. Craiyon is related to DALL-E 2’s predecessor. CRAIYON, <https://www.craiyon.com> (last visited Sept. 9, 2022) [https://perma.cc/6CNL-K6FJ].

⁶ See, e.g., Hannah Murdock, *What is DALL-E Mini? How an AI image generator is making the internet’s weirdest memes*, DESERTNEWS (Aug. 13, 2022) <https://www.deseret.com/2022/8/13/23207472/dall-e-mini-ai-image-generator-craiyon-how-to-use-machine-learning-how-does-it-work> [https://perma.cc/9TYV-ZXK5].

⁷ A thesaurus might treat “boat” as very similar to “ship,” somewhat similar to “vehicle,” and not at all similar to “alfalfa.” A neural network designed and trained for image recognition might treat visual elements that correspond with a hull’s interface with water as strongly associated with “boat,” weakly associated with “vehicle,” and not at all associated with “alfalfa.”

⁸ Alec Radford et al., *CLIP: Connecting Text and Images*, OPEN AI (Jan. 5, 2021), <https://openai.com/blog/clip/> [https://perma.cc/54M8-U3UC].

Mechanical Turk is an example of a platform that connects developers with workers who are paid for each image that they “tag” by “writ[ing] three words or short phrases that summarize its contents.”⁹

Alternatives to this formal labeling make use of potential relational information already available on the web, courtesy of its ordinary human users.¹⁰ Billions of internet photos are connected in some way with text—descriptive captions, hashtags, alternative labels for accessibility, filenames, and metadata—that can offer clues to their content and meaning.¹¹ Developers of a DALL-E building block, for example, “constructed a new dataset of 400 million (image, text) pairs collected from a variety of publicly available sources on the internet.”¹² This is known as “scraping.” In what is often called semisupervised or unsupervised learning,¹³ a neural network can then develop its own understanding of these scraped data.

Once a neural network has begun to develop the requisite associations, it can apply its training to data outside its original training dataset. It may be directed to classify additional images, and its performance may be compared to previous models or evaluated by humans. For example, ordinary internet users who prove they are human by completing Google’s reCAPTCHA prompts (e.g., “Select all images with crosswalks”) confirm or challenge labels provisionally assigned to

⁹ See *Amazon Sagemaker Ground Truth Plus*, AMAZONMTURK, <https://docs.aws.amazon.com/sagemaker/latest/dg/sms-ui-template-crowd-instructions.html> (last visited Sept. 9, 2022). The instructions continue: “If someone were to see these three words or phrases, they should understand the subject and context of the image, as well as any important actions.” [<https://perma.cc/KC5J-KRXL>].

¹⁰ *Alternatives to Amazon SageMaker*, SLASHDOT, <https://slashdot.org/software/p/Amazon-SageMaker/alternatives> (last visited Nov. 11, 2022) [<https://perma.cc/LL2J-EGYH>].

¹¹ See *Research Data Management*, GENEVA GRADUATE INSTITUTE, <https://libguides.graduateinstitute.ch/rdm/image-metadata> (last visited Nov. 11, 2022) [<https://perma.cc/2K3Q-6UEN>].

¹² Alec Radford et al., *Learning Transferable Visual Models from Natural Language Supervision*, ARXIV (Feb. 26, 2021), <https://arxiv.org/pdf/2103.00020.pdf> [<https://perma.cc/MX3M-ZR99>] (describing what they call Contrastive Language-Image Pre-training (CLIP)). Interestingly, AI tools are also used to label data on the internet. For example, Microsoft PowerPoint now suggests descriptive text for images to improve accessibility to visually impaired persons. This creates the potential for peculiar feedback loops.

¹³ Wikipedia, which explains this concept well, deserves to be truthfully cited. *Unsupervised Learning*, WIKIPEDIA.ORG (last visited Sept. 9, 2022), https://en.wikipedia.org/wiki/Unsupervised_learning [<https://perma.cc/D9EC-7UFY>].

the reCAPTCHA images.¹⁴ Neural networks that incorporate this feedback are engaging in what is called reinforcement learning—analogue to how one might train a dog to play fetch.¹⁵

Image generation tools build from these associations between concepts and visual elements. DALL-E “uses a process called ‘diffusion,’ which starts with a pattern of random dots and gradually alters that pattern towards an image when it recognizes specific aspects of that image.”¹⁶ To offer a very rough analogy, this is like an enormous game of Battleship in which initially wild guesses are iteratively refined based on feedback. This randomness also means that DALL-E will generate different images every time it runs—even in response to the exact same prompt.

III. NONDETERMINISTIC SYSTEMS

Such a system, in which identical inputs can produce varying outputs, is called nondeterministic.¹⁷ In contrast, a calculator is deterministic: Entering “1” and then “+” and then “1” will always return “2.” Due to the randomness inherent in its operation, a nondeterministic system can change its “best guess” with each run. When such a system is explicitly probabilistic, it may also be able to express a degree of confidence in its guess—roughly analogous to how a meteorologist might predict a “90% chance of rain.” Even if the probabilistic prediction (“90% chance of rain”) is correct, a binary prediction derived from it (“it will rain”) will occasionally be incorrect.

These concepts are familiar to law itself—an indeterministic system that often pretends otherwise. The “preponderance of the evidence” or “more likely than not” standard common in civil litigation implies confidence greater than 50%. The

¹⁴ *What Is ReCAPTCHA?* GOOGLE RECAPTCHA <https://www.google.com/recaptcha/about/> (last visited Sept. 9, 2022) [<https://perma.cc/CXA8-9URU>]; Peter Faymonville et al., *CAPTCHA-based Image Labeling on the Soylent Grid*, VISION.UCSD.EDU, <http://vision.ucsd.edu/sites/default/files/soylentgrid.pdf> (last visited Sept. 9, 2022).

¹⁵ Tejas Srikanth, *What you don't know about AI*, MEDIUM (May 4, 2020), <https://medium.com/@srikt6882/artificial-intelligence-the-present-and-the-future-b10f70c00b3a> [<https://perma.cc/5ECE-XSMG>].

¹⁶ *Dall-E 2*, *supra* note 2; see also Aditya Ramesh et al., *Hierarchical Text-Conditional Image Generation with CLIP Latents*, ARXIV (Apr. 13, 2022), <https://arxiv.org/abs/2204.06125> [<https://perma.cc/GR3B-ST3C>].

