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ASSUMING THE RISKS OF ARTIFICIAL INTELLIGENCE

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ABSTRACT

Tort law has long served as a remedy for those injured by products—and injuries from artificial intelligence ("AI") are no exception. While many scholars have rightly contemplated the possible tort claims involving AI-driven technologies that cause injury, there has been little focus on the subsequent analysis of defenses. One of these defenses, assumption of risk, has been given particularly short shrift, with most scholars addressing it only in passing. This is intriguing, particularly because assumption of risk has the power to completely bar recovery for a plaintiff who knowingly and voluntarily engaged with a risk. In reality, such a defense may prove vital to shaping the likelihood of success for these prospective plaintiffs injured by AI, first-adopters who are often eager to "voluntarily" use the new technology but simultaneously often lacking in "knowledge" about AI's risks.

To remedy this oversight in the scholarship, this Article tackles assumption of risk head-on, demonstrating why this defense may have much greater influence on the course of the burgeoning new field of "AI torts" than originally believed. It analyzes the historic application of assumption of risk to emerging technologies, extrapolating its potential use in the context of damages caused by robotic, autonomous, and facial recognition technologies. This Article then analyzes assumption of risk's relationship to informed consent, another key doctrine that revolves around appreciation of risks, demonstrating how an extension of informed consent principles to assumption of risk can establish a more nuanced approach for a future that is sure to involve an increasing number of AI-human interactions—and AI torts. In addition to these AI-human interactions, this Article's reevaluation also can help in other assumption of risk analyses and tort law generally to better address the evolving innovation-risk-consent trilemma.

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INTRODUCTION

Tort law has long served as a remedy for those injured by negligent actions or poorly designed products, and injuries caused by artificial intelligence ("AI") are no exception.[1] While many scholars have rightly debated the relative merits of negligence or strict products liability regimes where a plaintiff is injured by AI-driven technology,[2] there is little focus on the subsequent analysis of defenses that may prove vital to shaping the likelihood of success for these prospective plaintiffs. One of these defenses, assumption of risk, is often dismissed or only briefly discussed—and, if discussed, it is often only in the context of autonomous vehicles.[3] Although taught in first-year torts courses, its

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[1] *See, e.g.*, Complaint at 36-42, Umeda v. Tesla, Inc., No. 5:20-cv-02926 (N.D. Cal. Apr. 28, 2020) (PACER) (bringing wrongful death, negligence, and strict products liability claims where Tesla in autopilot mode killed pedestrian); Complaint at 5-26, Banner v. Tesla, Inc., No. 50:19-cv-09962 (Fla. Palm Beach County Ct. Aug. 1, 2019) (PlainSite) (bringing products liability and negligence claims where decedent's car crashed while in autonomous pilot mode); Complaint at 2-4, Nilsson v. Gen. Motors LLC, No. 4:18-cv-00471 (N.D. Cal. Jan. 22, 2018) (PACER) (bringing negligence claim where motorcyclist was injured by self-driving car); Cruz v. Talmadge, 244 F. Supp. 3d 231, 232-33 (D. Mass. 2017) (considering tort claims against semiautonomous GPS company for directing twelve-foot-tall bus to drive under ten-foot bridge); Pertile v. Gen. Motors, LLC, No. 15-cv-00518, 2017 WL 4117908, at *1 (D. Colo. Sept. 15, 2017) (considering negligence claim alleging automatic breaking system malfunctioned in car accident); Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219, 2019 WL 6840187, at *1-2 (W.D. Mich. Aug. 26, 2019) (considering wrongful death claim against employer where woman was killed by robot at work); Mracek v. Bryn Mawr Hosp., 610 F. Supp. 2d 401, 402-03 (E.D. Pa. 2009) (considering negligence claim against physician using AI-assisted surgical robot), *aff'd*, 363 F. App'x 925 (3d Cir. 2010); Huu Nguyen, *Artificial Intelligence Law Is Here, Part One*, ABOVE THE L. (July 26, 2018, 2:22 PM), https://abovethelaw.com/legal-innovation-center/2018/07/26/artificial-intelligence-law-is-here-part-one/ [https://perma.cc/2VRG-MUCG] ("The courts are seeing cases involving traditional products liability and negligence arising from AI usage . . . . ").

[2] Weston Kowert, *The Foreseeability of Human-Artificial Intelligence Interactions*, 96 TEX. L. REV. 181, 186-99 (2017) (arguing that causation is difficult to establish in AI cases); John W. Zipp, Note, *The Road Will Never Be the Same: A Reexamination of Tort Liability for Autonomous Vehicles*, 43 TRANSP. L.J. 137, 171-72 (2016) (arguing that treating autonomous cars as individual legal entities under negligence regime would enable better recovery for plaintiffs than holding car manufacturers or owners liable); Andrew D. Selbst, *Negligence and AI's Human Users*, 100 B.U. L. REV. 1315, 1321 (2020) (discussing challenges that tort law faces regarding human-operated AI systems, including issues with foreseeability, duty to investigate AI compromises, and the reasonable person standard).

[3] *See, e.g.*, Jacob D. Walpert, Note, *Carpooling Liability?: Applying Tort Law Principles to the Joint Emergence of Self-Driving Automobiles and Transportation Network Companies*, 85 FORDHAM L. REV. 1863, 1893 n.274 (2017) (discussing appropriate negligence standard for self-driving automobiles and transportation network tort suits, but only briefly mentioning, in a footnote, assumption of risk as possible defense to such suits); Zipp, *supra* note 2, at 170 (arguing negligence claims would fail "because owners are aware of the potential danger that may result in driving in any vehicle, autonomous or not"); Jessica S. Brodsky, Note, *Autonomous Vehicle Regulation: How an Uncertain Legal Landscape May Hit the Brakes on Self-Driving Cars*, 31 BERKELEY TECH. L.J. 851, 865-67 (2016) (arguing that assumption of

practical impact has waned over the last century as many jurisdictions have abandoned the harsh all-or-nothing nature of the defense and instead merged the concept into more modern comparative negligence analyses that apportion fault.[4]

This dismissive treatment of the assumption of risk defense in AI torts cases is shortsighted. As AI continues to infiltrate much of everyday society, new life may be breathed into this centuries-old defense.[5] The field of "AI torts" will necessarily include not only injuries caused by autonomous vehicles but also robots powered by machine learning, software algorithms programmed with AI components, and humans relying on AI to assist them in a variety of tasks.[6] Where available, defendants may then turn to the assumption of risk defense to avoid liability. This defense protects defendants where they can establish both that the plaintiff "voluntarily" and "knowingly" assumed the inherent risks of a given activity—two elements at play in the context of AI.[7]

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risk defense in autonomous automobile context could be beneficial); Kyle Colonna, Note, *Autonomous Cars and Tort Liability*, 4 CASE W. RSRV. J.L. TECH. & INTERNET 81, 104 (2012) (arguing against using assumption of risk in AI vehicle lawsuits because "consumers have no power over the quality of autonomous car manufacturing, design, or spending"); Sophia H. Duffy & Jamie Patrick Hopkins, *Sit, Stay, Drive: The Future of Autonomous Car Liability*, 16 SMU SCI. & TECH. L. REV. 453, 460-61, 478 (2013) (listing the elements required for assumption of risk defense for autonomous car owners but saying that "[a] successful showing of contributory negligence or assumption of risk by the injured party could invalidate strict liability for the autonomous car owner"); Alexander F. Beale, Note, *Whose Coffers Spill When Autonomous Cars Kill? A New Tort Theory for the Computer Code Road*, 27 WIDENER COMMONWEALTH L. REV. 215, 229-30 (2018) (referring to role assumption of risk defense will play in preventing total immunity for autonomous car manufacturers). *But see* Jeffrey K. Gurney, Note, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles*, 2013 U. ILL. J.L. TECH. & POL'Y 247, 269-71 (broaching assumption of risk defense); David King, Note, *Putting the Reins on Autonomous Vehicle Liability: Why Horse Accidents Are the Best Common Law Analogy*, 19 N.C. J.L. & TECH. ONLINE 127, 156 (2017) (discussing assumption of risk defense in depth in context of autonomous vehicles).

[4] Kenneth W. Simons, *Reflections on Assumption of Risk*, 50 UCLA L. REV. 481, 482 (2002) (first citing KENNETH S. ABRAHAM, THE FORMS AND FUNCTIONS OF TORT LAW 153 (2d ed. 2002); and then citing DAN B. DOBBS, THE LAW OF TORTS 534-46 (2000)) (noting that most scholars and the Restatement (Third) of Torts agree that assumption of risk should be completely merged with comparative fault and dismantled as distinct doctrine); *see also* RESTATEMENT (THIRD) OF TORTS: APPORTIONMENT LIAB. § 2 reporters' note cmt. d (AM. L. INST. 2000) ("Most courts have abandoned implied assumption of risk as an absolute bar to a plaintiff's recovery.").

[5] Assumption of risk was first recognized in the United States in 1842. 2 W. F. BAILEY, A TREATISE ON THE LAW OF PERSONAL INJURIES INCLUDING EMPLOYER'S LIABILITY, MASTER AND SERVANT AND THE WORKMEN'S COMPENSATION ACTS 939 (2d ed. 1912).

[6] *See infra* notes 80-82 and accompanying text; *e.g.*, *Wheelchair Mounted Robot Arm to Use Intel Neuromorphic Technology to Assist Patients*, ROBOT REP. (Aug. 19, 2020), https://www.therobotreport.com/wheelchair-mounted-robot-arm-intel-neuromorphic-accenture-support/ [https://perma.cc/W8T4-MJZ8] (discussing, as an example, assisted robots using neuromorphic chips).

[7] *See infra* notes 18-19 and accompanying text.

But the voluntary and knowing requirements may work against each other when emerging technologies like AI are at issue. The voluntary requirement can be easily satisfied as many early adopters are anxious to try new AI-driven products like autonomous vehicles, AI-tumor scans, dating apps, direction services like Waze, and biometric fingerprint scans.[8] But the knowing requirement cuts the other way—the novelty and complexity of AI present a challenge for defendants who must prove that the users understood the risks associated with the technology. This is particularly true for AI, because the term itself is not even well-understood by the general public, let alone AI's attendant risks.[9] Indeed, where the technology is complex, novel, and transformative, can its inherent risks ever be "known"?

This presents a normative dilemma for the law. A broad interpretation of assumption of risk could deny recovery to a large majority of AI users. Defendants could paint plaintiffs as early adopters who knowingly and voluntarily engaged with the AI technologies, effectively banning any recovery for related injuries. Defendants could argue that society is well aware that new technologies come with attendant risks, that this particular plaintiff had knowledge of the risks, and that they had plenty of alternatives available, including opting for a different technology. The case is even more challenging if the defendant fully disclosed the risks in an instruction manual or required the user to sign an express assumption of risk waiver.[10] The defendants would likely

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[8] *See Artificial Intelligence: Dating App Users Are Increasingly Trusting This Matchmaker*, FORBES INDIA (July 27, 2021, 5:05 PM), https://www.forbesindia.com/article /forbes-lifes/artificial-intelligence-dating-app-users-are-increasingly-trusting-this-matchmaker/69413/1 [https://perma.cc/H4VJ-9QEK] (discussing AI use in dating apps); Frederic Lardinois, *Waze Doubles Its User Base to 20 Million in 6 Months*, TECHCRUNCH (July 5, 2012, 8:34 AM), https://techcrunch.com/2012/07/05/waze-20-million/ [https://perma.cc/624K-9W5Y]; Maria Korolov, *What Is Biometrics? 10 Physical and Behavioral Identifiers That Can Be Used for Authentication*, CSO (Feb. 12, 2019, 3:00 AM), https://www.csoonline.com/article/3339565/what-is-biometrics-and-why-collecting-biometric-data-is-risky.html [https://perma.cc/Y9XE-LEB3] (noting that, in 2018, 62% of companies were using biometric authentication and another 24% planned to deploy it within two years).

[9] Experts cannot even agree on a single definition of "artificial intelligence." *See, e.g.*, John McCarthy, What Is Artificial Intelligence? 2 (Nov. 12, 2007) (unpublished manuscript) (available at http://jmc.stanford.edu/articles/whatisai/whatisai.pdf [https://perma.cc/5HLA-4J6A]) (defining AI as "[t]he science and engineering of making intelligent machines" where "[i]ntelligence is the computational part of the ability to achieve goals in the world"); MCKINSEY GLOB. INST., ARTIFICIAL INTELLIGENCE: THE NEXT DIGITAL FRONTIER? 6 (2017) (describing AI as machines' ability to "exhibit human-like cognition"); Stuart Russell & Peter Norvig, *Preface* to ARTIFICIAL INTELLIGENCE: A MODERN APPROACH, at viii (Stuart J. Russell & Peter Norvig eds., 3d ed. 2010) ("We define AI as the study of agents that receive percepts from the environment and perform actions.").

[10] McCune v. Myrtle Beach Indoor Shooting Range, Inc., 612 S.E.2d 462, 465-67 (S.C. Ct. App. 2005) (holding that liability release and assumption of risk agreement limited defendant's liability); Gumnitsky v. Delta Int'l Mach. Corp., 411 F. Supp. 2d 756, 770 (N.D.

argue that plaintiffs engaged in a cost-benefit analysis of the new technologies and found the benefits exceeded the risks. As such, the argument continues, the plaintiffs' injuries were unfortunate, but such is part of the tradeoff associated with the use of new technologies.

In direct contrast, a narrow interpretation of assumption of risk would result in the defense being denied to almost every AI-defendant. The defendant bears the burden of demonstrating that the plaintiff knowingly and voluntarily engaged with a foreseeable risk.[11] While they should have little difficulty establishing the plaintiff's voluntary use of the AI-driven technology, they may have an extremely difficult time demonstrating that a plaintiff without any computer or data science background could fully appreciate the risk of harm for such a sophisticated piece of technology. This might be particularly difficult given the "black box," or opaque, nature of most machine learning algorithms.[12] For example, even if a plaintiff had some basic understanding that AI was involved in one's medical diagnosis, the understanding may not be substantial enough that a jury would find it to be "knowing."[13] And there is a critical distinction between explainability of a technology and knowledge of the risks associated with such technology.

A similar conundrum exists with respect to assumption of risk and the COVID-19 pandemic that has plagued the world since March 2020. A largely unknown virus resulted in multiple and recurring health restrictions across the United States that shut down many sectors of the economy.[14] As these businesses reopened, they faced potential liability from patrons who were at risk of

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Ohio 2005) (finding it relevant to dismissal of failure-to-warn claim that plaintiff understood warning on saw blade); *see also* Karst v. Shur-Co., 2016 SD 35, ¶¶ 16-20, 878 N.W.2d 604, 613-14 (noting that to sustain failure to warn action, plaintiff must actually read warnings accompanying product).

[11] *See, e.g.*, Pachunka v. Rogers Constr., Inc., 716 N.W.2d 728, 731 (Neb. 2006).

[12] *See, e.g.*, Ashley Deeks, *The Judicial Demand for Explainable Artificial Intelligence*, 119 COLUM. L. REV. 1829, 1833 (2019) (defining the "'black box' problem" as a "lack of information about how [an] algorithm arrives at its results").

[13] The assumption of risk analysis is further complicated by its extreme fact-dependency and reliance on juries for resolution. There are reports that patients are often not made aware when artificial intelligence is being used in their healthcare. *See* Rebecca Robbins & Erin Brodwin, *An Invisible Hand: Patients Aren't Being Told About the AI Systems Advising Their Care*, STAT (July 15, 2020), https://www.statnews.com/2020/07/15/artificial-intelligence-patient-consent-hospitals/ [https://perma.cc/99TZ-DYB6] (publicizing that Minnesota healthcare system regularly uses artificial intelligence for discharge planning decisions without patient knowledge). Defendants in such circumstances could be precluded from invoking an assumption of risk defense when injury results from the use of AI.

[14] *See The Virus That Shut Down the World: Economic Meltdown*, UN NEWS (Dec. 30, 2020), https://news.un.org/en/story/2020/12/1080762 [https://perma.cc/E85L-R9K4] ("Mass lay-offs took place in the service sector, particularly industries that involve personal interactions such as tourism, retail, leisure and hospitality, recreation and transportation services.").

contracting the virus while at their establishments.[15] In an effort to protect themselves, there was a resurgence in express assumption of risk waivers that customers were asked to sign to signify they voluntarily and knowingly assumed the risks of contracting COVID-19.[16] Although the enforceability of such waivers is currently unclear,[17] similar questions about a COVID-19 defendant's ability to establish assumption of risk's "knowing" requirement with respect to the novel COVID-19 virus may help guide assumption of risk's application to novel and complex technologies. Just as society's management of COVID-19 risks evolved as the virus became more understood, so too will society's management of AI risks.