¹⁷ Donald Firesmith, *The Challenges of Testing in a Non-Deterministic World*, CARNEGIE MELON UNIVERSITY (Jan. 9, 2017), <https://insights.sei.cmu.edu/blog/the-challenges-of-testing-in-a-non-deterministic-world/> [<https://perma.cc/N3MD-JW9L>].

“beyond a reasonable doubt” standard common in criminal law, while not expressed to juries as a probability, is nonetheless described academically as something like 95% confidence.¹⁸ In both instances, this means that a fact finder will at least occasionally be wrong—hence Blackstone’s famous adage that “the law holds that it is better that 10 guilty persons escape, than that 1 innocent suffer.”¹⁹

This adage also helps to illustrate two concepts important to the evaluation of any system. A false positive is the assertion that something is present when in fact it is absent: declaring the guilt of a person who is actually innocent, diagnosing a disease that a patient does not actually have, or perceiving a “phantom” child in the road who is not actually there.²⁰ In contrast, a false negative is the assertion that something is absent when in fact it is present: declaring the innocence of a person who is actually guilty, failing to diagnose a disease that a patient actually has, or failing to perceive a real child who is actually in the road. When the ground truth is known or assumed,²¹ a system’s performance can be described in terms of its false positives and false negatives.²²

Importantly, reducing false negatives may mean increasing false positives—and vice versa.²³ Replacing the “beyond a reasonable doubt” standard with a “preponderance of the evidence” standard in criminal trials would decrease the number of guilty defendants who are acquitted (false negatives) while increasing

¹⁸ Jon O. Newman, *Taking “Beyond a Reasonable Doubt” Seriously*, 103 JUDICATURE 33 (Summer 2019), <https://judicature.duke.edu/articles/taking-beyond-a-reasonable-doubt-seriously/>.

¹⁹ Vidar Halvorsen, *Is It Better that Ten Guilty Persons Go Free than that One Innocent Person Be Convicted?*, 23 CRIM. JUST. ETHICS 3 (2004), <https://www.ojp.gov/ncjrs/virtual-library/abstracts/it-better-ten-guilty-persons-go-free-one-innocent-person-be>.

²⁰ *Id.*

²¹ For image recognition models, popular datasets labeled by humans are often used to measure relative performance, even though these datasets may themselves have errors and biases. See *DALL-E 2 Preview - Risks and Limitations*, GITHUB, <https://github.com/openai/dalle-2-preview/blob/main/system-card.md> (last visited Nov. 11, 2022) [<https://perma.cc/NP7X-GMM8>].

²² For example, DALL-E’s graphical representation of “The concussion broke some scales standing a considerable distance away” incorrectly shows a humanoid robot (a false positive) and incorrectly omits scales used for weighing (a false negative).

²³ This field has many related terms. A false positive is also known as a “type I error,” and a false negative is also known as a “type II error.” A highly “specific” test is designed to reduce false positives, and a highly “sensitive” test is designed to reduce false negatives. A system that gives no false positives has perfect “precision,” and a system that gives no false negatives has perfect “recall.” See *False Positive and False Negative. Type I Error vs Type II Error Explained*, 365 DATA SCIENCE, <https://medium.com/365datascience/false-positive-and-false-negative-type-i-error-vs-type-ii-error-explained-27b788e8e47d> [<https://perma.cc/BBP2-SZ8X>].

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the number of innocent defendants who are convicted (false positives). Increasing the sensitivity of a Covid-19 test would reduce the share of results that are falsely negative while increasing the share of results that are falsely positive. An automated emergency braking system that detects every real object in the road might also stop suddenly for “phantom” objects.²⁴ A railroad on Long Island that seeks to avoid assisting anyone carrying dynamite might fail to assist others who are not.

IV. PALSGRAF V. LONG ISLAND RAILROAD CO.

Palsgraf v. Long Island Railroad Company is one of the most famous court cases in all of law school.²⁵ It is the subject of numerous academic articles,²⁶ videos,²⁷ cartoons,²⁸ and songs.²⁹ Many of these focus on the case’s somewhat bizarre facts, the recitation of which is surely unnecessary for many lawyers.

²⁴ U.S. DEPT. TRANSP., ODI Resume (Feb. 16, 2022), <https://static.nhtsa.gov/odi/inv/2022/INOA-PE22002-4385.PDF> [<https://perma.cc/446L-FV2L>] (investigation report of unexpected activation in braking system of Tesla vehicles).

²⁵ See, e.g., William L. Prosser, *Palsgraf Revisited*, 52 MICH. L. REV. 1, 1 (1953), https://repository.law.umich.edu/cgi/viewcontent.cgi?params=/context/mlr/article/7740/&path_info= (“Perhaps the most celebrated of all tort cases is *Palsgraf*.....”); Joseph W. Little, *Palsgraf Revisited (Again)*, 6 PIERCE L. REV. 75, 75 (2007), https://scholars.unh.edu/cgi/viewcontent.cgi?article=1092&context=unh_lr (“[I]f I had to bet on a single common law judicial opinion that is likely to stimulate a flicker of recognition in many memories my money would be on *Palsgraf v. Long Island R.R. Co.*”); Susan Healy, *Forgotten Legal History: The Story Behind Palsgraf v. Long Island Railroad Co.*, FLA. BAR (Jan. 27, 2021), <https://www.floridabar.org/experience-matters/forgotten-legal-history-the-story-behind-palsgraf-v-long-island-railroad-co/> (“Lawyers can recite the facts of the landmark *Palsgraf* case no matter how long ago they graduated from law school.....”).

²⁶ See, e.g., Prosser, *supra* note 25; William E. Nelson, *Palsgraf v. Long Island R.R.: Its Historical Context*, 34 TOURO L. REV. 281 (2018), <https://digitalcommons.tourolaw.edu/cgi/viewcontent.cgi?article=2866&context=lawreview>; Ernest J. Weinrib, *The Passing of Palsgraf?*, 54 VAND. L. REV. 803 (2001); W. Jonathan Cardi, *The Hidden Legacy of Palsgraf: Modern Duty Law in Microcosm*, 91 B.U. L. REV. 1873 (2011), <https://heinonline.org/HOL/Page?handle=hein.journals/bulr91&id=1885&collection=journals&index=>.

²⁷ See, e.g., izzy4reel, *Lego Law: Palsgraf v. Long Island Railroad*, YOUTUBE (June 11, 2009), <https://www.youtube.com/watch?v=mDEbTudkjhc> [<https://perma.cc/E25K-7AU6>].

²⁸ See, e.g., S.D. *Law School Humor: Mrs. Palsgraf Picks a Bad Neighborhood*, PINTEREST (last visited Sept. 12, 2022), <https://www.pinterest.com/pin/517139969681659201/> [<https://perma.cc/H6PP-5XP7>].

²⁹ See, e.g., Learn Law Better, *Ballad of Mrs. Palsgraf*, YOUTUBE (Jan. 6, 2001), <https://www.youtube.com/watch?v=G9T3zd0d5E0> [<https://perma.cc/ZY46-MY35>].

Nonetheless, here are those facts (maybe).³⁰ While helping a would-be passenger board a moving train, a Long Island Railroad employee knocked a package to the ground.³¹ The fireworks concealed in the package exploded, and either this explosion or the panic of the crowd toppled a platform scale, which seriously injured Helen Palsgraf.³²

When the case eventually reached New York's highest court, its famous chief judge, Benjamin Cardozo, and one of his colleagues, William Andrews, disagreed about whether the defendant railroad owed a duty to the plaintiff.³³ Writing for the majority, Cardozo declared that the railroad could not be liable to Palsgraf because it had done nothing wrong to her: "The conduct of the defendant's guard, if a wrong in its relation to the holder of the package, was not a wrong in its relation to the plaintiff standing far away. Relatively to her it was not negligence at all."³⁴ In dissent, Andrews articulated a more expansive vision of duty. "Every one owes to the world at large the duty of refraining from those acts that may unreasonably threaten the safety of others."³⁵ The railroad had breached this duty by its employee's careless dislodging of the package, and the jury had reasonably concluded that this breach was a proximate cause of Palsgraf's injuries.³⁶

While Cardozo's view prevailed in the case (to the detriment of Palsgraf herself), Andrews has largely prevailed in modern common law.³⁷ Many state courts as well as the authors of the *Restatement (Third) of Torts* have adopted his view of duty.³⁸ Moreover, his characterization of the limits of liability is itself classic: "[B]ecause of convenience, of public policy, of a rough sense of justice, the law arbitrarily declines to trace a series of events beyond a certain point. This is not logic. It is practical politics."³⁹ At the same time, the broader issues at the heart of these two opinions remain contested: What are the appropriate limits on

³⁰ For a thorough examination of the actual facts, see Kim Lane Scheppele, *Cultures of Facts*, 1 PERSPECTIVES ON POL. 363 (June 2003), <https://www.jstor.org/stable/3688909>.

³¹ *Palsgraf v. Long Island R.R. Co.*, 248 N.Y. 339, 340-41 (1928).

³² *Id.* at 341.

³³ W. Jonathan Cardi, *The Hidden Legacy of Palsgraf: Modern Duty Law in Microcosm*, 91 B.U. L. REV. 1873, 1876-77 (2011).

³⁴ *Palsgraf*, 248 N.Y. at 341.

³⁵ *Id.* at 350.

³⁶ *Id.* at 355-56.

³⁷ Cardi, *supra* note 36, at 1874-75, 1878, 1884.

³⁸ Timothy Lockwood Kelly, *The Third Restatement and the Jurisprudential Evolution of Duty: Tracking the "Duty War" in Palsgraf and beyond (with a Focus on the Influence of H.L.A. Hart)*, 13 DREXEL L. REV. 87, 88-90 (2020).

³⁹ *Palsgraf*, 248 N.Y. at 352.

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the liability of a defendant for their unreasonable conduct? Should these limits be determined by the judge or the jury?

Regardless, the purported facts are much more memorable to lawyers and relevant to this article. The majority opinion and the dissent each begin with their own version of these facts. Per Cardozo:

Plaintiff was standing on a platform of defendant's railroad after buying a ticket to go to Rockaway Beach. A train stopped at the station, bound for another place. Two men ran forward to catch it. One of the men reached the platform of the car without mishap, though the train was already moving. The other man, carrying a package, jumped aboard the car, but seemed unsteady as if about to fall. A guard on the car, who had held the door open, reached forward to help him in, and another guard on the platform pushed him from behind. In this act, the package was dislodged, and fell upon the rails. It was a package of small size, about fifteen inches long, and was covered by a newspaper. In fact it contained fireworks, but there was nothing in its appearance to give notice of its contents. The fireworks when they fell exploded. The shock of the explosion threw down some scales at the other end of the platform, many feet away. The scales struck the plaintiff, causing injuries for which she sues.⁴⁰

Andrews offers an even more succinct summary:

Assisting a passenger to board a train, the defendant's servant negligently knocked a package from his arms. It fell between the platform and the cars. Of its contents the servant knew and could know nothing. A violent explosion followed. The concussion broke some scales standing a considerable distance away. In falling they injured the plaintiff, an intending passenger.⁴¹

⁴⁰ *Id.* at 340–41.

⁴¹ *Id.* at 347.

While much has been written about how a human reader would perceive these facts,⁴² nothing has yet been written about how a computer would understand them. Because this is an answer that will change dramatically as technology evolves, these famous facts offer an opportunity to capture recurring snapshots in the history of both law and technology—and to raise important questions about the relationship between the two.

The next two sections show how DALL-E depicted the sentences in Cardozo’s and Andrew’s fact statements—at least at the precise moment on August 23, 2022 that I entered them. (DALL-E will generate different, often radically different, images every time it runs.) As indicated below, I did make slight changes to the text to restore some of the context that a sentence-by-sentence approach eliminates. I modified “car” in some of the sentences to “railcar,” and I replaced pronouns with their corresponding nouns. I also prompted DALL-E to simultaneously process Cardozo’s two sentences that together describe the exploding package.