Contrary to scholars who argue for the abolition of the assumption of risk doctrine,[18] this Article explores its continued viability in a world that is

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[15] *See* Erik Larson, Christopher Yasiejko & Edvard Pettersson, *Ending Virus Shutdowns Too Soon Poses Legal Risk for Businesses*, Bloomberg L. (Apr. 17, 2020, 9:00 AM), https://news.bloomberglaw.com/daily-labor-report/ending-virus-shutdowns-too-soon-poses-legal-risk-for-businesses ("Whenever U.S. stores, restaurants and theaters reopen from coronavirus shutdowns, they may face an unexpected problem: lawsuits from sick patrons and workers."); Rural Cmty. Workers All. v. Smithfield Foods, Inc., 459 F. Supp. 3d 1228, 1238-40 (W.D. Mo. 2020) (finding that meat processing plant owner did not fail to adequately protect workers at plant from COVID-19 where owner took significant measures to protect its essential workers, there were no confirmed COVID cases, the spread of COVID-19 at plant was not inevitable, and owner could contain spread of COVID-19 at plant if it occurred).

[16] Rosie Perper, *Trump Is Making Rally Attendees Sign a Waver so if They Catch the Coronavirus and Die, It's on Them Not Him*, Bus. Insider (Jun. 11, 2020, 10:57 PM), https://www.businessinsider.com/trump-campaign-requiring-people-to-sign-coronavirus-waiver-tulsa-rally-2020-6 [https://perma.cc/D8A9-DV8Q] ("By attending the Rally, you and any guests voluntarily assume all risks related to exposure to COVID-19 . . . ."); Bd. of L. Exam'rs of the State of N.C., Notice to Applicants Regarding COVID-19 Requirements, Protective Measures, and Assumption of Risk for July 2020 North Carolina Bar Examination 2, https://www.ncble.org/covid_19_requirements [https://perma.cc/DRC7-YQJT] (last visited Feb. 15, 2022) ("By proceeding to take the examination, each applicant acknowledges and voluntarily assumes all risk of exposure to or infection with COVID-19 . . . .").

[17] Jennifer Kennedy Park, Michael J. Albano & Lina Bensman, *Risky Business: Waivers & Assumption of the Risk of COVID-19 Exposure*, Cleary Gottlieb (May 28, 2020), https://www.clearygottlieb.com/-/media/files/alert-memos-2020/risky-business--waivers-and-assumption-of-the-risk-of-covid.pdf [https://perma.cc/FF24-8QAD] ("[T]here is no clear precedent relating to communicable disease waivers during a pandemic . . . .").

[18] *See* Fleming James, Jr., *Assumption of Risk: Unhappy Reincarnation*, 78 Yale L.J. 185, 187-88 (1968) (arguing that assumption of risk "deserves no separate existence (except for *express* assumption of risk) and is simply a confusing way of stating certain no-duty rules or . . . simply one kind of contributory negligence"); Stephen D. Sugarman, *Assumption of Risk*, 31 Val. U. L. Rev. 833, 835 (1997) ("[W]hen we are tempted to say 'assumption of risk' we should instead say something else."); John L. Diamond, *Assumption of Risk After Comparative Negligence: Integrating Contract Theory into Tort Doctrine*, 52 Ohio St. L.J. 717, 725 (1991) (arguing that without enforceable contract or policy of limited duty, comparative negligence principles should apply to determine plaintiff's recovery under

increasingly hungry for new technology—*voluntarily* engaging with it—and one that is increasingly reliant on complex technologies with risks that it *knows* little about. Instead of completely abandoning it, the assumption of risk doctrine may have a place in our AI-driven future. Although the all-or-nothing nature of assumption of risk means it should be used sparingly, to completely abandon it does a disservice to the subtle tradeoffs associated with tort risk assessments. An overbroad interpretation may eviscerate the defense but a narrow interpretation might overpower it. Reenvisioned correctly, it can serve a valuable purpose by better aligning incentives of both providers and beneficiaries of new technology.

Part I of this Article provides necessary background on the assumption of risk defense, exploring both express and implied assumption of risk. Part II examines the difficulties that defendants face when attempting to invoke the assumption of risk defense with respect to AI. It analyzes the historical use of this defense with respect to emerging technologies generally, and then situates these difficulties in the context of various artificially intelligent technologies. Part III then demonstrates how the assumption of risk defense might be reinvigorated to apply to future tort claims using principles extracted from informed consent frameworks. Specifically, informed consent's disclosure requirements and objective analyses of plaintiffs' appreciation of the risks may be instrumental in establishing a better balance between two of tort law's competing goals: facilitating innovation and compensating the injured.

I.   THE HISTORICAL LEGACY OF ASSUMPTION OF RISK

As every first-year torts student knows, negligence claims are comprised of four required elements: (1) duty, (2) breach, (3) causation, and (4) damages.[19] After the plaintiff establishes this prima facie case,[20] the defendant may then raise affirmative defenses, including comparative/contributory negligence and assumption of risk.[21] The assumption of risk defense is broadly available to

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implied assumption of risk); Simons, *supra* note 4, at 529 (acknowledging that spirit of assumption of risk endures in most jurisdictions, but that defense should only be retained in narrow situations where victim prefers risk and "insists on a relationship with the injurer").

   [19] John C.P. Goldberg & Benjamin C. Zipursky, *The Restatement (Third) and the Place of Duty in Negligence Law*, 54 VAND. L. REV. 657, 658 (2001).

   [20] The prospect of emergent, unforeseeable behavior by AI will not only cause assumption of risk problems but also proximate cause and product misuse problems, which may create difficulties in establishing the plaintiff's prima facie negligence case, which would preclude the need for an assumption of risk affirmative defense. *See* Ryan Calo, *Robotics and the Lessons of Cyberlaw*, 103 CALIF. L. REV. 513, 554-55 (2015).

   [21] Primary assumption of risk serves to negate the duty element of the prima facie case, so sometimes it is not considered an affirmative defense. *See, e.g.*, Hvolboll v. Wolff Co., 347 P.3d 476, 481 (Wash. Ct. App. 2015) (recognizing that express and implied primary assumption of risk relieves defendant of duty owed to plaintiff); Henson v. Uptown Drink, LLC, 906 N.W.2d 533, 539 (Minn. Ct. App. 2017) (stating that primary assumption of risk serves to negate defendant's duty of care to the plaintiff); Schnetz v. Ohio Dep't. of Rehab. & Corr., 195 Ohio App. 3d 207, 2011-Ohio-3927, 959 N.E.2d 554, at ¶ 24 (Ohio Ct. App.

parties defending against not only negligence claims but also products and strict liability[22] and misrepresentation claims.[23] To establish the defense of assumption of risk, the plaintiff must (1) have knowledge of the facts constituting a dangerous condition, (2) know the condition is dangerous, (3) appreciate the nature and extent of the danger, and (4) voluntarily expose him or herself to the danger.[24]

This Article will not rehash the solid work of prior scholars documenting the rise and fall of the assumption of risk doctrine through the last 160 years,[25] but will provide a brief contextual summary. Most scholars document its emergence in the United States in 1842 originating in master-servant relationships.[26] It is reflected in the maxim *volenti non fit injuria*: "to a willing person, injury is not

2011) (recognizing primary assumption of risk negates negligence claim because defendant does not owe duty to plaintiff); *see also* Dale L. Moore, *Please Watch Your Language!: The Chronic Problem of Assumption of Risk*, 61 CATH. U. L. REV. 175, 191 (2011) ("Commentators and influential state courts agree that a finding of primary implied assumption of risk is analytically equivalent to a finding that the defendant either did not owe or did not breach a duty of care to the plaintiff.").

[22] *See, e.g.*, Patterson Enters., Inc. v. Johnson, 2012 MT 43, ¶ 38, 364 Mont. 197, 272 P.3d 93 ("[W]e extended the defense of assumption of the risk to strict liability based on abnormally dangerous activities."); Wilson v. Voss, 361 So. 2d 312, 314 (La. Ct. App. 1978) ("Assumption of the risk is a defense to an action in strict liability.").

[23] *See, e.g.*, Staggs v. Violet, No. 85-61-II, 1985 WL 3643, at *4 (Tenn. Ct. App. Sept. 11, 1985); Pac. Mut. Life Ins. Co. v. Arnold, 90 S.W.2d 44, 50 (Ky. 1935) (discussing assumption of risk and misrepresentation in insurance contracts context). Assumption of risk even rears its head outside of the torts context, as seen in contracts and criminal law. *See* Guthrie v. Times-Mirror Co., 124 Cal. Rptr. 577, 581 (Cal. Dist. Ct. App. 1975) ("Where parties are aware at the time the contract is entered into that a doubt exists in regard to a certain matter and contract on that assumption, the risk of the existence of the doubtful matter is assumed as an element of the bargain."); Frazier v. Cupp, 394 U.S. 731, 740 (1969) ("Petitioner, in allowing Rawls to use the bag and in leaving it in his house, must be taken to have assumed the risk that Rawls would allow someone else to look inside. We find no valid search and seizure claim in this case."). Assumption of the risk in criminal law search and seizure cases is falling to the wayside however, as the doctrine is often conflated with the common authority doctrine, under which one person may consent to the search of another person's property if both have joint access or control. *See* United States v. Matlock, 415 U.S. 164, 170 (1974); Elizabeth A. Wright, Note, *Third Party Consent Searches and the Fourth Amendment: Refusal, Consent, and Reasonableness*, 62 WASH. & LEE L. REV. 1841, 1857 (2005).

[24] STUART M. SPEISER, CHARLES F. KRAUSE, ALFRED W. GANS & MONIQUE C. M. LEAHY, 3 THE AMERICAN LAW OF TORTS § 12:46 (Dec. 2021), Westlaw; *see also* Cole v. S.C. Elec. & Gas, Inc., 608 S.E.2d 859, 863-64 (S.C. 2005).

[25] For the seminal article on assumption of risk, see generally Francis H. Bohlen, *Voluntary Assumption of Risk*, 20 HARV. L. REV. 14 (1906); *see also* Diamond, *supra* note 18, at 718 ("Assuming the defendant is negligent, two defenses were traditionally available: contributory negligence and assumption of risk.").

[26] BAILEY, *supra* note 5, at 939. Under this doctrine, where a master fulfilled his duty to keep a reasonably safe workplace, he was not liable for a servant's injuries due to inherent dangers in the workplace. *See* Diamond, *supra* note 18, at 718 n.5.

done."[27] The early twentieth century reflected strong adherence to the doctrine, denying plaintiffs any compensation for injuries occurring from known risks freely encountered.[28] The mid-twentieth century swung the doctrine's pendulum, as courts demonstrated a greater willingness to award a plaintiff some compensation even where the plaintiff had a role in the injury.

A similar pro-plaintiff trend is seen in the emergence of strict liability, which holds defendants liable for damages for certain categories of activities, such as ultrahazardous activities, even when all due care is taken.[29] It is also seen in the shift from contributory negligence, which served as a complete bar to plaintiff's injuries, to comparative negligence, which apportions recovery in relation to relative fault of the parties.[30] The result was three types of assumption of risk: (1) express, (2) implied primary, and (3) implied secondary.[31] Each is discussed below.

A.   *Express Assumption of Risk*

Express assumption of risk is a relatively straightforward concept and does not engender the same degree of controversy that surrounds implied assumption of risk.[32] It arises when a plaintiff, who by contract or otherwise, expressly agrees to accept a risk of harm arising from the defendant's negligent or reckless conduct.[33] In its simplest form, assumption of risk means that the plaintiff has expressly consented to relieve the defendant of an obligation to exercise care for his or her protection.[34] "Express assumption of risk resembles consent" because

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[27] *See* Bohlen, *supra* note 25, at 14.

[28] *See, e.g.*, Murphy v. Steeplechase Amusement Co., 166 N.E. 173, 174-75 (N.Y. 1929) (finding that plaintiff trying to keep footing on moving belt of amusement park device accepted the "obvious and necessary" dangers of doing so); Turcotte v. Fell, 502 N.E.2d 964, 971-73 (N.Y. 1986) (finding that professional jockey injured in fall from horse was "well aware" of risks of racing).

[29] *See* Pierce v. Pac. Gas & Elec. Co., 212 Cal. Rptr. 283, 293 (Cal. Dist. Ct. App. 1985) ("[O]ne who undertakes an ultrahazardous activity is liable to every person who is injured as a proximate result of that activity, regardless of the amount of care he uses."); Alden D. Holford, *The Limits of Strict Liability for Product Design and Manufacture*, 52 Tex. L. Rev. 81, 82-83 (1973) (noting that manufacturer's ability to absorb costs of injury and to control risks are two rationales behind strict products liability).

[30] *See* Arthur Best, *Impediments to Reasonable Tort Reform: Lessons from the Adoption of Comparative Negligence*, 40 Ind. L. Rev. 1, 6-11 (2007) (explaining shift from contributory to comparative negligence in U.S. jurisdictions).

[31] Eric A. Feldman & Alison Stein, *Assuming the Risk: Tort Law, Policy, and Politics on the Slippery Slopes*, 59 DePaul L. Rev. 259, 271-72 (2010).

[32] *See* Speiser et al., *supra* note 24, § 12:48 ("Very few questions arise in the situation where a plaintiff—by contract or otherwise—expressly agrees to accept a risk of harm arising from a defendant's negligent or reckless conduct.").

[33] Restatement (Second) of Torts § 496B (Am. L. Inst. 1965).

[34] *Id.* at § 496A cmt. c; *see also* Matthew J. Toddy, Note, *Assumption of Risk Merged with Contributory Negligence:* Anderson v. Ceccardi, 45 Ohio St. L.J. 1059, 1061-62 (1984)

the plaintiff affirmatively and clearly waives her right to recovery for any harm incurred.[35] Before the COVID-19 pandemic, most express assumption of risk was associated with activities viewed as inherently dangerous in some way, including skiing, bungee jumping, hang gliding, and rock climbing.[36]

While the law does not bar defendants from contracting away their ordinary duty to exercise reasonable care, courts have refused to honor such agreements when they are contrary to public policy.[37] A common scenario where courts hesitate to enforce waivers of assumption of risk is between employers and employees. There, concerns over disparate bargaining power and economic necessity on the part of the employee generally dissuade courts from giving

("Express assumption of risk . . . occurs when a plaintiff expressly states that the defendant will be held blameless for the plaintiff's failure to exercise due care for his or her protection in certain circumstances.").

[35] Toddy, *supra* note 34, at 1062. For example, the Trump campaign asked registrants who wanted to attend an event during the COVID-19 pandemic to sign a waiver acknowledging the "inherent risk of exposure to COVID-19 exists in any public place where people are present" and that they "voluntarily assume all risks related to exposure to COVID-19 and agree not to hold [the Trump campaign, the venue or other organizers] liable." Ryan Nobles, *Trump Campaign Says It Can't Be Held Liable if Rally Attendees Contract Coronavirus*, CNN (June 13, 2020, 12:38 AM), https://www.cnn.com/2020/06/11/politics/trump-campaign-rally-coronavirus/index.html [https://perma.cc/BLT7-GEQ5].

[36] *See, e.g.*, David Horton, *Extreme Sports and Assumption of Risk: A Blueprint*, 38 U.S.F. L. REV. 599, 602-04 (2004); Amanda Greer, *Extreme Sports and Extreme Liability: The Effect of Waivers of Liability in Extreme Sports*, 9 DEPAUL J. SPORTS L. & CONTEMP. PROBS. 81, 81-84 (2012).

[37] *See* Luke Ellis, Note, *Talking About My Generation: Assumption of Risk and the Rights of Injured Concert Fans in the Twenty-First Century*, 80 TEX. L. REV. 607, 615 (2002) ("For example, access to medical attention, landlord and tenant leasing agreements, and employer-employee relationships are areas in which courts have been most active in invalidating exculpatory clauses as contrary to public policy." (citations omitted)); RESTATEMENT (SECOND) OF TORTS § 496B (AM. L. INST. 1965). Continuing with our Trump campaign example, courts could find a waiver of COVID-19 risks during a global pandemic unconscionable. Courts generally disfavor exculpatory clauses and will usually not enforce them if they are contrary to public policy. *See, e.g.*, Loewe v. Seagate Homes, Inc., 987 So. 2d 758, 760 (Fla. Dist. Ct. App. 2008) (stating that "[e]xculpatory clauses are disfavored" and will not be enforced if violative of public policy); Topp Copy Prods., Inc. v. Singletary, 626 A.2d 98, 99 (Pa. 1993) (stating that exculpatory clause cannot be enforced if violative of public policy). Some courts require "negligence" to be stated in the liability waiver, which the Trump rally waiver failed to include. Sirek v. Fairfield Snowbowl, Inc., 800 P.2d 1291, 1295 (Ariz. Ct. App. 1990) (recognizing that many courts believe exculpatory clauses should not only be clear and equivocal, but also must include the word "negligence"). Additionally, the Trump rally waiver language may imply that proper precautions, like mask-wearing, would be enforced at the rally, possibly rendering the waiver unenforceable if such precautions were not taken. *See* UCF Athletics Ass'n v. Plancher, 121 So. 3d 1097, 1102 (Fla. Dist. Ct. App. 2013) (holding exculpatory clause unenforceable when it implied that proper rules and techniques for football conditioning would be implemented before language waiving liability appeared), *aff'd in part, rev'd in part*, Plancher v. UCF Athletics Ass'n, 175 So. 3d 724 (Fla. 2015). It is also possible that a court would enforce such a waiver, however, given that attendance at such a rally was completely optional.

waivers effect.[38] Generally, any express agreement for the assumption of risk will not be enforced "where there is such disparity of bargaining power between the parties that the agreement does not represent a free choice on the part of the plaintiff."[39] Furthermore, courts generally reject express assumption of risk when defendants are charged with a public duty.[40] These common carrier or public utility defendants cannot discharge their public obligation duties by contract or any other agreement.[41] Notably, these waivers often only apply to a defendant's ordinary negligence and courts can still find a defendant liable for injuries to a plaintiff who signed an assumption of risk waiver where the defendant was grossly negligent.[42] As of January 2022, such express waivers are allowed in at least forty-six of the fifty states.[43]

B.   *Implied Assumption of Risk*

Implied assumption of risk is more common and doctrinally confusing.[44] Implied assumption of risk occurs if a plaintiff knowingly and voluntarily enters into some relation with the defendant that involves risk, and in so doing, tacitly or impliedly agrees to relieve the defendant of responsibility.[45] Unlike express assumption of risk, there is no signed waiver to analyze. As one California court has explained, this results in a different analysis.[46] Whereas "express assumption of the risk focuses on the agreement itself," the "scope of the release," and the

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[38] *See* RESTATEMENT (SECOND) OF TORTS § 496B cmt. f; Ellis, *supra* note 37, at 615.