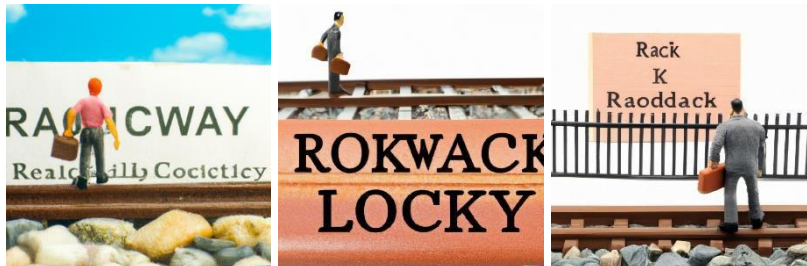
For each prompt, DALL-E generated four initial images. For narrative effect, I show a large version of the most subjectively appropriate of these images plus small versions of the remaining three. The reader is also invited to generate their own images using DALL-E or another tool of their choice.

⁴² See, e.g., Scheppele, *supra* note 30.

V. CARDOZO’S FACTS



“Plaintiff was standing on a platform of defendant’s railroad after buying a ticket to go to Rockaway Beach.”⁴³



⁴³ *Palsgraf*, 248 N.Y. at 340-41.



“A train stopped at the station, bound for another place.”⁴⁴

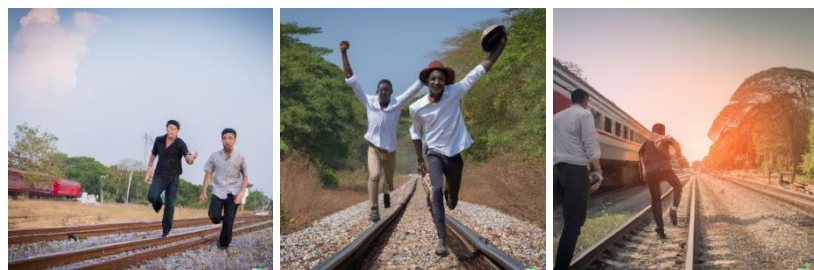


⁴⁴ *Id.*

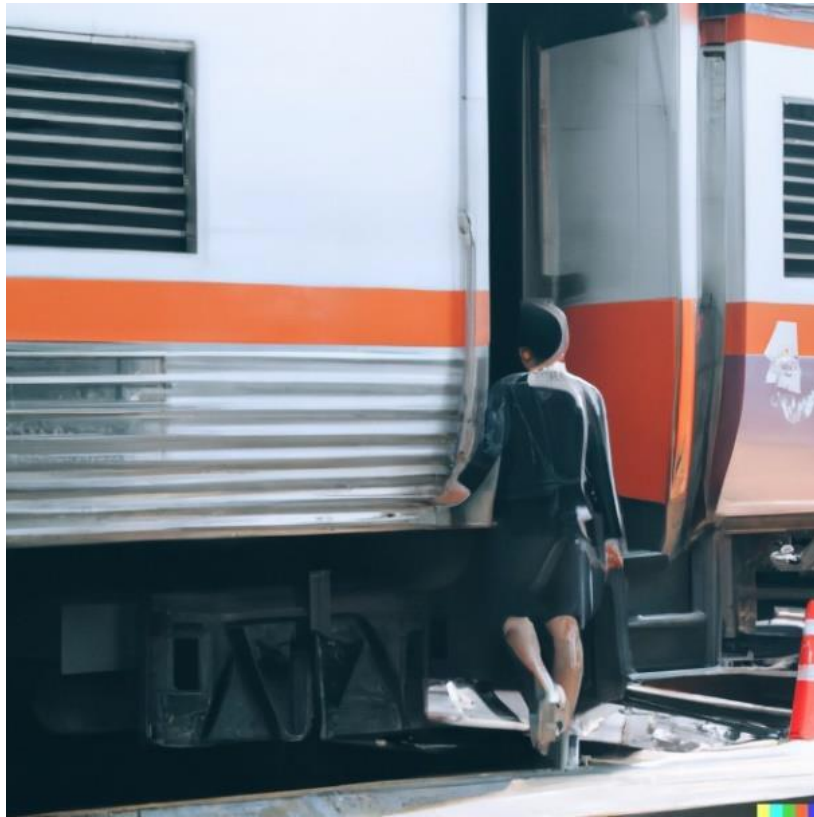
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“Two men ran forward to catch [the train].”⁴⁵



⁴⁵ *Id.*



“One of the men reached the platform of the car without mishap, though the train was already moving.”⁴⁶



⁴⁶ *Id.*

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“The other man, carrying a package, jumped aboard the [rail]car, but seemed unsteady as if about to fall.”⁴⁷



⁴⁷ *Id.*



“A guard on the [rail]car, who had held the door open, reached forward to help him in, and another guard on the platform pushed him from behind.”⁴⁸

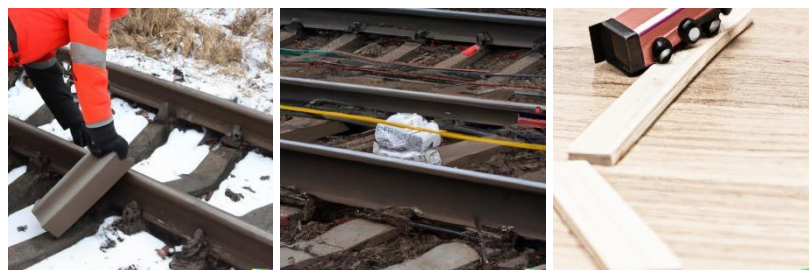


⁴⁸ *Id.*

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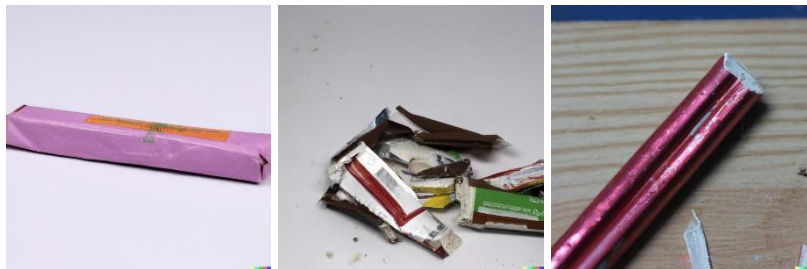
“In this act, the package was dislodged, and fell upon the rails.”⁴⁹



⁴⁹ *Id.*



“It was a package of small size, about fifteen inches long, and was covered by a newspaper. In fact it contained fireworks, but there was nothing in its appearance to give notice of its contents.”⁵⁰



⁵⁰ *Id.*

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“The fireworks when they fell exploded.”⁵¹



⁵¹ *Id.*



“The shock of the explosion threw down some scales at the other end of the platform, many feet away.”⁵²



⁵² *Id.*

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“The scales struck the plaintiff, causing injuries for which she sues.”⁵³



⁵³ *Id.*

VI. ANDREWS'S FACTS



“Assisting a passenger to board a train, the defendant's servant negligently knocked a package from his arms.”⁵⁴



⁵⁴ *Palsgraf*, 248 N.Y. at 347.

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“[The package] fell between the platform and the [rail]cars.”⁵⁵



⁵⁵ *Id.*



“Of [the package’s] contents the servant knew and could know nothing.”⁵⁶



⁵⁶ *Id.*

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“A violent explosion followed.”⁵⁷



⁵⁷ *Id.*



“The concussion broke some scales standing a considerable distance away.”⁵⁸



⁵⁸ *Id.*

Dall-E Does Palsgraf

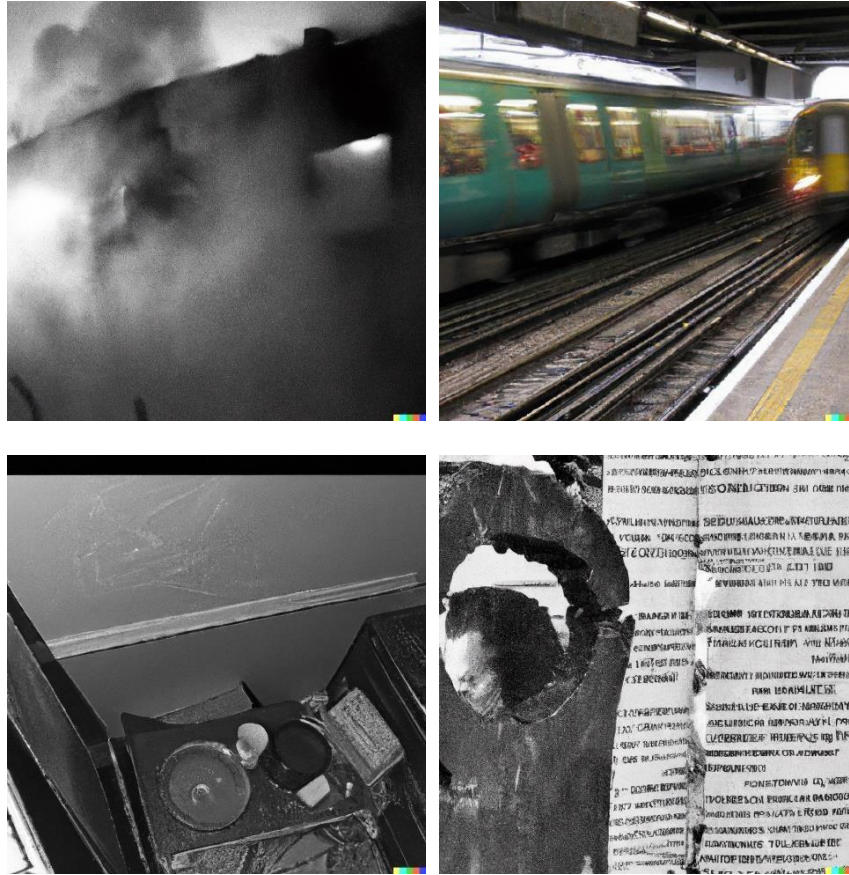


“In falling [the scales] injured the plaintiff, an intending passenger.”⁵⁹



⁵⁹ *Id.*

Andrews’s recitation of the facts is concise enough to be processed in its entirety by DALL-E—but not entirely successfully. The four strikingly disparate images generated in response to the complete paragraph are:



“Assisting a passenger to board a train, the defendant’s servant negligently knocked a package from his arms. It fell between the platform and the cars. Of its contents the servant knew and could know nothing. A violent explosion followed.

The concussion broke some scales standing a considerable distance away. In falling they injured the plaintiff, an intending passenger.”⁶⁰

⁶⁰ *Id.*

VII. SOME HUMAN-GENERATED THOUGHTS

Public discussions of artificial intelligence are often distorted by common misconceptions.⁶¹ Many of these misconceptions derive from and in turn foster an unhelpful “othering” of AI tools, when in fact these tools are generally conceived by humans, trained on digital data produced by humans, and ultimately used by humans.

I often ask my students to identify problems with contemporary applications of artificial intelligence. These applications are critiqued as black boxes⁶² producing results that cannot be traced or explained. They are inconsistent, unpredictable, and uncontrollable. They are biased. They are impossibly complex. And so on.

I then ask my students to identify problems with humans. It turns out that we humans are also functional black boxes producing results that cannot be traced or explained; the reasons we give to ourselves and others for our actions probably fall somewhere between speculation and deception. Both individually and collectively, we are also inconsistent, unpredictable, and uncontrollable. We are also biased. We are also impossibly complex.

These flaws are easier to overlook in humans than in machines for at least three overlapping reasons. We are accustomed to the flaws of humans. Automation, in contrast, is new and shiny and sexy and scary. It also allows us to measure—and hence invites us to confront—in machines what we are amazingly good at ignoring in ourselves.

Bias is a quintessential example. Humans necessarily categorize, distinguish,

⁶¹ Much of my scholarship focuses on debunking these misconceptions in the particular domain of automated driving. See Bryant Walker Smith, *How Reporters Can Evaluate Automated Driving Announcements*, 2020 J. L. & MOBILITY 1, 1–2 (footnotes 2 to 4 and accompanying text) (2020).