[39] Fuller v. TLC Prop. Mgmt., LLC, 402 S.W.3d 101, 111 (Mo. Ct. App. 2013) (en banc) (Rahmeyer, J., concurring). Comparatively, courts have upheld exculpatory clauses when a plaintiff chooses to participate in a nonessential recreational activity. *See* Sharon v. City of Newton, 769 N.E.2d 738, 745 (Mass. 2002) (finding that exculpatory clause signed as prerequisite to participate in cheerleading did not violate public policy); Dimick v. Hopkinson, 2018 WY 82, ¶¶ 10-11, 422 P.3d 512, 517-18 (Wyo. 2018) (enforcing exculpatory clause that plaintiff signed to go overnight camping because it was not an "essential service").

[40] RESTATEMENT (SECOND) OF TORTS § 496B cmt. g.

[41] *Id.*

[42] Tuttle v. Heavenly Valley LP, No. G056427, 2020 WL 563604, at *8-10 (Cal. Ct. App. Feb. 5, 2020) (noting that, while enforcing waiver of assumption of risk for recreational activities is against public policy as to gross negligence, defendant's waiver "exculpated it from liability for its own ordinary negligence").

[43] MATTHIESEN, WICKERT & LEHRER, S.C., EXCULPATORY AGREEMENTS AND LIABILITY WAIVERS IN ALL 50 STATES 6-7, https://www.mwl-law.com/wp-content/uploads/2018/05/EXCULPATORY-AGREEMENTS-AND-LIABILTY-WAIVERS-CHART.pdf [https://perma.cc/WV7R-KC8N] (last updated Jan. 13, 2022) (noting that such waivers are not allowed in Louisiana, Montana, and Virginia and that Rhode Island has not clearly defined its requirements and thus is hard to classify).

[44] *See* SPEISER ET AL., *supra* note 24, at § 12:49 ("A much more common situation than express agreement assumption of risk—and which also has created much more confusion—is involved in the so-called 'implied' assumption of risk.").

[45] *Id.*

[46] *Tuttle*, 2020 WL 563604, at *6.

plaintiff's "specific knowledge of the particular risk that ultimately caused the injury," implied assumption of risk focuses on "risks inherent" to the activity.[47] Implied assumption of risk is inferred from the plaintiff's behavior and can encompass one of two situations: the plaintiff (1) voluntarily assumes a known inherent risk where the defendant is not negligent (primary assumption of risk) or (2) voluntarily assumes a known risk arising from the defendant's negligence (secondary assumption of risk).[48] Each is discussed below.

Primary. Primary implied assumption of risk applies when the risk encountered is inherent in the activity itself; it is "neither created nor exacerbated by negligence," but "simply exist[s]."[49] A common example would be participation in any sport that is likely to cause injury, such as football, skiing, or hang gliding.[50] Primary assumption of risk is based on one of two types of implied knowledge: either the risk must have been known because it was the "subject of common knowledge" or the risk would have been "obvious" to a "reasonable person in the plaintiff's position."[51] Under primary assumption of risk, liability attaches only "where the defendant intentionally injures or engages in reckless, willful or wanton misconduct beyond the scope ordinarily contemplated for the activity."[52]

In cases involving primary assumption of risk—often described as "no duty of care"—the defendant is not negligent because he either "owed no duty or he did not breach the duty owed."[53] Unlike an affirmative defense, primary assumption of risk serves to negate an element of the plaintiff's prima facie case, thus acting as a complete bar to recovery.[54] Even though not technically an affirmative defense, some courts nevertheless apply primary assumption of risk as one.[55] Still other courts hold that the label of primary assumption of risk

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[47] *Id.*

[48] *See* Stephanie M. Wildman & John C. Barker, *Time to Abolish Implied Assumption of a Reasonable Risk in California*, 25 U.S.F. L. Rev. 647, 652 (1991) ("Implied assumption of risk is inferred from plaintiff's conduct."); Ellis, *supra* note 37, at 618, 620-21 (defining primary implied assumption of risk as plaintiff "engaging in a known and potentially risky activity," and secondary implied assumption of risk as plaintiff voluntarily encountering known risk created by defendant).

[49] Moore, *supra* note 21, at 184.

[50] *See id.* 184 & n.62.

[51] *See* George D. Turner, Note, *Allocating the Risk of Spectator Injuries Between Basketball Fans and Facility Owners*, 6 Va. Sports & Ent. L.J. 156, 159 (2006); *id.* at 159 n.12 (collecting cases where defendants asserted primary assumption of risk in suits brought by baseball fans hit by foul balls at games).

[52] Alexander J. Drago, *Assumption of Risk in the Arena, on the Field and in the Mosh Pit: What Protection Does It Afford?*, 13 Ent. & Sports Law. 3, 4 (1995).

[53] *See* Kenneth W. Simons, *Assumption of Risk and Consent in the Law of Torts: A Theory of Full Preference*, 67 B.U. L. Rev. 213, 215 (1987).

[54] *See, e.g.*, Moore, *supra* note 21, at 191; Ellis, *supra* note 37, at 618.

[55] Moore, *supra* note 21, at 192 ("[M]any intermediate appellate and state court judges frequently label and treat primary implied assumption of risk as an affirmative defense.").

should be dropped and such conduct should rather be analyzed in a no-duty context, thus alleviating much of the confusion and ambiguity that presently exists.[56]

Secondary. Secondary assumption of risk, on the other hand, is an affirmative defense to an established breach of duty and exists only if the plaintiff was contributorily negligent in embracing the risk.[57] Implied secondary assumption of risk applies where a plaintiff voluntarily assumes a risk of a foreseeable harm arising from the negligent or reckless conduct of the defendant and, therefore, cannot recover for the resultant harm.[58] It occurs when the defendant has breached a duty of care owed to the plaintiff and the plaintiff voluntarily encounters a known risk of harm created by the defendant's negligence.[59] In other words, the plaintiff was "aware of [the] risk created by the negligence of the defendant, [and] proceed[ed] or continue[d] voluntarily to encounter it."[60]

Implied secondary assumption of risk can be distinguished further between reasonable and unreasonable assumption of risk.[61] One commentator has distinguished reasonable from unreasonable assumption of risk through the example of a man entering a blazing building to rescue a child (reasonable) versus a man entering the same building to recover a favorite hat (unreasonable).[62] In the latter case, the defense may be subsumed under contributory or comparative negligence.[63] Courts are split on whether to bar recovery for a reasonable plaintiff—even in jurisdictions that have adopted comparative negligence—due to policy concerns around barring recovery for a plaintiff that has acted in a manner encouraged by the law.[64] However, in jurisdictions that have merged the defenses of comparative negligence and assumption of risk, a plaintiff's unreasonable assumption of risk will not

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[56] Toddy, *supra* note 34, at 1063.

[57] *See* Ellis, *supra* note 37, at 621-22.

[58] RESTATEMENT (SECOND) OF TORTS § 496A (AM. L. INST. 1965). Such a defense would not apply to all risks encountered by any new AI, only foreseeable ones. *See, e.g.*, Kelly v. McCarrick, 841 A.2d 869, 877 (Md. Ct. Spec. App. 2004) (recognizing that "the risks assumed by participating in a game are only the 'usual' and foreseeable dangers that a similarly situated player reasonably would expect to encounter").

[59] *See* Meistrich v. Casino Arena Attractions, Inc., 155 A.2d 90, 93 (N.J. 1959).

[60] RESTATEMENT (SECOND) OF TORTS § 496A cmt. c.

[61] *See id.*; Toddy, *supra* note 34, at 1063.

[62] *See* Toddy, *supra* note 34, at 1064.

[63] RESTATEMENT (SECOND) OF TORTS § 496A cmt. c (noting that when "plaintiff's conduct in voluntarily encountering a known risk is itself unreasonable, [it] amounts to contributory negligence").

[64] Toddy, *supra* note 34, at 1063-64 (discussing problems with a "policy denying recovery . . . [to a] plaintiff [who] is, in effect, punished for acting in a manner that the law encourages").

completely bar recovery, as it would if asserted as a distinct defense, but would rather act to apportion fault under a comparative negligence scheme.[65]

Of all three forms of assumption of risk, this implied secondary assumption of risk has the greatest overlap with contributory negligence defenses. As such, the cumulative impact of states moving away from contributory negligence has resulted in a concordant drift away from implied secondary assumption of risk.[66]

C.   *Enduring Impact of Assumption of Risk*

These three forms of assumption of risk, coupled with the varied treatment of each, has generated a sizable amount of scholarship lamenting the confusion surrounding the doctrine.[67] Much of this confusion reflects the inherent overlap between the doctrine of implied assumption of risk and that of contributory negligence.[68] Similar to contributory negligence,[69] several states impose a complete bar on recovery if the defendant proves an assumption of risk defense.[70] This leads scholars to criticize the "all-or-nothing" nature of the doctrine, arguing that it does not align with the legal system's overall movement

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[65] *Id.* at 1064-65.

[66] *See infra* Section I.C.

[67] *See, e.g.*, RESTATEMENT (SECOND) OF TORTS § 496A cmt. c ("'Assumption of risk' is a term which has been surrounded by much confusion, because it has been used by the courts in at least four different senses, and the distinctions seldom have been made clear."); *see also* Diamond, *supra* note 18, at 717-20 (describing confusion around interaction of assumption of risk with comparative negligence); James, *supra* note 18, at 186-88 (explaining that assumption of risk "is simply a confusing way of stating certain no-duty rules or, where there has been a breach of duty toward plaintiff, simply one kind of contributory negligence"); Fleming James, Jr., *Assumption of Risk*, 61 YALE L.J. 141, 141 (1952) (noting confusion term invokes because it refers to two overlapping concepts, primary and secondary assumption of risk, which often produce the same legal result); John W. Wade, *The Place of Assumption of Risk in the Law of Negligence*, 22 LA. L. REV. 5, 14 (1961) (lamenting confusion over doctrine and concluding that "[a]ccurate analysis in the law of negligence would probably be advanced if the term [of primary assumption of risk] were eradicated and the cases divided under the topics of consent, lack of duty, and contributory negligence").

[68] *See* Frelick v. Homeopathic Hosp. Ass'n of Del., 150 A.2d 17, 18 (Del. Super. Ct. 1959) ("The attempt to distinguish between the affirmative defenses of assumption of risk and contributory negligence has been a favorite subject of many courts, 'law journalists and reviewers.'"); VICTOR E. SCHWARTZ, COMPARATIVE NEGLIGENCE 167-73 (2d ed. 1986) (discussing merger of implied assumption of risk into contributory negligence).

[69] Only four states and the District of Columbia still recognize the pure contributory negligence rule. MATTHIESEN, WICKERT & LEHRER, S.C., CONTRIBUTORY NEGLIGENCE/COMPARATIVE FAULT LAWS IN ALL 50 STATES, https://www.mwl-law.com/wp-content/uploads/2018/02/COMPARATIVE-FAULT-SYSTEMS-CHART.pdf [https://perma.cc/HN3H-KAQR] (last updated Jan. 13, 2022).

[70] Diamond, *supra* note 18, at 721 (noting that some jurisdictions hold that assumption of risk is a complete defense, "even when contributory negligence is converted to a comparative system and remains only a partial defense").

toward apportionment liability regimes.[71] Because of the superfluity and inconsistent application of implied assumption of risk, many have advocated for its abolishment.[72]

Despite this scholarly push and perceived overlap, eleven U.S. jurisdictions recognize the two defenses as distinct and retain assumption of risk in all its varieties.[73] Courts in these jurisdictions retain both defenses partly because they employ different standards. Assumption of risk employs a subjective standard, assessing whether the plaintiff knew, understood, and appreciated the inherent risks of the activity before participating; in contrast, contributory negligence employs an objective standard, comparing the plaintiff's judgment to that of a reasonable person.[74]

But over half of the country has explicitly rejected parts of the assumption of risk defense, finding parts of it subsumed within modern notions of comparative or contributory negligence.[75] The majority of them have only disallowed

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[71] *See, e.g.*, Feldman & Stein, *supra* note 31, at 270 ("[A]s the black-and-white reasoning of contributory negligence has yielded to the more nuanced analysis of comparative fault, states with comparative fault statutes have had to reassess the assumption of risk defense in many types of claims.").

[72] *See* Wildman & Barker, *supra* note 48, at 647 ("The elimination of implied assumption of risk would avoid this unnecessary duplication of doctrine and the confusion that has surrounded implied assumption of risk litigation."); James, *supra* note 18, at 187-88 (concluding that, except for express assumption of risk, the doctrine of assumption of risk "deserves no separate existence"); Edward J. Kionka, *Implied Assumption of the Risk: Does It Survive Comparative Fault?*, 1982 S. ILL. U. L.J. 371, 400 ("Since in negligence cases, with the advent of comparative fault, [assumption of risk] has become totally superfluous, it should be abolished by name in those cases."). Further, unlike the Restatement (Second) of Torts, the Restatement (Third) of Torts "explicitly repudiates the defense." Simons, *supra* note 4, at 482.

[73] WELLS, ANDERSON & RACE, LLC, 50-STATE COMPENDIUM ON PREMISES LIABILITY (2015), https://namwolf.org/wp-content/uploads/2017/12/Pac_Hospitality_Compendium.pdf [https://perma.cc/VD6J-5FHC].

[74] *Effect of Adoption of Comparative Negligence Rules on Assumption of Risk*, 16 A.L.R.4th 700, 703 (1982); *see also* RESTATEMENT (SECOND) OF TORTS § 496A cmt. d (AM. L. INST. 1965).

[75] WELLS, ANDERSON & RACE, LLC, *supra* note 73; RESTATEMENT (SECOND) OF TORTS § 496A cmt. e ("In many states there are statutes which, by their express provisions, have abrogated the defense of assumption of risk in particular relations or situations."); SPEISER ET AL., *supra* note 24, at § 3:41 (discussing judicial abolition of implied assumption of risk after enactment of comparative fault statutes); Simmons v. Porter, 312 P.3d 345, 355 (Kan. 2013) (holding that rationale for retaining assumption of risk doctrine is no longer viable and comparative fault statute should control); *see also* Paul Rosenlund & Paul Killion, *Once a Wicked Sister: The Continuing Role of Assumption of Risk Under Comparative Fault in California*, 20 U.S.F. L. REV. 225, 266-67 n.236 (1986) (listing comparative fault jurisdictions that subsume unreasonable implied assumption of risk into comparative fault); Frank J. Chiarchiaro & Nelson Camacho, *Fifty-State Tort Reform Survey*, AIRCRAFT BUILDERS COUNCIL AIRCRAFT PRODS. INS., http://www.aircraftbuilders.com/State_Surveys /Tort_Reform_Survey/ [https://perma.cc/BT5G-FHNM] (last visited Feb. 15, 2022) (providing overview of assumption of risk laws in all U.S. states).

secondary assumption of risk.[76] Notably, however, almost all of these states allow express and primary assumption of risk to bar recovery. Only two have completely abolished the defense through statute—Massachusetts and Connecticut,[77] resulting in its continued viability in forty-eight of fifty states.[78] And perhaps most importantly, the nation's three most populous states—California, Texas, and Florida—all allow express and primary assumption of risk to bar a plaintiff's recovery.[79]

As such, the real impacts of a weakened assumption of risk are limited. First, the majority of jurisdictions have only eliminated secondary assumption of risk.[80] This narrow subset of assumption of risk only disqualifies those situations where plaintiff encountered a known risk caused by defendant's negligence.[81] Second, even in those jurisdictions, this move has merely eliminated the *complete* bar to plaintiff's recovery that traditionally follows from a successful assumption of risk defense.[82] Importantly, a plaintiff who voluntarily and knowingly encounters a risk may still serve to reduce a defendant's liability, albeit shrouded in a comparative negligence discussion.[83] As such, the doctrine explicitly survives in over half of jurisdictions "and its spirit endures in most, if not all."[84]

To complicate matters further, generally product liability claims do not recognize a contributory negligence defense, but allow limited assumption of

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[76] WELLS, ANDERSON & RACE, LLC, *supra* note 73; *see also* Wildman & Barker, *supra* note 48, at 653; *id.* at 653 n.34 ("Most comparative fault jurisdictions agree that *un*reasonable implied assumption of risk is subsumed into comparative fault.").

[77] MASS. GEN. LAWS ch. 231, § 85 (2022); CONN. GEN. STAT. ANN. § 52-572h (West 2021).

[78] WELLS, ANDERSON & RACE, LLC, *supra* note 73.

[79] *See* Knight v. Jewett, 834 P.2d 696, 703 n.4 (Cal. 1992) (en banc) (recognizing express and primary implied assumption of risk as valid defenses); Acosta v. United Rentals, Inc., No. 8:12-cv-01530, 2013 WL 869520, at *6 (M.D. Fla. Mar. 7, 2013) (merging contractual assumption of risk and implied assumption of risk for participation in contact sports as valid defenses); Phi Delta Theta Co. v. Moore, 10 S.W.3d 658, 659-60 (Tex. 1999) (explaining that implied assumption of risk is not recognized while express assumption of risk is still recognized); Lee v. Loftin, 277 S.W.3d 519, 524 (Tex. Ct. App. 2009) (recognizing that through Equine Activity Act, Texas legislature "altered the existing common law to provide for the application of the 'inherent risk' doctrine, a version of the 'assumption of the risk' doctrine" to matters relating to activities involving certain animals).

[80] *See* Chiarchiaro & Camacho, *supra* note 75 (providing overview of assumption of risk laws in U.S. states).

[81] *See* Rosenlund & Killion, *supra* note 75, at 233 ("Implied assumption of risk arises where consent [to incur a known risk] is evidenced by the plaintiff's conduct.").

[82] "Where comparative negligence principles apply, assumption of risk that is a form of contributory negligence serves to reduce, rather than bar, plaintiff's recoveries." Larsen v. Pacesetter Sys., Inc., 837 P.2d 1273, 1290 (Haw. 1992); Bulatao v. Kauai Motors, Ltd., 406 P.2d 887, 895 (Haw.), *reh'g denied*, 408 P.2d 396 (Haw. 1965).

[83] Tuttle v. Heavenly Valley, L.P., No. G056427, 2020 WL 563604, at *6-7 (Cal. Ct. App. Feb. 5, 2020) ("Comparative fault principles apply in secondary assumption of the risk cases.").

[84] Simons, *supra* note 4, at 528; Chiarchiaro & Camacho, *supra* note 75.

risk defenses.[85] Many courts, in allowing the defense, require that the plaintiff have unreasonably assumed the risk of injury before a defendant can escape liability.[86] This defense rests on both the subjective characteristics of the plaintiff in the classic assumption of risk context and the objective reasonableness of the plaintiff's choice to proceed in the face of a known risk.[87] As such, assumption of risk is recognized as a defense to products liability claims (albeit possibly a disfavored one)[88] as will often arise from injuries involving new technologies.[89]

The bottom line is that assumption of risk is alive and well in the majority of the country. Courts recognize some form of assumption of risk across forty-eight of the fifty states, generally disfavor only implied secondary assumption of risk, and continue to embrace the voluntary and knowing requirements as considerations even in comparative negligence jurisdictions.[90]

II.   THE CHALLENGES OF ESTABLISHING ASSUMPTION OF RISK DEFENSE FOR TECHNOLOGIES DRIVEN BY ARTIFICIAL INTELLIGENCE

For all its faults,[91] the world is quickly embracing various forms of AI. AI is a generic term used to encompass algorithms designed to mimic different aspects

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[85] Gary D. Spivey, Annotation, *Products Liability: Contributory Negligence or Assumption of Risk as Defense Under Doctrine of Strict Liability in Tort*, 46 A.L.R.3d 240, 243 (1972) ("[T]here is general agreement that contributory negligence in the sense of a failure to discover or guard against product defects is not a defense to an action based upon strict products liability in tort, but that assumption of risk does constitute a defense." (footnote omitted)); Note, *Assumption of Risk and Strict Products Liability*, 95 HARV. L. REV. 872, 873-74 (1982) (describing trend limiting allowance of assumption of risk defenses in products liability cases).

[86] *Assumption of Risk and Strict Products Liability*, *supra* note 85, at 875.

[87] *Id.*

[88] *See id.* at 873 (noting trend towards limiting use of assumption of risk defense in products liability cases); David G. Owen, *Products Liability: User Misconduct Defenses*, 52 S.C. L. REV. 1, 4 (2000) (discussing abolishment and limitation of assumption of risk defense); Milwaukee Elec. Tool Corp. v. Superior Ct., 19 Cal. Rptr. 2d 24, 36 (Cal. Ct. App. 1993) (limiting primary assumption of risk in products liability cases except in extraordinary circumstances). *But see* Nicholson v. Biomet, Inc., 363 F. Supp. 3d 931, 942 (N.D. Iowa 2019) (recognizing that assumption of risk is valid defense "where contributory negligence is not an available defense, such as in defense to strict products liability claims").

[89] *See* Kupetz v. Deere & Co., 644 A.2d 1213, 1220 (Pa. Super. Ct. 1994) (recognizing that "assumption of risk remains a defense in a products liability case").

[90] WELLS, ANDERSON & RACE, LLC, *supra* note 73; Chiarchiaro & Camacho, *supra* note 75; *see* Simons, *supra* note 4, at 528.

[91] *See* Selbst, *supra* note 2, at 1350-54 (discussing AI's potential to be hacked); Clark D. Asay, *Artificial Stupidity*, 61 WM. & MARY L. REV. 1187, 1197 (2020) (discussing lack of general AI and limitations of narrow AI); Deeks, *supra* note 12, at 1831 (arguing for increased explainability to combat AI's lack of transparency); Karl Manheim & Lyric Kaplan, *Artificial Intelligence: Risks to Privacy and Democracy*, 21 YALE J.L. & TECH. 106, 119 (2019) (discussing AI's risk to privacy); Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671, 673 (2016) (stating algorithmic bias can lead to

of human intelligence.[92] On a more granular level, AI is comprised of different tools to achieve these purposes.[93] It often entails machine learning, a process by which the algorithm engages in a form of self-learning where it continually improves on its predictions by adjusting to new input data.[94] Another AI tool is a neural network which is capable of handling more complex problems. The neural network simulates the human brain by learning independently and producing outputs that are first fed through layers of hidden filters which enable nonlinear decision making.[95] And AI can involve other tools such as natural language processing, speech recognition, and computer vision to aid humans in enhancing social goods such as medical treatment, national security, and transportation.[96]

AI's potential for being more efficient and accurate and for seeing patterns too overwhelming for the average human has led to its widespread use across multiple domains, including cell phones, social media apps, movie streaming services, online translators, facial recognition, criminal bail decisions, climate

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"disproportionately adverse outcomes concentrated within historically disadvantaged groups in ways that look a lot like discrimination").

[92] Deeks, *supra* note 12, at 1832.

[93] *Id.*

[94] Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment*, 164 U. PA. L. REV. 871, 874-75 (2016); Karen Hao, *What Is Machine Learning?*, MIT TECH. REV. (Nov. 17, 2018), https://www.technologyreview.com/2018/11/17/103781 /what-is-machine-learning-we-drew-you-another-flowchart/ [https://perma.cc/UP76-QGZ2].

[95] *See* Bernard Marr, *What Are Artificial Neural Networks - A Simple Explanation For Absolutely Anyone*, FORBES (Sept. 24, 2018, 12:46 AM), https://www.forbes.com/sites /bernardmarr/2018/09/24/what-are-artificial-neural-networks-a-simple-explanation-for- absolutely-anyone/?sh=1cba0db51245 ("An artificial neural network is an attempt to simulate the network of neurons that make up a human brain so that the computer will be able to learn things and make decisions in a humanlike manner."); Michael J. Garbade, *Clearing the Confusion: AI vs Machine Learning vs Deep Learning Differences*, TOWARDS DATA SCI. (Sept. 14, 2018), https://towardsdatascience.com/clearing-the-confusion-ai-vs-machine- learning-vs-deep-learning-differences-fce69b21d5eb [https://perma.cc/249H-Y3AG] (explaining artificial neural networks "aim to imitate the way our brains make decisions"); *see also* Larry Hardesty, *Explained: Neural Networks*, MIT NEWS (Apr. 14, 2017), https://news.mit.edu/2017/explained-neural-networks-deep-learning-0414 [https://perma.cc/34WC-YKQK] ("Training data is fed to the bottom layer [of the neural net]—the input layer—and it passes through the succeeding layers, getting multiplied and added together in complex ways, until it finally arrives, radically transformed, at the output layer.").

[96] *See* Joshua Yeung, *Three Major Fields of Artificial Intelligence and Their Industrial Applications*, TOWARDS DATA SCI. (Feb. 22, 2020), https://towardsdatascience.com/three- major-fields-of-artificial-intelligence-and-their-industrial-applications-8f67bf0c2b46 [https://perma.cc/FF2G-ZC22]; Darrell M. West & John R. Allen, *How Artificial Intelligence Is Transforming the World*, BROOKINGS INST. (Apr. 24, 2018), https://www.brookings.edu /research/how-artificial-intelligence-is-transforming-the-world/ [https://perma.cc/DSJ4- HGKN].

change, banking, antitrust, agriculture, etc.[97] In the United States alone, investments in AI have grown over 190% between 2015 and 2019[98] and spending is expected to increase by two and a half times between 2020 and 2023.[99] Although AI's popularity has ebbed and flowed over time,[100] the combination of next-generation computing architecture and cheap and easy access to massive data sets have led most to view AI as a constant in our future.[101]

As AI continues to permeate daily life—at construction sites, on highways, and in homes—the risks associated with increased human-AI interface will grow as well. Embedded AI-driven algorithms, ubiquitous in your daily tasks, are hidden from view and often do not cause the types of injuries typically remedied through torts.[102] However, physical manifestations of AI in robot or vehicle

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[97] *See* R.L. Adams, *10 Powerful Examples of Artificial Intelligence in Use Today*, FORBES (Jan. 10, 2017, 8:32 AM), https://www.forbes.com/sites/robertadams/2017/01/10/10-powerful-examples-of-artificial-intelligence-in-use-today/?sh=3ae6d375420d (discussing AI's use in phones, video steaming, social media, and music); Amy L. Stein, *Artificial Intelligence and Climate Change*, 37 YALE J. ON REGUL. 890, 892-93 (2020) (discussing use of AI to address climate change); Derek Thompson, *Should We Be Afraid of AI in the Criminal-Justice System?*, ATLANTIC (June 20, 2019), https://www.theatlantic.com/ideas /archive/2019/06/should-we-be-afraid-of-ai-in-the-criminal-justice-system/592084/; Eleni Digalaki, *The Impact of Artificial Intelligence in the Banking Sector & How AI Is Being Used in 2022*, BUS. INSIDER (Feb. 2, 2022, 2:04 PM), https://www.businessinsider.com/ai-in-banking-report [https://perma.cc/6A47-5KL6]; Vikram Singh Bisen, *Where Is Artificial Intelligence Used: Areas Where AI Can Be Used*, MEDIUM (Dec. 9, 2019), https://medium.com/vsinghbisen/where-is-artificial-intelligence-used-areas-where-ai-can-be-used-14ba8c092e73 [https://perma.cc/RH2X-CYAV].

[98] Zachary Arnold, *What Investment Trends Reveal About the Global AI Landscape*, BROOKINGS INST. (Sept. 29, 2020), https://www.brookings.edu/techstream/what-investment-trends-reveal-about-the-global-ai-landscape/ [https://perma.cc/VD9B-HCNN].

[99] DELOITTE AI INST. & DELOITTE CTR. FOR TECH. MEDIA & TELECOMMS., THRIVING IN THE ERA OF PERVASIVE AI 3 (3d ed. 2020), https://www2.deloitte.com/content/dam/Deloitte /cn/Documents/about-deloitte/deloitte-cn-dtt-thriving-in-the-era-of-persuasive-ai-en-200819.pdf [https://perma.cc/32HG-C25S].

[100] *See* Kathleen Walch, *Are We Heading for Another AI Winter Soon?*, FORBES (Oct. 20, 2019, 1:00 AM), https://www.forbes.com/sites/cognitiveworld/2019/10/20/are-we-heading-for-another-ai-winter-soon/?sh=4d03548b56d6 ("Those in the industry know that there has been previous hype and then disillusionment around AI.").

[101] DELOITTE AI INST., *supra* note 99, at 2 ("Adopters continue to have confidence in AI technologies' ability to drive value and advantage. We see increasing levels of AI technology implementation and financial investment.").

[102] *See* Will Knight & Karen Hao, *Never Mind Killer Robots—Here Are Six Real AI Dangers to Watch Out for in 2019*, MIT TECH. REV. (Jan. 7, 2019), https://www.technologyreview.com/2019/01/07/137929/never-mind-killer-robotshere-are-six-real-ai-dangers-to-watch-out-for-in-2019/ [https://perma.cc/9E9U-WQAL] (noting greatest dangers of AI include political manipulation, deep fakes, algorithmic discrimination, and surveillance). In fact, some AI actually protects users from injury. *See* Benjamin Goggin, *Inside Facebook's Suicide Algorithm: Here's How the Company Uses Artificial Intelligence*

forms engaged in human contact are much more likely to result in tort injuries.[103] And those who choose to benefit from such new technologies may sacrifice some of their tort protections through defenses like assumption of risk.

Given the continued viability of the assumption of risk defense, this next Part explores the intersection of the defense with AI.[104] It first explains why AI, like other emerging technologies of the past, presents unique challenges for a defense that requires "knowledge of the inherent risks."[105] It then examines the convergence of assumption of risk with AI and its implications for the voluntary requirement, reenvisioning the world of assuming the risk scenarios to encompass AI.

A.   *"Knowingly" Assuming the Risks: The Difficulties of Emerging Technologies*

AI is not the first new technology that causes injuries that may be remedied by tort doctrine, nor will it be the last. This Section explores the historic difficulties of applying the knowing requirement to emerging technologies, as well as the element's contemporary application to AI.

1.   The Historic Difficulties of "Knowing" the Risks of Emerging Technologies

The knowing requirement has proved fatal for a number of defendants seeking to evoke the assumption of risk defense when new technologies are involved. As AI is the groundbreaking technology of this decade, electricity, locomotives, and internal combustion engines reflected some of the same unknowns regarding new risks and the same lack of sophistication of the general populace with regard to their inner workings. Such technological advances place enhanced pressure

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to Predict Your Mental State from Your Posts, BUS. INSIDER (Jan. 6, 2019, 11:19 AM), https://www.businessinsider.com/facebook-is-using-ai-to-try-to-predict-if-youre-suicidal-2018-12 [https://perma.cc/98H8-VD72]. *But see Alexa Tells 10-Year-Old Girl to Touch Live Plug with Penny*, BBC (Dec. 28, 2021), https://www.bbc.com/news/technology-59810383 [https://perma.cc/KY9J-AMLQ].

[103] Jack M. Beard, *Autonomous Weapons and Human Responsibilities*, 45 GEO. J. INT'L L. 617, 619 (2014) ("The advent of autonomous war-fighting machines has raised various concerns in the international community . . . because no adequate system of legal accountability can be devised, and because robots should not have the power of life and death over human beings." (internal quotations omitted)); *see also infra* Section II.B (discussing AI tort possibilities resulting from autonomous and semiautonomous vehicles).

[104] This Article refers to "AI-driven technologies" as those that are data-driven algorithms that harness massive computational power to mimic and enhance human functions to be proactive, predictive, and capable of learning. *See* Jim Goodnight, *AI Technologies that Matter Now: Augmenting People, Processes, and Potential*, MIT TECH. REV. (Dec. 11, 2019), https://www.technologyreview.com/2019/12/11/238285/ai-technologies-that-matter-now-augmenting-people-processes-and-potential/ [https://perma.cc/E9L8-YVPA] (discussing examples, such as Siri, self-driving cars, chat bots, and surveillance).

[105] *See* Calo, *supra* note 20 and accompanying text (discussing unique assumption of risk analysis in robotics).

on the tension seen across much of tort law—that between innovation and plaintiffs' interest in retaining remedies for attendant harms.[106] Some find that these injuries are par for the course if we want society to advance, whereas others are not as willing to make this sacrifice and would prefer to share the cost of these new technologies across society or with the manufacturer.[107]

Whether the new technology is electricity or robots, defendants face challenges in establishing the knowing requirement. A first characteristic of new technologies centers on knowledge of the associated risks. For the conduct to be knowing, the plaintiff "must not only be aware of the facts which create the danger, but must also appreciate the danger itself and the nature, character, and extent which make it unreasonable."[108] Unlike the objective standard for contributory negligence, the majority view is that the standard applied here is subjective to the plaintiff.[109] Whereas an objective assessment asks whether a hypothetical reasonable person would have this belief, a subjective assessment asks whether the circumstances would produce this belief in this particular plaintiff, with the plaintiff's particular mental and physical characteristics, including factors such as the plaintiff's age and degree of experience with the activity.[110]

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[106] *See, e.g.*, Donald G. Gifford, *Technological Triggers to Tort Revolutions: Steam Locomotives, Autonomous Vehicles, and Accident Compensation*, 11 J. TORT L. 71, 104-05 (2018) (arguing that strict liability-like tort structure at beginning of nineteenth century would have ruined emerging railroad industry, thus technological innovation of locomotives triggered protective shift to negligence standard); James L. Hunt, *Ensuring the Incalculable Benefits of Railroads: The Origins of Liability for Negligence in Georgia*, 7 S. CAL. INTERDISC. L.J. 375, 420 (1998) (arguing that Georgia Supreme Court's worry about excessive tort liability for railroads prompted shift away from absolute liability in the state).