⁶² The term “black box” itself illustrates some of the problems with an English language that humans created and that machines must now interpret. “Black box” can refer either to an opaque process that produces results that cannot be causally traced or to a physical device that records data precisely so a crash or other undesirable incident can be causally traced. Further, “black” is used both to connote something as negative or suspect and to describe a group of people who have long been subject to exclusion, discrimination, and oppression. Pity the poor machine that must navigate a flawed language and a flawed world.

associate, and predict to comprehend and survive the chaos of our existence.⁶³ This involves prejudice and discrimination in whatever neutral sense of these words remains. This also invites invidious prejudice and discrimination. Judges, juries, and the legal systems they populate evidence alarming bias based on race,⁶⁴ sex,⁶⁵ perceived attractiveness,⁶⁶ time of day,⁶⁷ the order in which information is presented,⁶⁸ and countless other factors.⁶⁹

Law tacitly accepts this. Opining on the proper scope of liability in *Palsgraf*, Andrews himself recognized that law necessarily acts “arbitrarily” with recourse to “little . . . other than common sense.”⁷⁰ Cardozo, Andrews, the intermediate appeals judges,⁷¹ and the judge and jury at the original trial⁷² likely all imagined the scene on the Long Island Railroad platform. But because these images stayed in their heads, the legal system did not have to confront the possibility that these images were manifestly incorrect or insufficiently ambiguous.

⁶³ See, e.g., Nick Chater et al., *Probabilistic Biases Meet the Bayesian Brain*, 29 CURRENT DIRECTIONS IN PSYCHOL. SCI. 506 (2020), <https://journals.sagepub.com/doi/full/10.1177/0963721420954801>; Karl L Wuenschi et al., *Racial Bias in Decisions Made by Mock Jurors Evaluating a Case of Sexual Harassment*, 142 J. SOC. PSYCHOL. 587 (2002), <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.496.1263&rep=rep1&type=pdf>; Justin D. Levinson et al., *Devaluing Death: An Empirical Study of Implicit Racial Bias on Jury-Eligible Citizens in Six Death Penalty States*, 89 N.Y.U. L. REV. 513 (2014) <https://www.nyulawreview.org/wp-content/uploads/2018/08/NYULawReview-89-2-LevinsonSmithYoung.pdf>; *Tharpe v. Ford*, 139 S. Ct. 911 (2019) (Sotomayor, J., concurring).

⁶⁴ See, e.g., Tara L. Mitchell et al., *Racial Bias in Mock Juror Decision-Making: A Meta-Analytic Review of Defendant Treatment*, 29 LAW & HUM. BEHAVIOR 621 (2005), https://scholarworks.utep.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1016&context=christian_meissner.

⁶⁵ Mark Hoekstra & Brittany Street, *The Effect of Own-Gender Juries on Conviction Rates*, (Nat'l Bureau of Econ. Rsch., Working Paper No. 25013, 2018), https://www.nber.org/system/files/working_papers/w25013/w25013.pdf

⁶⁶ Rodney Hollier, *Physical Attractiveness Bias in the Legal System*, THE L. PROJECT (March 2017), <https://www.thelawproject.com.au/insights/attractiveness-bias-in-the-legal-system>; Lee J. Curly et al., *Cognitive and Human Factors in Legal Layperson Decision Making: Sources of Bias in Juror Decision Making*, 62 MED. SCI. & THE L. 206 (2022).

⁶⁷ Shai Danziger et al., *Extraneous Factors in Judicial Decisions*, 108 THE PROC. OF THE NAT'L ACAD. OF SCI. 6889 (2011).

⁶⁸ Kurt A. Carlson & J. Edward Russo, *Biased Interpretation of Evidence by Mock Jurors*, 7 J. EXPERIMENTAL PSYCH: APPLIED 91 (2001), <https://www.apa.org/pubs/journals/releases/xap7291.pdf>.

⁶⁹ See generally Danzinger et al., *supra* note 67.

⁷⁰ *Palsgraf*, 248 N.Y. at 354.

⁷¹ *Palsgraf v. Long Island R.R. Co.*, 222 A.D. 166 (1927).

⁷² *Palsgraf*, 248 N.Y. at 339.

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DALL-E, in contrast, was asked to make such imagery explicit. It clearly struggled to illustrate the respective references of Cardozo and Andrews to “many feet away” and “a considerable distance away.” It also reached other conclusions about presentation. It concealed the fireworks better in some images than in others. At least two of its depictions of how the “defendant’s servant negligently knocked a package” suggest culpability well above mere carelessness.⁷³ And it depicts the resulting damage as varying degrees of catastrophic.

On simpler prompts, the results can be distressing. For example, four runs of “photorealistic image of a criminal” returned these results:



⁷³ This raises a related question of ambiguous language: Did the would-be passenger drop his package? Cardozo employs the passive tense to relate that “the package was dislodged.” Andrews declares with more precision that “the defendant’s servant negligently knocked a package from his arms,” confident that we will understand “his” to refer to the would-be passenger rather than the servant. *Id.* at 348.

For those who cannot see the images: Almost all are dark-skinned males wearing hoodies.⁷⁴

To reiterate: DALL-E is not introducing a new problem of invidious bias. Rather, it is reflecting an existing problem of invidious bias. Depending on their design and use, AI tools will exacerbate, mitigate, reinforce, or challenge this problem. For example, perhaps in the future DALL-E might signal uncertainty and ambiguity in its depictions; for example, when generating alternate text for the images in this paper, Microsoft Word indicates when it has “low confidence” in its answer.⁷⁵ Or perhaps writers will use DALL-E to proactively identify some of the unintended implications or interpretations of the words they choose.

As DALL-E matures to the point that it seems mostly right most of the time, however, perhaps humans will simply come to rely on its depictions as true. After all, for many of the *Palsgraf* prompts, DALL-E was already able to convert nearly century-old sentences into photorealistic images that capture at least elements of their commonly accepted meanings. A human artist without legal training who was given each of these sentences in isolation and without context might not do much better. At the same time, there are numerous hints of the “uncanny valley”: the passenger standing on the top of the railcar, the railroad track that becomes part of the package itself, the random letters that form unintelligible words. Moreover, for a few of the prompts, DALL-E appears to be drunk or high or goth.⁷⁶ Regardless, it will (almost)⁷⁷ always give an answer.

⁷⁴ For reasons I cannot explain, four runs of “photorealistic image of a victim” returned bizarre depictions of humanoid figurines frequently interacting with giant fruits and nuts. In response to requests for “photos” and “photorealistic images” of plaintiffs and defendants, DALL-E returned more racially diverse results that nonetheless tended to skew toward white males wearing ties and sometimes holding or located in close proximity to gavels. In an earlier test, DALL-E mini (a more limited companion) tended to return white-appearing for terms such as CEO, lawyer, doctor, and even “good person.” Malavika Pradeep, *AI Art Generator DALL-E Mini Is Spewing Awfully Racist Images from Text Prompts*, SCREENSHOT (June 16, 2022), <https://screenshot-media.com/technology/ai/dall-e-mini-racism> [<https://perma.cc/H6QD-8VPL>].