[107] *See* Gifford, *supra* note 106, at 100 (describing conflicting theories of negligence doctrine surrounding emerging railroad industry); *see also* N. & C. R.R. v. Messino, 33 Tenn. (1 Sneed) 220, 225-27 (1853) (articulating competing interests: "the most perfect safety should be secured" but "the rules of accountability should be reasonable, that men may not be deterred from devoting their time, capital, and energies to these very useful, and now almost indispensable enterprises").

[108] RESTATEMENT (SECOND) OF TORTS § 496D cmt. b (AM. L. INST. 1965); *see, e.g.*, Anderson v. Nw. Elec. Coop., 760 P.2d 188, 191-92 (Okla. 1988) (stating "mere knowledge of the danger without full appreciation of the risk" is insufficient for assumption of risk defense); Berkenfeld v. Lenet, 921 F.3d 148, 158 (4th Cir. 2019) (stating assumption of risk defense as a matter of law requires "*clear*[]" comprehension of the danger).

[109] RESTATEMENT (SECOND) OF TORTS § 496D cmt. c. *Compare* Country Mut. Ins. v. Sunbeam Prods., Inc., 500 F. Supp. 2d 986, 990 (N.D. Ill. 2007) (describing necessary subjective analysis into a particular plaintiff's state of mind), *with Berkenfeld*, 921 F.3d at 158 (applying objective standard to assumption of risk analysis).

[110] Hawkins v. Switchback MX, LLC, 339 F. Supp. 3d 543, 550 (W.D. Pa. 2018). Juries also frequently use objective factors, such as age, experience, knowledge, and obviousness, to determine subjective knowledge. Curtis R. Calvert, *The Knowledge Element of Assumption of Risk as a Defense to Strict Products Liability*, 10 J. MARSHALL J. PRAC. & PROC. 243, 250-51 (1977).

If a particular plaintiff is unfamiliar with a new technology that caused an injury, it is difficult for defendants to establish the assumption of risk defense. The standard simply cannot demand knowledge of the inner workings of a technology, as most people who drive cars and ride on trains and planes have little understanding of how these mobile sources work.[111] But if courts nevertheless demand an understanding of the risks associated with using the device, how can one fully understand the risks without being somewhat familiar with the device? In fact, the finders of fact may find lack of knowledge means that the plaintiff could not fully appreciate the risks of using that technology.[112] For example, injuries by electric shock were litigated in the early 1900s as new electrical technologies spread through urban areas; in some of the cases, however, courts found that ignorance of particular dangers associated with electricity meant that the injured plaintiffs had not assumed the risk of their injuries.[113] Courts have denied defendants assumption of risk where the plaintiffs were "not educated and knowledgeable about the dangers of electricity,"[114] and "young . . . [and] of very limited experience in and about sawmills".[115] One court even denied assumption of risk against a child who had been familiar with the playground that caused injury for four years prior.[116]

The subjective nature of the knowing analysis means that finders of fact can decline to find the element satisfied for plaintiffs that are new to an activity, even

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[111] *See* Duda v. Phatty McGees, Inc., 2008 SD 115, ¶ 13, 758 N.W.2d 754, 758 ("A person is deemed to have appreciated the risk 'if it is the type of risk that no adult of average intelligence can deny.'" (quoting Ray v. Downes, 1998 SD 40, ¶ 11, 576 N.W.2d 896, 898)); Sproles v. Simpson Fence Co., 649 N.E.2d 1297, 1301 (Ohio Ct. App. 1994) (finding plaintiff was not inadequately warned and assumed risk of injury because he "understood the moving parts of a gate" and knew it was "powered by electricity"); Baker v. Chrysler Corp., 127 Cal. Rptr. 745, 750 (Ct. App. 1976) ("[B]y requiring actual knowledge of the defect . . . rather than only knowledge that he was placing himself in danger . . . placed upon respondent the burden of proving more knowledge than was actually necessary to establish the defense.").

[112] *See, e.g.*, Rahmig v. Mosley Mach. Co., 412 N.W.2d 56, 74 (Neb. 1987) (holding that plaintiff did not assume risk of machine's design defect when he did not know defect existed); Barrow v. Bristol-Myers Squibb Co., No. 96-cv-00689, 1998 WL 812318, at *41 (M.D. Fla. Oct. 29, 1998) (holding that plaintiff did not assume risk of gel leaking out of breast implants because she did not know that such defect was possible).

[113] *See, e.g.*, Poor v. Madison River Power Co., 99 P. 947, 954 (Mont. 1909) (holding plaintiff's decedent did not assume risk of electric shock because he was a carpenter, not electrician, and did not know work would be unsafe); Perry v. Ohio Valley Elect. Ry. Co., 78 S.E. 692, 693-95 (W. Va. 1913) (holding plaintiff's decedent had not assumed risk of electric shock when wires were in abnormally unsafe condition).

[114] *See* Giraudi v. Elec. Improvement Co., 40 P. 108, 111 (Cal. 1895) (holding hotel laborer was not contributorily negligent when burned after coming into contact with exposed wires because he was not educated and knowledgeable about dangers of electricity).

[115] Peek v. Ostrom, 120 N.W. 1084, 1085 (Minn. 1909).

[116] J.R. v. City of New York, 96 N.Y.S.3d 686, 689 (App. Div. 2019) (finding child did not appreciate risk despite often climbing on subject playground equipment for over four years).

if the activity itself has been around for a long time.[117] Courts have rejected assumption of risk for "novice skiers" with no experience in boarding or riding a ski lift,[118] for an experienced mechanic who was unaware of the intricacies of a particular mechanized farming device,[119] for a construction worker with no electrical experience,[120] for an individual who was not aware of the presence of seat belts in a golf cart,[121] and for a "novice" mechanized bull-rider.[122]

In contrast, where plaintiffs were found to have greater knowledge of the technology and its attendant risks, courts have allowed assumption of risk to bar recovery.[123] Courts have barred recovery for many such well-trained plaintiffs, holding an electrician assumed the risk of electric shock,[124] a dirt bike rider assumed the risk of off-roading,[125] a longtime motorcycle rider who had undergone safety training assumed the risks of injury,[126] and a worker trained in robot molding assumed the risk of attendant injuries.[127] Even when new

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[117] *See* Summit Cnty. Dev. Corp. v. Bagnoli, 441 P.2d 658, 661 (Colo. 1968) (finding plaintiff lacked knowledge when she "was a ski novice with no experience in boarding or riding a ski lift").

[118] *Id.* at 660-62; *see also* Feldman & Stein, *supra* note 31, at 275-77 (discussing liability shift to ski industry defendants).

[119] Gardner v. Brillion Iron Works, Inc., 120 F. Supp. 3d 928, 937 (D. Minn. 2014) (finding awareness of general risk of welding was insufficient to establish assumption of risk of drilling-induced flame).

[120] Shaffer v. Alter Trading Corp., No. 08-cv-03006, 2009 WL 1393286, at *6 (C.D. Ill. May 15, 2009) (denying summary judgement for assumption of risk because of plaintiff's "utter lack of any electrical experience").

[121] Cleary v. Fager's Island, Ltd., No. 1:17-cv-02252, 2020 WL 4547951, at *3 (D. Md. Aug. 6, 2020) (holding assumption of risk was inapplicable where individual had "lack of awareness as to the presence of seat belts in the golf cart, and no reliable evidence that instructions were present"), *reconsideration denied*, No. 1:17-cv-02252, 2020 WL 5500166 (D. Md. Sept. 10, 2020).

[122] Van Tuyn v. Zurich Am. Ins., 447 So. 2d 318, 321 (Fla. 1984).

[123] *See, e.g.*, Heldman v. Uniroyal, Inc., 371 N.E.2d 557, 567 (Ohio Ct. App. 1977) (recognizing "[a] higher degree of knowledge and awareness is imputed to professional tennis players than to average nonprofessional tennis players as to the dangers in playing on a synthetic tennis court having obvious bubbles").

[124] Clements v. Elizabeth City Elec. Light & Power Co., 100 S.E. 189, 191 (N.C. 1919) (holding decedent assumed risk of electric shock when he had over a decade of experience working with electric wires and could fully appreciate risks of his work).

[125] Hawkins v. Switchback MX, LLC, 399 F. Supp. 3d 543, 550 (W.D. Pa. 2018) (holding plaintiff assumed risk of injury incurred during "off-road dirt bike riding" when he "had been riding dirt bikes for more than 12 years").

[126] *See* Frey v. Harley Davidson Motor Co., 734 A.2d 1, 6 (Pa. Super. Ct. 1999) (finding motorcycle driver understood risk of driving with headlights off where he had training and extensive experience).

[127] Miller v. Rubbermaid Inc., No. cv-05-10-6197, 2006 WL 5105711, at *10 (Ohio C.P. Summit Oct. 13, 2006) (holding assumption of risk barred recovery from man injured by molding robot because plaintiff was "properly trained in the operation of the machine and understood the risks attendant thereto").

technologies were involved of which a plaintiff was not familiar, courts have barred recovery where that plaintiff had sufficient training and experience to appreciate the risks of that new technology.[128]

Additionally, as a new technology or knowledge of its risks becomes more commonplace, courts are often more willing to allow the assumption of risk defense. For example, after state laws were passed to protect people engaging with "novel" locomotive technology,[129] courts later expected passengers to ensure their own safety and "tended to favor railroads" in negligence cases.[130] Similarly, courts initially allowed assumption of risk defenses against plaintiffs injured by trampolines; however, as injuries from trampolines increased, courts began to recognize the danger of the activity.[131] This recognition led to higher insurance rates and stricter standards for the design, maintenance, and warning labels of trampolines.[132]

But courts also balance these considerations against the dangerousness of the new technology. For example, one early electricity case explicitly pointed out that electricity is "a dangerous force, and one not generally understood" and that the defendant "was required to use very great care to prevent injury."[133] Where

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[128] Benson v. Am. Aerolights, Inc., No. 83-cv-01457, 1985 WL 965, at *2 (N.D. Ill. Apr. 25, 1985) (holding even though plaintiff was using new kind of ultralight aircraft, plaintiff's "previous experience with light aircraft, and, presumably, his training experience . . . prior to his solo effort exposed plaintiff to the risks of such flight").

[129] *See* Hunt, *supra* note 106, at 410 (discussing common carriers' statutory standard of care in Georgia after the Civil War). Georgia law also imposed a presumption of negligence on railroad companies and provided for reduced, not elimination, of damages for plaintiff's own negligence. *Id.*

[130] *Id.* at 413. Between 1865 and 1880, almost 60% of the passenger injury cases decided by the Georgia Supreme Court were in favor of railroads. *Id.* at 410. In cases involving pedestrian collisions at railroad crossings, railroad companies' use of contributory negligence won them more than half of the cases. *Id.* at 413-14; *see also* St. Louis & S.F.R. Co. v. Whittle, 74 F. 296, 299-301 (8th Cir. 1896) (holding plaintiff assumed risk of being hit by reversing train when he went onto the tracks on dark and foggy night when there were no lights on the back of train).

[131] *See* Williams v. Lombardini, 238 N.Y.S.2d 63, 65 (Sup. Ct. 1963) (holding that plaintiff assumed the risk of injury when he "propelled himself through the air in a forward flip" on a trampoline); Kungle v. Austin, 380 S.W.2d 354, 357-58 (Mo. 1964) (finding only four other appellate cases involving trampoline injuries, including *Myers v. Sky Jump, Inc.*, slip op. at 6-7 (Tenn. Ct. App. Aug. 8, 1962) (unreported) (on file with *Boston University Law Review*) (discussing assumption of risk in trampoline injury) and *Ford v. Brandan*, 367 S.W.2d 481, 483-84 (Tenn. Ct. App. 1962) (upholding directed verdict for defendant trampoline center that held plaintiff assumed risk of injury)).

[132] Walter L. Gerash, *Liability for Trampoline Injury*, 45 AM. JURIS. PROOF FACTS 2D 469, at §§ 3-4 (noting that designs of trampolines have become safer and modern standards of safety can be admitted showing proper standard of care).

[133] Giraudi v. Elec. Improvement Co., 40 P. 108, 109 (Cal. 1895); *see also* Bice v. Wheeling Elec. Co., 59 S.E. 626, 629 (W. Va. 1907) ("[I]n cases involving the employment of such a dangerous agent as electricity, reasonable care means the highest degree of care

a danger is obvious on its face, such as with fireworks, courts require little else to hold that plaintiffs assumed the risk even when the technology was relatively novel.[134] But where a danger is not as obvious, courts may be more reluctant to find the knowledge element was satisfied.[135]

It also appears that the scope of the risk that plaintiffs assume when using new technologies will not extend to product defects.[136] Injuries caused by product defects will often be litigated under a strict products liability regime, which holds manufacturers of AI to a much higher standard of care. Similarly, courts often require defendants to show that plaintiffs had actual knowledge of the defect before allowing the assumption of risk defense to block recovery.[137] If defendants are found to have withheld knowledge of dangers from plaintiffs, however, their assumption of risk defense may rightly be vulnerable.[138]

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which skill and forethought can attain."); Sullivan v. Mountain States Power Co., 9 P.2d 1038, 1045 (Or. 1932) (discussing unusually high degree of danger inherent to electricity).

[134] *See* Frost v. Josselyn, 62 N.E. 469, 469-70 (Mass. 1902) (holding that plaintiff, who was thrown off his carriage when his horse was startled by fireworks, knew there was celebration involving fireworks and thus assumed risk of seeing celebration); Scanlon v. Wedger, 31 N.E. 642, 642-43 (Mass. 1892) (holding that plaintiff was voluntary spectator at fireworks display and thus assumed risk of injury).

[135] Ashmen v. Big Boulder Corp., 322 F. Supp. 3d 593, 597 (M.D. Pa. 2018) (finding genuine issue of material fact regarding whether snowboarder who collided with snowmaking equipment knew of this potential danger); *cf.* Carradine v. Ford, 187 S.W. 285, 290-91 (Mo. Ct. App. 1916) (holding that plaintiff was not contributorily negligent when she stepped out in front of electric car that was moving too quietly and quickly for plaintiff to have reasonably noticed).

[136] *See* Dahl v. Atritech, Inc., No. 07-cv-00192, 2008 WL 706993, at *3 (D. Minn. Mar. 14, 2008) (holding that when plaintiff assumes risk of ordinary surgical complications inherent to experimental technologies, defendant may still be liable for negligence and design defects because plaintiff's assumption of risk does not extend to those forms of liability); Frisina v. Women & Infants Hosp. of R.I., No. cv-A-95-4037, 2002 WL 1288784, at *13 (R.I. Super. Ct. May 30, 2002) (holding that plaintiffs' informed consent form did not release defendant hospital from liability resulting in negligent destruction of frozen embryos because consent form only discussed risk of accident, not absence of due care in handling embryos); Tillman v. C.R. Bard, Inc., 96 F. Supp. 3d 1307, 1354 (M.D. Fla. 2015) (holding that plaintiff's consent to risks inherent to implant of vascular filter did not mean that she assumed risk of unreasonably dangerous device).

[137] *See, e.g.*, Horn v. Fadal Machining Ctrs., LLC, 972 So. 2d 63, 75 (Ala. 2007) (holding that, for application of assumption of risk, plaintiff had to discover alleged defect); Bailey v. Boatland of Hous., Inc., 585 S.W.2d 805, 812 (Tex. Civ. App. 1979) (holding fisherman being familiar with area where accident occurred, with operation of boats, and with weather conditions on date of accident was not enough to show fisherman's knowledge of design defect of boat for assumption of risk), *rev'd on other grounds*, 609 S.W.2d 743 (Tex. 1980); *cf.* Jordan v. Gen. Motors Corp., 590 P.2d 193, 195-96 (Okla. 1979) (holding jury instruction on assumption of risk was properly submitted where plaintiff was injured in accident attributable to defective stabilizer bar because plaintiff knew car was veering off road prior to accident).

[138] *See* Jeffrey Standen, *Assumption of Risk in NFL Concussion Litigation: The Offhand*

2.   The Contemporary Difficulties of "Knowing" the Risk of Black Box
      Artificial Intelligence

The subjective knowledge required for assumption of risk makes it difficult for defendants to establish that plaintiffs injured by AI technologies fully understood and appreciated the risks they undertook. because AI is often coined a "black box" precisely due to its lack of explainability.[139] In fact, one type of AI machine learning illustrates the lack of transparency that can exist across the development of a model. First, the data used to train the model may mask some risks. If the training data is not representative of the general population, the AI's rules will likely include biases and assumptions, for example, about gender, race, and class.[140] Second, often the AI researcher does not know what rules the AI created[141] or sometimes chooses not to disclose the information.[142] Finally, if the AI researcher mistakenly believes that the training data addressed all possible circumstances, and the AI encounters a scenario it has not seen before, the AI's response is uncertain.[143] DARPA, the Defense Advanced Research Projects

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Empiricism of the Courtroom, 8 FIU L. REV. 71, 80 (2012) ("Finally, the plaintiffs will attempt to avoid the assumption of risk defense by claiming that the NFL had information about the long-term risks of playing the game and withheld that information from the players. Unaware of the true risks involved in the sport, the plaintiffs cannot be deemed to have assumed them."). *See generally* Mikayla Paolini, Comment, *NFL Takes a Page from the Big Tobacco Playbook: Assumption of Risk in the CTE Crisis*, 68 EMORY L.J. 607, 609-11 (2019) (comparing tobacco litigation and NFL chronic traumatic encephalopathy brain degeneration litigation and suggesting that for assumption of risk to apply, unlike in tobacco litigation, players must understand all long-term risks of sport).

[139] *See, e.g.*, Aaron Chou, Note, *What's in the "Black Box"? Balancing Financial Inclusion and Privacy in Digital Consumer Lending*, 69 DUKE L.J. 1183, 1187-88 (2020) ("Many key players have criticized algorithms for being 'black boxes,' a term used to describe the opacity of their processes." (footnote omitted)); W. Nicholson Price II, *Regulating Black-Box Medicine*, 116 MICH. L. REV. 421, 430 (2017) ("A key distinguishing feature of black-box algorithms, as the term is used here, is that it refers to algorithms that are inherently black box (i.e., their developers *cannot* share the details of how the algorithm works in practice) . . . ."); Roger Allan Ford & W. Nicholson Price II, *Privacy and Accountability in Black-Box Medicine*, 23 MICH. TELECOMMS. & TECH. L. REV. 1, 7 (2016) ("This is the black box of black-box medicine: decisions can be based on opaque algorithmic analysis of dozens or hundreds of variables, with no theories to explain the results.").

[140] *See* Barocas & Selbst, *supra* note 91, at 684 ("Decisions that depend on conclusions drawn from incorrect, partial, or nonrepresentative data may discriminate against protected classes."). When citizens or communities are overlooked or underrepresented, conclusions that may be drawn from data analysis can be skewed. *Id.* at 684-85.

[141] *See* Gabriel Nicholas, *Explaining Algorithmic Decisions*, 4 GEO. L. TECH. REV. 711, 717, 726-27, 729-30 (2020).

[142] Price, *supra* note 139, at 430.

[143] *See infra* note 152 and accompanying text (discussing tort claims arising out of imperfect AI); Neal E. Boudette, *Tesla's Self-Driving System Cleared in Deadly Crash*, N.Y. TIMES (Jan. 19, 2017), https://www.nytimes.com/2017/01/19/business/tesla-model-s-autopilot-fatal-crash.html ("While the update addressed some concerns that the agency had about Autopilot, Mr. Thomas said automakers could not rely on software updates to fix safety issues and avoid recalls.").

Agency, recognizes the need "to understand, appropriately trust, and effectively manage an emerging generation of . . . machine partners" and has launched an entire program aimed at producing more explainable models.[144] Dubbed "xAI," this area of work is deemed critical for many scholars as well, noting the need to understand how the AI reached its conclusions as particularly important where its outputs have important due process implications.[145]

But in some ways, every new technology is a black box until one reads the user manual.[146] One can imagine similar questions and uncertainties when the first users tried an automobile or a computer. But in other ways, AI of today has greater barriers to achieving a place of understanding than old technologies of the past. An ambitious user could lift the hood of the automobile and get dirty with tangible components to better understand how the vehicle works. Gaining an analogous understanding is much more difficult with AI. The components are less tangible because the dataset used to train it is not accessible for users to "get their hands dirty." Just as not all automobile users are mechanics, not all AI users will be data scientists or engineers. But the effort required to obtain a place of knowing with AI seems like a heavier lift than technologies of the past.[147]

Until efforts to explain AI processes are more commonplace, difficulties will arise when one tries to apply assumption of risk's "knowing" standard to a technology that is notoriously opaque. How can one knowingly accept a risk of AI if they do not understand how AI works, what training data was used, or what

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[144] Matt Turek, *Explainable Artificial Intelligence (XAI)*, DARPA, https://www.darpa.mil/program/explainable-artificial-intelligence [https://perma.cc/2WV3-2PFU] (last visited Feb. 15, 2022) ("At the end of the program, the final delivery will be a toolkit library consisting of machine learning and human-computer interface software modules that could be used to develop future explainable AI systems.").

[145] *See* Danielle Keats Citron, *Technological Due Process*, 85 WASH. U. L. REV. 1249, 1278-300 (2008) ("The opacity of automated systems prevents an easy determination of the source of the error. This creates confusion about the procedures owed individuals, interfering with both due process guarantees and rulemaking procedures."); Deeks, *supra* note 12, at 1829 ("Sometimes called 'explainable AI' (xAI), legal and computer science scholarship has identified various actors who could benefit from (or who should demand) xAI.").

[146] *See* Jaime Bonnín Roca, Parth Vaishnav, M. Granger Morgan, Joana Mendonça & Erica Fuchs, *When Risks Cannot Be Seen: Regulating Uncertainty in Emerging Technologies*, 46 RSCH. POL'Y 1215, 1216 (2017) ("Nevertheless, some aspects of a technology may only be revealed in the use phase of the final product, due to the inability to cost-effectively simulate those conditions (or the length of exposure thereto) in a test environment."); Fei Wang, Rainu Kaushal & Dhruv Khullar, *Should Health Care Demand Interpretable Artificial Intelligence or Accept "Black Box" Medicine?*, 172 ANNALS INTERNAL MED. 59, 59 (2019) ("Many effective drugs . . . were in widespread use for decades before their mechanism of action was understood.").

[147] This difficulty is not limited to AI. For instance, the same lack of knowledge and inability to explain may exist with respect to a non-AI statistical model. Ted Gross, *The Simple Complexity of Artificial Intelligence*, MEDIUM (Dec. 1, 2015), https://tedwgross.medium.com/the-simple-complexity-of-artificial-intelligence-7990083f98aa [https://perma.cc/KP4N-JHLQ?type=image] ("Yet it would be wise for us to analyze just how difficult AI is, even in the simplest of examples.").

scenarios the AI has encountered? For example, in Ohio, a Tesla in Autopilot mode crashed into a tractor trailer because it "failed to recognize the white truck against a bright sky."[148] Because the Tesla had not encountered the situation before, the AI malfunctioned, but in an unexpected way. Researchers are often not aware of these holes in the AI training until they appear in practice. In fact, there is an entire area of computing research dedicated to unexpected ways that computers evolve.[149] If researchers are not aware of the full scope of risks, AI users cannot be expected to fully understand and appreciate the risks of the AI either.

But to entertain this line of thinking would mean that assumption of risk would never be available to manufacturers; a position that may cut against innovation but in favor of disclosure.[150] If a company knows that assumption of risk will not be an available defense unless they do a better job of explaining the

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[148] Boudette, *supra* note 143.

[149] *See, e.g.*, Tom Simonite, *When Bots Teach Themselves to Cheat*, WIRED (Aug. 8, 2010, 9:00 AM), https://www.wired.com/story/when-bots-teach-themselves-to-cheat/ (discussing one group of researchers' list of "more than three dozen incidents of algorithms finding loopholes in their programs or hacking their environments"); Alan Bellows, *On the Origin of Circuits*, DAMN INTERESTING (June 2007), https://www.damninteresting.com/on-the-origin-of-circuits/ [https://perma.cc/PJ5G-YPNT] (describing how hardware can evolve in unexpected ways); LAKSHMI NAIR, NITHIN SHRIVATSAV & SONIA CHERNOVA, TOOL MACGYVERING: A NOVEL FRAMEWORK FOR COMBINING TOOL SUBSTITUTION AND CONSTRUCTION 1 (2020), https://arxiv.org/pdf/2008.10638.pdf [https://perma.cc/539W-AC55] ("A transformative change for robotics is enabling robots to effectively improvise tools."); JOEL LEHMAN, JEFF CLUNE, DUSAN MISEVIC, CHRISTOPH ADAMI, LEE ALTENBERG, JULIE BEAULIEU, PETER J. BENTLEY, SAMUEL BERNARD, GUILLAUME BESLON, DAVID M. BRYSON, PATRYK CHRABASZCZ, NICK CHENEY, ANTOINE CULLY, STEPHANE DONCIEUX, FRED C. DYER, KAI OLAV ELLEFSEN, ROBERT FELDT, STEPHAN FISCHER, STEPHANIE FORREST, ANTOINE FRÉNOY, CHRISTIAN GAGNÉ, LENI LE GOFF, LAURA M. GRABOWSKI, BABAK HODJAT, FRANK HUTTER, LAURENT KELLER, CAROLE KNIBBE, PETER KRCAH, RICHARD E. LENSKI, HOD LIPSON, ROBERT MACCURDY, CARLOS MAESTRE, RISTO MIIKKULAINEN, SARA MITRI, DAVID E. MORIARTY, JEAN-BAPTISTE MOURET, ANH NGUYEN, CHARLES OFRIA, MARC PARIZEAU, DAVID PARSONS, ROBERT T. PENNOCK, WILLIAM F. PUNCH, THOMAS S. RAY, MARC SCHOENAUER, ERIC SCHULTE, KARL SIMS, KENNETH O. STANLEY, FRANÇOIS TADDEI, DANESH TARAPORE, SIMON THIBAULT, WESTLEY WEIMER, RICHARD WATSON & JASON YOSINSKI, THE SURPRISING CREATIVITY OF DIGITAL EVOLUTION: A COLLECTION OF ANECDOTES FROM THE EVOLUTIONARY COMPUTATION AND ARTIFICIAL LIFE RESEARCH COMMUNITIES 2 (2019), https://arxiv.org/pdf/1803.03453.pdf [https://perma.cc/GW4S-BZHR] (discussing possibility of digital evolution where "evolving algorithms and organisms have creatively subverted their expectations or intentions, exposed unrecognized bugs in their code, produced unexpectedly adaptations, or engaged in behaviors and outcomes uncannily convergent with ones found in nature").

[150] Surely, defendants may have other available defenses, but most are only viable if the plaintiff was negligent or misused a product. *See* Owen, *supra* note 88, at 45 ("Thus, like assumption of risk, product misuse is a powerful common law 'misconduct defense' in products liability litigation."). For this reason, assumption of risk provides an important escape hatch for defendants offering risky products or services that society deems worthy. *See id.*

risks associated with the technology, it may force the company to weigh the respective costs and benefits of such disclosure. As such, defendants may have an incentive to better explain their AI if they know it can help bolster an assumption of risk defense.

Time may also impact the knowledge analysis. Not all AI is the same—and some may be less of a black box than others.[151] And as AI becomes more commonplace, perhaps it will follow in the way of locomotives and automobiles. Even those who choose not to go under the hood or unpack the development of an AI model could still appreciate the risks associated with technologies that they do not understand. Users may have no understanding of how the technology works, but through experience, user narratives, or trusted intermediaries who provide certifications, users may nevertheless be able to have a more accurate sense of the risk involved. As its use proliferates, so does knowledge of its dangers. Until the use of AI grows, however, juries may be left to probe the subjective understanding of individual plaintiffs to assess the risks of each AI-driven technology.

B.   *"Voluntarily" Assuming the Risk: Envisioning a New World of Artificial*
      Intelligence Plaintiffs

The emergence of many forms of AI across so many domains has inevitably led to some tort claims.[152] The most prominent examples have come from semiautonomous and autonomous vehicles, which have already caused at least ten deaths and even more injuries.[153] Although some of these cases against the

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[151] *Compare* Shipher Wu, Chun-Min Chang, Guan-Shuo Mai, Dustin R. Rubenstein, Chen-Ming Yang, Yu-Ting Huang, Hsu-Hong Lin, Li-Cheng Shih, Sheng-Wei Chen & Sheng-Feng Shen, *Artificial Intelligence Reveals Environmental Constraints on Colour Diversity in Insects*, 10 NATURE COMMC'NS 1, 2 (2019) (using explainable artificial intelligence to classify moths based on color, shape, and patterns of their wings as part of ecological study), *with* Ngozi Okidegbe, *Discredited Data*, 107 CORNELL L. REV. (forthcoming 2022) (manuscript at 6-7) (explaining rise of pretrial algorithms used to make bail determinations and lack of transparency as to factors they consider).

[152] *See* Cruz v. Talmadge, 244 F. Supp. 3d 231, 232 (D. Mass. 2017); Mracek v. Bryn Mawr Hosp., 610 F. Supp. 2d 401, 402-03 (E.D. Pa. 2009), *aff'd*, 363 F. App'x 925 (3d Cir. 2010). Workplace robot injury cases are some of the most common right now. *See, e.g.*, Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219, 2017 WL 6498908, at *1 (W.D. Mich. Nov. 5, 2020); Miller v. Rubbermaid Inc, No. cv-05-10-6197, 2006 WL 5105711 (Ohio C.P. Summit Oct. 13, 2006); Payne v. ABB Flexible Automation, Inc., 116 F.3d 480 (8th Cir. 1997) (unpublished table decision) (man pinned and killed by automated robot at work). According to a Deloitte report which surveyed 2,337 IT and line-of-business executives, 55% of the executives think potential liability for AI decisions is a "major/extreme concern" while only 39% believed they were "fully prepared." DELOITTE AI INST., *supra* note 99, at 14 fig.8. These concerns are valid because, while only a relatively small number of AI cases have made their way to the court system, most scholars agree that more are coming very soon.

[153] *See* TESLA DEATHS, https://www.tesladeaths.com/ [https://perma.cc/584H-TNVZ] (last visited Feb. 15, 2022). Several families have filed suit. Complaint at 34-40, Umeda v. Tesla,

autonomous device manufacturers have settled, these instances have naturally triggered a slew of analyses about the tort implications of such AI-driven devices.[154] Much of the analysis has debated the benefits of using negligence versus strict liability regimes for such injuries.[155]

For purposes of injuries related to AI-driven devices, both express and implied assumptions of risk may arise. For instance, Tesla manufacturers require all purchasers to sign a contract that attempts to nullify tort liability through an exculpatory clause in the company's new warranty contract.[156] While known in contracts as an exculpatory clause, these may do little to stave off all tort lawsuits.[157] For instance, the Tesla contract does not expressly include "strict liability" in its enumerated torts list and courts may find such a blanket clause to be against public policy.[158] But the existence of such an exculpatory contract for

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Inc., No. 5:20-cv-02926 (N.D. Cal. Apr. 28, 2020); Complaint at 3-5, 18, Banner v. Tesla, Inc., No. 50:19-CA-09962 (Fla. Cir. Ct. Aug. 1, 2019); Complaint at 2-4, Nilsson v. Gen. Motors LLC, No. 4:18-cv-00471 (N.D. Cal. Jan. 22, 2018).

[154] *See supra* note 1 and accompanying text (describing alleged injuries caused by AI-driven devices).

[155] *Compare* Ryan Abbott, *The Reasonable Computer: Disrupting the Paradigm of Tort Liability*, 86 GEO. WASH. L. REV. 1, 4 (2018) (arguing for negligence standard for computer-generated torts), *and* Gurney, *supra* note 3, at 252 (arguing for new tort liability regime based on products liability principles), *with* Elizabeth Fuzaylova, Note, *War Torts, Autonomous Weapon Systems, and Liability: Why a Limited Strict Liability Tort Regime Should Be Implemented*, 40 CARDOZO L. REV. 1327, 1331 (2019) (proposing "a limited strict liability tort regime standard for regulating autonomous and semiautonomous weapons").

[156] *See New Vehicle Limited Warranty*, TESLA 11 (Mar. 22, 2021), https://www.tesla.com/sites/default/files/downloads/tesla-new-vehicle-limited-warranty-en-us.pdf [https://perma.cc/2RRB-GFCE] ("Tesla hereby *disclaims any and all indirect, incidental, special and consequential damages* arising out of or relating to your vehicle . . . . Tesla *shall not be liable* for any *direct damages* in an amount that exceeds the fair market value of the vehicle at the time of the claim. The above limitations and exclusions *shall apply whether your claim is in contract, tort (including negligence and gross negligence)*, breach of warranty or condition, misrepresentation (whether negligent or otherwise) *or otherwise at law or in equity* . . . ." (emphasis added)); *see also* Omri Ben-Shahar, *Should Carmakers Be Liable When a Self-Driving Car Crashes?*, FORBES (Sept. 22, 2016, 11:36 AM), https://www.forbes.com/sites/omribenshahar/2016/09/22/should-carmakers-be-liable-when-a-self-driving-car-crashes/#3c53d0ca48fb ("The Tesla lawsuit is a long shot, because Tesla buyers agree to contract terms that require drivers to keep hands on the steering wheel at all times, even when operating the autopilot."); Courtney K. Meyer, Note, *Exculpatory Clauses and Artificial Intelligence*, 51 STETSON L. REV. 259, 267-71 (2022) (discussing "contractual limitation of liability doctrine" as applied to Tesla's business practices).

[157] An exculpatory clause is a contractual clause that attempts to absolve a party of liability. RESTATEMENT (SECOND) OF CONTS. § 195 (AM. L. INST. 1981).