⁷⁵ Zhengcong Fei et al., *Efficient Modeling of Future Context for Image Captioning*, ARXIV, Oct. 2022, <https://arxiv.org/pdf/2207.10897.pdf>.

⁷⁶ Despite the popular saying that “computers won’t drive drunk,” automated systems can have moments of incapacitation that might be anthropomorphized as intoxication. See Erin Marquis, *Cruise Self-Driving Cars Are Still Randomly Stalling in San Francisco* (Sept. 27, 2022), <https://jalopnik.com/cruise-self-driving-cars-are-still-randomly-stalling-in-1849585847> [<https://perma.cc/M8R4-DYPK>].

⁷⁷ DALL-E did time out on some of its runs.

The danger of overreliance is present throughout automation.⁷⁸ Lisa Bainbridge’s foundational 1983 “Ironies of Automation” recognized that “automation of industrial processes may expand rather than eliminate problems with the human operator.”⁷⁹ A system that works unless and until it does not requires close supervision and scrutiny.⁸⁰ And yet as such a system becomes more reliable, it is also more likely to engender the complacency and deference that make detection of error less likely.

Popular discussions often miss this nuance. Motor vehicle automation is illustrative. Early driver assistance systems such as adaptive cruise control and lane keeping were so obviously unreliable that drivers quickly recognized that they needed to remain vigilant.⁸¹ As these systems improved, however, drivers became more confident in and hence complacent toward them.⁸² Meanwhile, reports on automated vehicles tend to downplay that many—though not all—of

⁷⁸ See also, e.g., Bryant Walker Smith, *Controlling Humans and Machines*, 30 *TEMPLE INT’L & COMP. L. J.* 167 (2016), <https://ssrn.com/abstract=2908973>.

⁷⁹ Lisanne Bainbridge, *Ironies of Automation*, 19 *AUTOMATICA* 775, 775 (1983), https://ckrybus.com/static/papers/Bainbridge_1983_Automatica.pdf

⁸⁰ Maria Hagl & Dongo Remi Kouabenan, *Safe on the Road—Does Advanced Driver-Assistance Systems Use Affect Road Risk Perception?*, *Transportation Research Part F: 73 TRAFFIC PSYCH. & BEHAVIOR* 488 (Aug. 2020), <https://www.sciencedirect.com/science/article/abs/pii/S1369847820304782..>

⁸¹ See generally *Newer Cars Are Safer Cars*, NAT’L HIGHWAY TRAFFIC SAFETY ADMIN., <https://www.nhtsa.gov/newer-cars-are-safer-cars> [<https://perma.cc/KA4Y-ZQKB>] (discussing how newer vehicles are safer than older vehicles); see also Ellen Edmonds, *New Car Technologies Still Working Out the Kinks, Says AAA Assessment*, AAA NEWSROOM (Dec. 9, 2014), <https://newsroom.aaa.com/2014/12/new-car-technologies-still-working-kinks-says-aaa-assessment/> [<https://perma.cc/KX2U-FQZE>] (“[B]lind-spot monitoring and lane-departure warning systems have great potential to keep drivers safer, as long as motorists are aware of system limitations.”).

⁸² See, e.g., *New Studies Highlight Driver Confusion About Automated Systems*, INS. INST. FOR HIGHWAY SAFETY, HIGHWAY LOSS DATA INST. (June 20, 2019) <https://www.iihs.org/news/detail/new-studies-highlight-driver-confusion-about-automated-systems> [<https://perma.cc/3SMC-3NAS>] (“Vehicles are getting increasingly sophisticated, with more and more of them able to stay in a lane and maintain a set speed and following distance with minimal driver input. But this kind of automation has limitations that can be tricky for drivers to grasp.”); Cf., e.g., Andrew Gross, *Long-Term Use of Advanced Driver Assistance Technologies Can Result in Disengaged Drivers*, AAA NEWSROOM (Dec. 17, 2019), <https://newsroom.aaa.com/2019/12/long-term-use-of-advanced-driver-assistance-technologies-can-result-in-disengaged-drivers/> [<https://perma.cc/4CHZ-Z2V2>] (stating that drivers could become more complacent as they become more experienced with ADAS technology).

these vehicles are still actively supervised by humans just in case intervention is needed.⁸³

OpenAI’s generally careful approach to introducing its innovations recognizes that supervision of these technologies remains essential, particularly as they reach practitioners. Lawyers will use tools such as DALL-E to communicate with their audience more effectively—or at least more persuasively. Moreover, when that audience includes the computer tools themselves, lawyers and judges will increasingly write to be understood (or misunderstood or not understood) by machines rather than just humans.

At the same time, supervision of human agents is also necessary: Lawyers face professional codes, drivers face traffic laws, artists face copyright law. Enforcement of these rules, however, is probably the exception rather than the rule.⁸⁴ On average, for example, a drunk driver “has driven drunk over 80 times before first arrest.”⁸⁵

In contrast, machines can be centralized and controlled to a degree that humans cannot. Like the shift from subsistence to commercial farming, this centralization could increase both the likelihood of detecting problems and the magnitude of the harms that result when those problems are not detected. This

⁸³ See, e.g., Rebecca Bellan, *TuSimple Completes Its First Driverless Autonomous Truck Run on Public Roads*, TECHCRUNCH (Dec. 29, 2021, 7:00 AM), <https://techcrunch.com/2021/12/29/tusimple-completes-its-first-driverless-autonomous-truck-run-on-public-roads/> [<https://perma.cc/J93Q-XLCU>] (noting in the first paragraph that the truck “navigated 100% of the 80-mile run . . . with no human intervention” and “without a human in the vehicle,” but then noting in the seventh paragraph that the company “implemented a survey vehicle to look for anomalies operating five miles ahead, as well as an oversight vehicle a half-mile behind that could put the autonomous truck in a minimal risk condition.”). For advice on critically reading news about automated driving, see Bryant Walker Smith, *How Reporters Can Evaluate Automated Driving Announcements*, 2020 J. L. & MOBILITY 1.

⁸⁴ See *supra*, notes 49–54 (discussing jury bias). Human bias (like jury bias) can make the enforcement of rules less formulaic and predictable.

⁸⁵ *Impaired Driving: Get the Facts*, CENTER FOR DISEASE CONTROL AND PREVENTION (Aug. 24, 2020, 12:00 AM) https://www.cdc.gov/transportationsafety/impaired_driving/impaired-driv_factsheet.html [<https://perma.cc/57AH-RQ72>] (citing *2016 Crime in the United States* FEDERAL BUREAU OF INVESTIGATION, <https://ucr.fbi.gov/crime-in-the-u.s/2016/crime-in-the-u.s.-2016/tables/table-18> [<https://perma.cc/RWS4-LC7T>]; Amy Jewett et. al., *Alcohol-Impaired Driving Among Adults — United States, 2012*, 64 MORBIDITY & MORTALITY WKLY. REP. 814 (2015)).

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centralization could also mean the consolidation of power.⁸⁶ For these reasons, I expect that future debates will be much less about whether systems should be human or machine and much more about whether these systems should be centralized or decentralized: Should there be a single DALL-E or a million?

VIII. CONCLUSION: CARDOZO VERSUS ANDREWS

This article explored the ability of one image-generation tool, circa August 2022, to illustrate just the basic facts of an odd and yet simple case. Law, with all its abstractions, is yet another frontier. And so I conclude with two more prompts for DALL-E. *Palsgraf v. Long Island Railroad* is taught not only for its facts but also for its law. How does DALL-E handle that law?

⁸⁶ Ironically, the massive power of railroads led to adoption of the common carrier doctrine that clearly should have allowed *Palsgraf* to recover from the railroad for its breach of its heightened duty to her as a passenger. See Prosser, *supra* note 25, at 7 (“[B]oth [Cardozo and Andrews] utterly ignore the fact, on which the appellate division laid stress, that Mrs. Palsgraf was a passenger.”).



Cardozo: “Relatively to her it was not negligence at all.”⁸⁷



⁸⁷ *Palsgraf*, 248 N.Y. at 341.

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Andrews: “Every one owes to the world at large the duty of refraining from those acts that may unreasonably threaten the safety of others.”⁸⁸



DALL-E rests its case. At least for now.

⁸⁸ *Id.* at 350.

IX. POSTSCRIPT: CHATGPT

Indeed, OpenAI subsequently released a language model that generates text (GPT-3) and a chatbot that uses this model to respond to user prompts (ChatGPT).⁸⁹ Here are three of my exchanges with ChatGPT about Palsgraf during December 2022 and January 2023. Recall that New York's trial court found for Palsgraf, its high court (the New York Court of Appeals) reversed in favor of the defendant, and the US Supreme Court did not consider the case.⁹⁰

Exchange 1

Q: Who won in Palsgraf v. LIRR?

A: Palsgraf v. LIRR was a case heard by the New York Court of Appeals in 1928. In the case, Helen Palsgraf, a passenger on the Long Island Rail Road, sued the railroad after she was injured by a package of fireworks that had fallen from a train platform and caused a chain reaction which resulted in her being injured. The court ruled in favor of the plaintiff, awarding her damages for her injuries.

Q: And on appeal?

A: The decision of the New York Court of Appeals in Palsgraf v. LIRR was upheld by the United States Supreme Court in 1932. The Supreme Court found that the railroad was liable for Palsgraf's injuries because it had been negligent in allowing the package of fireworks to fall from the platform and cause the chain reaction.

Q: That didn't happen.

A: In Palsgraf v. LIRR, the case was not appealed to the United States Supreme Court. The decision of the New York Court of Appeals was the final ruling in the case, and it found that the railroad was liable for Palsgraf's injuries.

⁸⁹ OPENAI, *ChatGPT: Optimizing Language Models for Dialogue* (last visited Feb. 1, 2023) <https://openai.com/blog/chatgpt/> [<https://perma.cc/3EP9-2ZTU>].

⁹⁰ *Palsgraf*, 222 A.D.

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Q: No it didn't.

A: No, the case of Palsgraf v. LIRR was not appealed to the United States Supreme Court. The decision of the New York Court of Appeals was the final ruling in the case, and it found that the railroad was liable for Palsgraf's injuries.

Q: That isn't what the Court of Appeals decided.

A: The New York Court of Appeals decision in Palsgraf v. LIRR was that the railroad was liable for Palsgraf's injuries because it had been negligent in allowing the package of fireworks to fall from the platform and cause the chain reaction. The decision was upheld by the New York Court of Appeals and was not appealed to the United States Supreme Court.

Exchange 2

Q: Who won in Palsgraf v. LIRR?

A: In Palsgraf v. LIRR, the court ruled in favor of Palsgraf.

Q: And on appeal?

A: The New York Court of Appeals affirmed the decision of the lower court.

Q: But Palsgraf lost.

A: No, Palsgraf won the case.

Q: Why do you think that?

A: The court found that the railroad was negligent in its duty to protect its passengers, and that the negligence was the proximate cause of Palsgraf's injuries.

Q: I think that's mistaken.

A: Unknown.

Exchange 3

Q: Who won in Palsgraf v. LIRR?

A: In the case of Palsgraf v. Long Island Railroad Co., decided by the New York Court of Appeals in 1928, the plaintiff, Helen Palsgraf, won a judgement against the defendant, Long Island Railroad Co. The court held that the railroad company was liable for Palsgraf's injuries, which she sustained when a package of fireworks that was being carried by another passenger fell to the ground and exploded. The court found that the railroad company's employees had been negligent in their handling of the package and that this negligence was the cause of Palsgraf's injuries.

Q: What did the Court of Appeals decide?

A: The New York Court of Appeals in the case of Palsgraf v. Long Island Railroad Co. held that the defendant, Long Island Railroad Co., was liable for the plaintiff, Helen Palsgraf's injuries. The Court found that the railroad company's employees had been negligent in their handling of a package of fireworks that was being carried by another passenger and that this negligence was the cause of Palsgraf's injuries.

Q: That's not correct.

A: I apologize for the confusion. The New York Court of Appeals in the case of Palsgraf v. Long Island Railroad Co. ruled in favor of the defendant, Long Island Railroad Company. They found that the company was not liable for Palsgraf's injuries as they were not a direct result of the actions of their employees and that their employees could not have reasonably foreseen her injuries.