[158] Exculpatory clauses must be both facially enforceable and not contrary to public policy; sometimes courts will refuse to enforce a facially enforceable clause because it is contrary to public policy. *See* Meyer, *supra* note 156, at 264; Applegate v. Cable Water Ski, L.C., 974 So. 2d 1112, 1114-15 (Fla. Dist. Ct. App. 2008) (holding exculpatory clause was

semiautonomous vehicles suggests it is not so far-fetched to imagine manufacturers of AI-driven devices like robots requiring purchasers to sign an express assumption of risk agreement associated with such devices.[159]

This Section instead focuses on the more difficult AI cases involving *implied* assumption of risk and evaluates them in the context of the voluntary requirement. Courts have almost always held that recreational activities satisfy the voluntary requirement.[160] Courts have differentiated the voluntariness present in such activities from employment or transportation needs. Split-second decisions may also not be considered voluntary.[161]

Because interactions with AI-driven technology are often viewed as a choice, more akin to recreational activities, one may initially think this element will always be satisfied for those who use, enjoy the benefits of, or work with AI. But a choice to engage with AI in and of itself cannot possibly lead to a voluntary assumption of all risks associated with the technology. In reality, the voluntariness of those injured by AI-driven technologies may be more varied. To better understand the application of the voluntary requirement of assumption of risk to AI-driven technology, this Section explores the defense in five contexts: (1) private (user), (2) residential (social guests), (3) commercial (business guests), (4) employment (employee), and (5) public settings (bystanders). This Section also provides a sampling of the types of AI-related injuries that may occur with greater frequency as the use of AI continues to grow.

AI Risks in Private Settings. A defendant's strongest case for establishing the voluntary requirement of an assumption of risk defense probably lies in the private use of an AI-driven device. At least in the early uses of AI, such a plaintiff may often reflect an overeager first-adopter of technology that is more than willing to embrace the new technology regardless of the risk. Although it may be difficult to establish knowledge of the risks posed by such technology,

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unenforceable on grounds of public policy because clause tried to absolve liability for injury to minor).

[159] *See, e.g.*, *Terms of Use*, EZ-ROBOT, https://www.ez-robot.com/terms-of-use.html [https://perma.cc/KSP5-FKQZ] (last visited Feb. 15, 2022) ("EZ-Robot (and manufacturers and distributors) assumes no responsibility or liability for any errors or inaccuracies that may appear in any documentation or files or any software that may be provided.").

[160] Nalwa v. Cedar Fair, L.P., 290 P.3d 1158, 1163 (Cal. 2012) ("And participation in recreational activity, however valuable to one's health and spirit, is voluntary in a manner employment and daily transportation are not."); Schneider *ex rel.* Schneider v. Erickson, 654 N.W.2d 144, 150 (Minn. Ct. App. 2002) (holding plaintiff voluntarily encountered risk because he could have worn goggles to reduce risk of eye injury from paintballs but refused to do so).

[161] As one court held, the nonconscious action of encountering the risk of a meat-slicing machine was not voluntary. Coty v. U.S. Slicing Mach. Co., 373 N.E.2d 1371, 1378 (Ill. App. Ct. 1978) ("It has also been held that to be voluntary for the purpose of the assumption of risk defense in products liability litigation a 'considered choice' must be involved which cannot be satisfied by 'inadvertence, momentary inattention or diversion of attention.'" (quoting Elder v. Crawley Book Mach. Co., 441 F.2d 771, 774 (3d Cir. 1971))).

as discussed earlier, these scenarios could easily satisfy the voluntary requirement.

AI Risks in Residential Guest Settings. A second category of cases where the voluntary requirement of the assumption of risk defense may arise involves AI-related injuries in residential guest settings. In such home settings, AI-driven technologies may inflict injuries not only on homeowners but also on both guests who voluntarily choose to engage with the technology and guests who have made no such knowing and voluntary choice. Each of these involves a different degree of voluntariness. In the prima facie negligence case, courts would explore the duties of the homeowners using AI through the lens of licensees.[162] Homeowners have a duty to warn licensees—social visitors—of known dangerous conditions but have no independent duty to inspect their premises for hazards.[163]

One illustration of courts' treatment of guests assuming the risks of new technologies can be found in passengers assuming the risk of riding in the once-novel technology of automobiles.[164] Some states compared the driver-passenger relationship to the landowner-licensee-invitee relationship in which the duties a driver owed depended upon the status of the passenger.[165] In Wisconsin, a state

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[162] Lechuga v. S. Pac. Transp. Co., 949 F.2d 790, 799 (5th Cir. 1992) (stating that landowner owes duty to warn licensees of known, nonobvious dangerous conditions); Marchello v. Denver & Rio Grande W. R.R., 576 F.2d 262, 265 (10th Cir. 1978) (stating landowner ordinarily owes licensees no duty to inspect).

[163] A duty of reasonable care still exists with respect to activities engaged in on the property. *Lechuga*, 949 F.2d at 795, 799. Homeowners insurance may need to advance to keep pace with the increasing AI risks in the home. Insurers have acknowledged the need to stay up to date on AI technologies and "how the increasing presence of robotics in everyday life and across industries will shift risk pools, change customer expectations, and enable new products and channels." Ramnath Balasubramanian, Ari Libarikian & Doug McElhaney, *Insurance 2030—The Impact of AI on the Future of Insurance*, McKINSEY & Co. (Mar. 12, 2021), https://www.mckinsey.com/industries/financial-services/our-insights/insurance-2030-the-impact-of-ai-on-the-future-of-insurance [https://perma.cc/NW3Z-XGVW] ("AI and its related technologies will have a seismic impact on all aspects of the insurance industry, from distribution to underwriting and pricing to claims.").

[164] In 1919, automobiles were seen as a luxury item, but by 1929 they were "transforming American life." Gifford, *supra* note 106, at 110. In 1925, over 3,735,000 new automobiles were sold and by the end of the 1920's, one half of American households owned an automobile. *Id.* But as the popularity of automobiles grew, so did the number of auto accidents. *Id.* The fatality rate from automobile accidents increased 500% between 1913 and 1931. *Id.*; *see also* Kyle Graham, *Of Frightened Horses and Autonomous Vehicles: Tort Law and Its Assimilation of Innovations*, 52 SANTA CLARA L. REV. 1241, 1252 n.34 (2012) ("Automobiles were responsible for more than 200,000 deaths during the 1920s.").

[165] *See* Graham, *supra* note 164, at 1245 n.10 (discussing early debate over duty of passenger to warn driver). The majority of courts analogized that situation with the precedents set in horse-drawn vehicle cases, which found that a driver owed a passenger ordinary care. J. Walter White, *The Liability of an Automobile Driver to a Non-paying Passenger*, 20 VA. L. REV. 326, 330 (1934).

that considered passengers licensees or invitees, courts limited a driver's liability by viewing them as providing their passenger "hospitality."[166] Therefore, the guest assumed the risk of the driver's skill and judgment.[167] Although a driver's negligence must have continued for long enough to have been observed by a passenger, if the passenger did not affirmatively protest to such negligent driving once it was noticed, he was considered to have assumed the risk.[168] Other states (even if they did not follow the licensee-invitee approach) similarly recognized that passengers could not recover if they assumed the risk.[169] As courts recognized the inherent dangers of automobiles, Wisconsin eventually abandoned the assumption of risk defense for drivers, largely relying on the emergence of automobile insurance as justification for increasing the liability on individual drivers.[170] Not all states, however, followed suit.[171]

Although not arising from analyses of tortious conduct,[172] thorny questions of assumption of risk in the home have also arisen in the context of privacy analyses. Notably, as "novel" technologies like cell phones and internet technologies evolved, courts have struggled with what constitutes a reasonable

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[166] Richard Glen Greenwood, *Assumption of Risk in Automobile Cases*, 43 Marq. L. Rev. 203, 204 (1959) ("The guest who voluntarily takes a chance on known dangers in preference to renouncing the benefits of the relationship which he creates by entering the car must himself bear the consequences when he is injured by reason of a known danger." (quoting Bourestom v. Bourestom, 285 N.W. 426, 428 (1939))).

[167] *Id.* at 203-04; *see also* Krueger v. Krueger, 222 N.W. 784, 785 (Wis. 1929) (holding plaintiff assumed risk that defendant driver would fall asleep because she knew he had driven a long distance day before and that he did not get enough sleep before drive); Sommerfield v. Flury, 223 N.W. 408, 411 (Wis. 1929) (holding passenger "assumes the dangers incident to the known incompetency or inexperience of the driver"); Cleary v. Eckhart, 210 N.W. 267, 269 (Wis. 1926) (holding that plaintiff could not recover damages resulting from lack of defendant's skill when she knew defendant driver had little experience driving an automobile).

[168] Greenwood, *supra* note 166, at 205.

[169] *See* Kloppfenstein v. Eads, 254 P. 854, 856 (Wash. 1927) (suggesting that plaintiff assumed risk of being injured while remaining in vehicle on side of road because he did not leave vehicle); Hall v. Hall, 258 N.W. 491, 491-92 (S.D. 1935) (holding that plaintiff assumed risk of injury because he knew of driver's lack of proficiency in driving an automobile); Curry v. Riggles, 302 Pa. 156, 160 (1931) ("Where a car is being improperly driven, a gratuitous passenger who sits beside the driver with full knowledge of the facts and makes no protest, in effect voluntarily joins in testing the danger . . . .").

[170] McConville v. State Farm Mut. Auto. Ins. Co., 15 Wis. 2d 374, 383 (1962).

[171] *See, e.g.*, Truong v. Nguyen, 67 Cal. Rptr. 3d 675, 679, 696 (Ct. App. 2007) (holding that assumption of risk barred plaintiff's wrongful death claim when plaintiff was passenger of jet ski operated by defendant and was killed in accident).

[172] The Restatement (Second) of Torts identified four main categories of privacy torts: (1) intrusion upon seclusion, (2) appropriation, (3) public disclosure of private facts, and (4) false light or publicity. Restatement (Second) of Torts § 652A (Am. L. Inst. 1977). At least one scholar has concluded that the privacy torts do not provide adequate protection for the privacy implications of AI and data collection. Corinne Moini, *Protecting Privacy in the Era of Smart Toys: Does Hello Barbie Have a Duty to Report?*, 25 Cath. U. J.L. & Tech. 281, 302 (2017).

expectation of privacy and what does not.[173] In the criminal law context, defendants who jointly occupy spaces have been found to assume the risk that another occupant will voluntarily consent to a search in the Fourth Amendment context.[174] Thus far, in the tort context, courts have most frequently evaluated consent related to verbal conversations, finding that defendants assume the risk that revealing incriminating information to another will be relayed or recorded.[175]

Can a similar analysis apply when AI-driven devices voluntarily brought into homes unknowingly record visitors? One of the most pervasive AI-driven home technologies is Alexa, with 157 million devices found in U.S. homes.[176] What are the privacy parameters when Alexa records visitors in the home?[177] Does it

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[173] *Compare* Smith v. Maryland, 442 U.S. 735, 744 (1979) (holding that defendant assumed risk of his call history being revealed to police), *and* United States v. Miller, 425 U.S. 435, 443 (1976) (holding that defendant assumed risk of his bank statements being exposed), *with* Carpenter v. United States, 138 S. Ct. 2206, 2220 (2018) (refusing to extend *Smith* and *Miller* in context of cell-site location information because disclosure of that information was not risk assumed by defendant without "any affirmative act on the part of the user beyond powering up" cell phone). Although *Smith* and *Miller* have since been superseded by congressional statutes (18 U.S.C. § 3121(a) and 12 U.S.C. § 3401, respectively), these cases still show how assumption of risk questions in the context of emerging technologies have been treated by courts in the past.

[174] *See* Frazier v. Cupp, 394 U.S. 731, 740 (1969) (holding that when defendant and his cousin shared duffel bag and defendant left bag in his cousin's house, he assumed risk that his cousin would consent to search of bag); United States v. Matlock, 415 U.S. 164, 170 (1974) (holding that prosecution does not have to prove that defendant gave consent to search, only that consent was given by third party with common authority over premises to be searched).

[175] *See* On Lee v. United States, 343 U.S. 747, 753 (1952) (holding that defendant assumed risk that his confidential and indiscrete conversation would be overheard); *see also* Rathbun v. United States, 355 U.S. 107, 111 (1957) (holding that "[e]ach party to a telephone conversation takes the risk that the other party may have an extension telephone and may allow another to overhear the conversation"); United States v. White, 401 U.S. 745, 752 (1971) ("Inescapably, one contemplating illegal activities must realize and risk that his companions may be reporting to the police. . . . But if he has no doubts, or allays them, or risks what doubt he has, the risk is his."); *Smith*, 442 U.S. at 744 (finding no Fourth Amendment search when petitioner "voluntarily conveyed numerical information to the telephone company and 'exposed' that information to its equipment in the ordinary course of business," and "assumed the risk that the company would reveal to police the numbers he dialed" when using his telephone).

[176] Felix Richter, *Smart Speaker Adoption Continues to Rise*, STATISTA (Jan. 9, 2020), https://www.statista.com/chart/16597/smart-speaker-ownership-in-the-united-states/ [https://perma.cc/36LM-RC4D].

[177] Raphael Davidian, *Alexa and Third Parties' Reasonable Expectation of Privacy*, 54 AM. CRIM. L. REV. ONLINE 58, 63 (2017) ("[U]nless and until Alexa becomes customary and prevalent in homes, third parties without knowledge that Alexa was within their vicinity should have a reasonable expectation of privacy in their conversations under the Fourth Amendment."); *see also* Gabriel Bronshteyn, Note, *Searching the Smart Home*, 72 STAN. L.

matter if the use of Alexa was unknown? Some smart toys, voluntarily brought into the home by caregivers, similarly function through recordings.[178] Or what if an AI-driven device moves to unauthorized areas?[179] And can such conceptions of consent in Fourth Amendment jurisprudence be extended to assumption of risk in tort jurisprudence? These are questions for a separate analysis and raise questions about technology in the home that extend far beyond AI, but acknowledge the nuance associated with consent in both tort and criminal cases.

In addition to voice recordings, facial recognition technology used in homes raises similar questions of consent. The popular Nest security systems use facial recognition to notify the homeowner if the face caught on camera is one recognized as an individual living in the home or not.[180] Similarly, the Aibo robo-dog's front-facing camera "uses facial recognition technology to remember and identify the people it's interacting with. That's why Sony can't sell Aibo in the state of Illinois, where the collection of biometric data, including face scans, is regulated by the Biometric Information Privacy Act" ("BIPA").[181]

AI Risks in Commercial Settings. Consumers in a commercial setting are a different story than residential visitors. If a shopper enters a store that has enlisted robots to roam the store stocking shelves or cleaning floors, have they voluntarily and knowingly encountered the risks of injury from such robots? Surely, they have voluntarily entered the store—but did they voluntarily engage with an AI-driven technology? Does the analysis change if the AI is new, nonobvious, or has been in use for years? In a prima facie negligence case, courts

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REV. 455, 493-94 (2020) (citing *Carpenter*, 138 S. Ct. at 2206) ("If the assumption-of-risk rationale is in play after *Carpenter*, it won't be until smart home devices are built into most every modern home that the Fourth Amendment will apply."); Margot E. Kaminski, *Robots in the Home: What Will We Have Agreed To?*, 51 IDAHO L. REV. 661, 674 (2015) (discussing how some robots may have implied consent to record people in their homes); Nathaniel Mott, *When Alexa Is Listening, What Do You Tell Houseguests?*, CHRISTIAN SCI. MONITOR (Sept. 16, 2016), https://www.csmonitor.com/World/Passcode/Security-culture/2016/0916/When-Alexa-is-listening-what-do-you-tell-houseguests (theorizing that social norms will change so that homeowners will have obligation to warn guests about potential listening devices).

[178] *See* Moini, *supra* note 172, at 282 (noting that Hello Barbie uses speech recognition and progressive learning techniques to engage in two-way conversation with child user).

[179] Ry Crist, *Yes, the Robot Dog Ate Your Privacy*, CNET (June 28, 2019, 8:21 AM), https://www.cnet.com/news/yes-the-robot-dog-ate-your-privacy/ [https://perma.cc/B7A5-ESZA] ("A reasonable consumer might rightly wonder just how much data [the Aibo robo-dog] gathers as it wanders their home scanning faces and learning about its owners."); *iRobot Privacy and Data Sharing Common Questions*, IROBOT (Nov. 19, 2021), https://homesupport.irobot.com/s/article/964 ("If a user agrees to having their map data viewable on their mobile device, then the map that the Roomba® creates during a cleaning job is sent to the Cloud . . . .").

[180] Megan Wollerton, *Best Facial Recognition Security Cameras to Buy for 2022*, CNET (Nov. 2, 2021, 3:00 AM), https://www.cnet.com/home/security/best-facial-recognition-security-cameras/ [https://perma.cc/2FAN-4WKE].

[181] Crist, *supra* note 179.

explore the duties of commercial defendants using AI through the lens of invitees.[182] Unlike with licensees, a landowner need not be aware of any dangerous condition to be liable to invitees.[183] Instead, a commercial landowner has a duty to inspect and warn business invitees and public visitors of hazards, both obvious and latent.[184] Would functional AI-driven technologies constitute a hazard, distinct from a non-AI driven commercial hazard?

Commercial use of AI-driven technologies has already begun. Walmart implemented human-robot interaction in its stores with automated inventory-checking robots that roam the aisles alongside customers, but appears to have discontinued this practice.[185] The retailer launched these robots in fifty stores in 2017.[186] By 2019, 350 stores across the country had the robots,[187] with another 650 robots planned to be deployed in 2020.[188] Another manufacturer has sold 506 of these robots to various stores in nine states.[189]

Robots are also being enlisted to help with agricultural tasks. In one case, plaintiff dairy farmers "purchased, financed, leased, and/or rented classic model voluntary milking system . . . robots allegedly 'designed to optimize quality milk yield' in a 'cow-friendly, hygienic and efficient way.'"[190] When the milking robots caused damage to a farmer's barn and cows, a court allowed these damages to satisfy part of the farmer's prima facie torts claims (instead of barring them by the economic loss doctrine).[191] Courts in such commercial settings sometimes frame the use of robots as a "condition" of the property under landowner duties.[192] In addition to affecting the standard of care for the prima facie case, these different scenarios may also affect the voluntariness of a

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[182] *See* Jacobsma v. Goldberg's Fashion F., 303 N.E.2d 226, 228 (Ill. App. Ct. 1973).

[183] *See* Degel v. Majestic Mobile Manor, Inc., 914 P.2d 728, 731 (Wash. 1996) (en banc) (stating that landowners owe "affirmative duty to use ordinary care to keep the premises in a reasonably safe condition" as opposed to less stringent duty owed to trespassers and licensees).

[184] *See, e.g.*, *id.* at 733 (holding landowners owe duty of reasonable care to invitees); City of Boca Raton v. Mattef, 91 So. 2d 644, 647-48 (Fla. 1956) (en banc) (holding landowners owe duty to invitees to inspect and/or fix dangerous conditions).

[185] Katharine Schwab, *Walmart's Robot Army Has Arrived*, Fast Co. (Aug. 29, 2019), https://www.fastcompany.com/90395843/walmarts-robot-army-has-arrived [https://perma.cc/92R3-Y6L7].

[186] *Id.*

[187] *Id.*

[188] Kate King, *The Robot in Aisle Five Isn't Stalking You. No, Really.*, Wall St. J. (Feb. 21, 2020, 11:21 AM), https://www.wsj.com/articles/the-robot-in-aisle-five-isnt-stalking-you-no-really-11582302075.

[189] *Id.* ("Badger Technologies says it has deployed 506 robots to grocers in nine states over the last year, including at Giant and Stop & Shop Supermarket Co. stores.").

[190] Bishop v. DeLaval Inc., 466 F. Supp. 3d 1016, 1021 (W.D. Mo. 2020).

[191] *Id.* at 1024-25.

[192] Hunter v. Durr Sys., Inc., No. 2:06-cv-00411, 2007 WL 1215075, at *2-3 (M.D. Ala. Apr. 24, 2007) (treating robotic paint booths as condition on property).

consumer's actions. Whereas a consumer may expect there to be fixtures and furniture in commercial settings, they may not be expecting robots.

AI Risks in Employment Settings. A much weaker case for voluntariness for AI-related injuries lies in employment settings. Workplace injuries today are governed by state workers' compensation laws, and in most states, employees are barred from making torts claims, such as negligence, against their employers.[193] Legislators across the country have allowed employees recourse against their employers for workplace injuries regardless of fault through compensation benefits, but have tempered this recourse by providing employers with immunity from personal injury tort suits.[194] Although this immunity is not absolute, the exceptions that do exist are rarely satisfied, often resulting in undercompensated employees injured on the job.[195] As such, it is unlikely that workers injured by AI in the workplace will have a viable negligence claim.[196]

Workers' compensation has strict caps on benefits provided to employees, particularly on Temporary and Permanent Total Disability benefits.[197] Workers' compensation was first established as a part of tort reform to allow employees recourse for injuries without having to prove the employer's negligence.[198] Part

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[193] *See* Gregory v. Pearson, 736 S.E.2d 577, 580 (N.C. Ct. App. 2012).

[194] *See, e.g.*, FLA. STAT. § 440.11 (2021) (defining limits of employer liability for employee claims); GA. CODE ANN. § 34-9-11 (2021) (providing exclusive rights and remedies to employees and immunity to certain employers).

[195] *FAQs–When Can You Sue Your Employer for a Work Injury?*, WORK INJ. SOURCE, https://workinjurysource.com/what-you-need-to-know/work-injury-faqs/faqs-can-sue-employer-work-injury/ [https://perma.cc/3N4K-WKMG] (last visited Feb. 15, 2022) (noting employer immunity exceptions for intentional torts, gross negligence, bad faith denials of claims, injury by employer-manufactured product, employer relationship with contractor, and independent contractors); *see also* Delawder v. Am. Woodmark Corp., 178 F. App'x 197, 199, 202 (4th Cir. 2006) (affirming summary judgment for employer because employee failed to meet the narrow statutory exceptions that allow plaintiffs to sue employers and evade workers' compensation requirements); Gifford, *supra* note 106, at 107-08 (noting that, under workers' compensation regimes, employees do not receive compensation for noneconomic damages, loss of income recovery is limited, and future medical expenses were awarded as incurred).

[196] *See, e.g.*, *Delawder*, 178 F. App'x at 202; W. VA. CODE ANN. § 23-4-2(d)(1) (2021) (stating that establishment of workers' compensation system was intended to remove employee-employer disputes from tort system). *See generally* F. Patrick Hubbard, *"Sophisticated Robots": Balancing Liability, Regulation, and Innovation*, 66 FLA. L. REV. 1803, 1830-31 (2014) (discussing complications from workers' compensation for claims of workers injured by robots used in workplace).

[197] *See* NAT'L ACAD. OF SOC. INS., WORKERS' COMPENSATION: BENEFITS, COVERAGE, AND COSTS, 2010, at 87-95 (2012) (discussing state limits on both duration and monetary value of workers' compensation).

[198] *See* Alan Pierce, *Workers' Compensation in the United States: The First 100 Years*, LEXISNEXIS (Mar. 14, 2011), https://www.lexisnexis.com/legalnewsroom/workers-compensation/b/workers-compensation-centennial/posts/workers-compensation-in-the-

of the push for workers' compensation arose as a response to employers who were arguing that employees assumed all risks related to their position when they arrived for the job.[199]

For those states that do allow negligence claims to proceed against employers, the voluntary requirement is particularly vexing when determining whether actions taken as part of one's employment are truly voluntary. In an effort to protect railroads, most early cases recognized that employees assumed not only the risks ordinary to their employment but also the risk of negligence by fellow employees.[200] Some courts have held that the voluntary requirement of assumption of risk is met when, for example, an employee programming a box-folding machine grabbed the control box near the moving parts of the machine and was injured,[201] a farm employee got too close to moving chains and injured his hand,[202] and a mechanic failed to attach a "clip-on chuck" while changing a tire, where doing so would have "greatly reduce[d] the risk of harm by a wheel assembly explosion."[203] However, other courts have expressed doubt that workers voluntarily assume risks of their workplace because their decisions are "compelled by economic forces," i.e., the threat of termination.[204]

Nevertheless, injuries derived from AI-driven technologies will continue to occur in the workplace. Occupational Safety and Health Administration records show at least forty-six robot-related injuries since November 12, 1984.[205] Additionally, Amazon warehouses that have introduced robots report higher

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united-states-the-first-100-years [https://perma.cc/R2SL-DSMZ] ("Negligence rules, which came to dominate the law of torts in the previous century, had been used by courts to protect American industries from responsibility for the widespread injury and death that the Industrial Revolution visited upon workers, State Workers' Compensation statutes were supposed to change all that.").

[199] *See* Robert F. Williams, *Can State Constitutions Block the Workers' Compensation Race to the Bottom?*, 69 RUTGERS U. L. REV. 1081, 1088-89 (2017).

[200] The fellow-servant rule technically barred recovery for plaintiffs injured by fellow servants, but some courts have characterized those risks as ones ordinarily assumed by employees. *Compare* Gifford, *supra* note 106, at 96 (explaining origin of fellow-servant rule that barred employees injured by tortious conduct of other employees from recovering from employers), *with* Murray v. S.C. R.R., 26 S.C.L. (1 McMul.) 385, 400 (1841) (holding that railroad employee assumes risks naturally incident from his employment, including negligence from other employees).

[201] Karim v. Tanabe Mach., Ltd., 322 F. Supp. 2d 578, 581 (E.D. Pa. 2004) (finding that plaintiff knew of danger before grabbing control box and assumed risk).

[202] Green v. Allendale Planting Co., 2005-CA-02271-SCT (¶ 3) (Miss. 2007).

[203] Wagner v. Firestone Tire & Rubber Co., 890 F.2d 652, 657-58 (3d Cir. 1989).

[204] Syler v. Signode Corp., 601 N.E.2d 225, 229 (Ohio Ct. App. 1992).

[205] *Accident Search Results*, U.S. DEP'T LAB.: OCCUPATIONAL SAFETY & HEALTH ADMIN., https://www.osha.gov/pls/imis/accidentsearch.search?sic=&sicgroup=&naics=&acc _description=&acc_abstract=&acc_keyword=%22Robot%22&inspnr=&fatal=&officetype= &office=&startmonth=&startday=&startyear=&endmonth=&endday=&endyear=&keyword _list=on&p_start=&p_finish=0&p_sort=&p_desc=DESC&p_direction=Next&p_show=20 [https://perma.cc/T8TU-A98H] (last visited Feb. 15, 2022) (documenting forty-six accidents caused by robots when one uses keyword "Robot").

rates of employee injuries; in fact, one warehouse's rate of injury quadrupled after the introduction of robots.[206] Although scholars have argued that the current compensation structure associated with workers' compensation laws should be changed to adapt to robot-related injuries,[207] the law currently treats robot injuries in the workplace the same as any other injury with similar caps and limitations.[208]

At least one state also provides a private right of action for employees against their employers regarding use of their biometric (physiological, biological, or behavioral) data.[209] Many workplaces use some sort of biometric scan as a requirement to enter the workplace.[210] In Illinois, a plaintiff alleged that her

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[206] Will Evans, *Ruthless Quotas at Amazon Are Maiming Employees*, ATLANTIC (Dec. 5, 2019, 6:00 PM), https://www.theatlantic.com/technology/archive/2019/11/amazon-warehouse-reports-show-worker-injuries/602530/ ("[M]ost of the warehouses with the highest rates of injury deployed robots."). Two other warehouses utilizing robots reported serious injury rates of almost 26 per 100 employees and about 13 per 100 employees. *Id.* (providing statistics from Oregon and Washington facilities with high rates of injury).

[207] Kenneth S. Abraham & Robert L. Rabin, *Automated Vehicles and Manufacturer Responsibility for Accidents: A New Legal Regime for a New Era*, 105 VA. L. REV. 127, 145-69 (2019) (arguing that as autonomous vehicles become more advanced and commonly used, a "Manufacture Enterprise Responsibility" regime should be adopted, which would hold manufacturers strictly responsible for injuries and compensation would be given from specialized fund); Tracy Hresko Pearl, *Compensation at the Crossroads: Autonomous Vehicles & Alternative Victim Compensation Schemes*, 60 WM. & MARY L. REV. 1827, 1828 (2019) (arguing that autonomous vehicle accidents should be governed by no-fault victim compensation fund financed by tax on sale of all fully autonomous vehicles); Antonio Davola, *A Model for Tort Liability in a World of Driverless Cars: Establishing a Framework for the Upcoming Technology*, 54 IDAHO L. REV. 591, 609-10 (2018) (proposing that autonomous vehicle torts should be governed by new tort regime which combines negligence evaluation with specialized fund for compensation).

[208] GARRY MATHIASON, NATALIE PIERCE, JOHN CERILLI, PHIL GORDON, PAUL KENNEDY, THEODORA LEE, MICHAEL LOTITO, KERRY NOTESTINE, EUGENE RYU, ILYSE SCHUMAN, PAUL WEINER, WILLIAM HAYS WEISSMAN, ROBERT WOLFF, GREG BROWN, JOON HWANG, MIRANDA MOSSAVAR, SARAH ROSS & JEFF SEIDLE, THE TRANSFORMATION OF THE WORKPLACE THROUGH ROBOTICS, ARTIFICIAL INTELLIGENCE, AND AUTOMATION: EMPLOYMENT AND LABOR LAW ISSUES, SOLUTIONS, AND THE LEGISLATIVE AND REGULATORY RESPONSE 11 (2016) ("For the purpose of determining eligibility for workers' compensation benefits, injuries caused by robots will be treated the same as injuries caused by using any other tool used in the workplace, such as a hammer, wrench, or computer keyboard.").

[209] *See* 740 ILL. COMP. STAT. ANN. 14/15, 14/20 (2021) (providing private right of action for employees when employers "collect, capture, purchase, receive through trade or otherwise obtain a person's or a customer's biometric identifier or biometric information" without first meeting specific, statutory requirements); N.Y. LAB. LAW § 201-a (McKinney 2021) (forbidding employers from requiring employees to use fingerprints to clock in).

[210] *See* Selena Larson, *Beyond Passwords: Companies Use Fingerprints and Digital Behavior to ID Employees*, CNN: BUS. (Mar. 18, 2018, 3:53 PM), https://money.cnn.com/2018/03/18/technology/biometrics-workplace/index.html [https://perma.cc/JJ9K-DDSV] ("Spiceworks, a professional network for people in the IT industry, says nearly 90% of businesses will use biometric authentication by 2020, up from

employer negligently violated the Illinois BIPA in collecting her finger scan as part of its timekeeping technology.[211] Her employer responded that such a claim was barred by primary implied assumption of risk, as any privacy risks were "inherent in the activity [the plaintiff] voluntarily chose to undertake: her employment," a contention the court rejected on a number of grounds.[212] Even so, perhaps this case was the impetus for the New York privacy law that now prohibits fingerprinting "as a condition of securing employment or of continuing employment."[213]

Furthermore, although AI tort claims by employees against *employers* may fail under worker compensation laws, such employees and their families may still sue the relevant *manufacturer* under negligence, products liability, and other causes of action. In 2015, a deceased employee's husband did just that when a robot unexpectedly entered an area where his wife was working and attempted to attach a hitch even though she was in the way.[214] The robot crushed her head.[215] Her husband filed a lawsuit against the robot's manufacturer. After settling with the employer for worker's compensation, her husband filed against the manufacturer of the robot, claiming negligent installation, maintenance, and engineering as well as defective design and manufacture of the robot.[216] Defendant manufacturers of the robot filed a motion for summary judgment, claiming any misconduct was caused by the decedent's employer and, in the alternative, that the plaintiff is arguing the employer and manufacturer are the same corporation, thus his action is barred.[217]

Some of these manufacturers have been successful in asserting an assumption of risk defense against injured workers.[218] Where an employee was found to

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62% today. Fingerprint scanning is currently the most common type of biometric authentication: 57% of organizations use it. Far fewer, just 14%, use facial recognition.").

[211] Snider v. Heartland Beef, Inc., 479 F. Supp. 3d 762, 765 (C.D. Ill. 2020) (citing 740 ILL. COMP. STAT. ANN. 14/20).

[212] *Id.* at 772-73.

[213] Natalie A. Prescott, *The Anatomy of Biometric Laws: What U.S. Companies Need to Know in 2020*, NAT'L L. REV. (Jan. 15, 2020), https://www.natlawreview.com/article /anatomy-biometric-laws-what-us-companies-need-to-know-2020 [https://perma.cc/4QVQ-XZN4] (discussing implications of N.Y. LAB. LAW § 201-a for employees).

[214] Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219, 2021 WL 4260622, at *2 (W.D. Mich. Sept. 20, 2021).

[215] *Id.*

[216] Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219, 2020 WL 6498908, at *1 (W.D. Mich. Nov. 5, 2020).

[217] *Id.* at *2.

[218] Broyles v. Kasper Mach. Co., 517 Fed. App'x 345, 352 (6th Cir. 2013) (holding that by attempting to fix machine, "[p]laintiff assumed the risks of his actions in bypassing every existing safety precaution and not complying with company procedures to voluntarily engage in conduct that he admittedly knew could result in his injury"); Fox v. Van Dorn Demag Corp., No. 5:08-cv-01668, 2009 WL 10690029, at *9 (E.D. Ohio May 19, 2009) (denying summary judgment for defendant because whether plaintiff assumed risk of injury by putting her hand twelve inches into machine at her workplace was question for the jury).

have ignored safety precautions involving a robotic arm, for instance, the court was quick to find that the employee had assumed the risks of such an injury.[219] In that case, the employee attempted to fix the carpet-forming machine himself, despite warnings and training to the contrary, as well as personal knowledge of the dangerousness of such actions.[220] As such, the court found that "notwithstanding any alleged defective design, Plaintiff assumed the risks of his actions in bypassing every existing safety precaution and not complying with company procedures to voluntarily engage in conduct that he admittedly knew could result in his injury."[221]

Depending on the facts, some manufacturers instead choose to rely on comparative or contributory negligence defenses.[222] In one example, where an electrician was working at a robotics plant, he placed a ladder too close to a robot.[223] The robot was in the process of being repaired and was thus operating in a "continuing test mode" and workers at the plant warned the electrician to move the ladder away from the robot.[224] He declined to do so and the robot struck the ladder, causing the plaintiff to fall and sustain injuries.[225] An appeals court upheld a jury verdict for over $3.5 million in favor of the plaintiff, finding him only 2% comparatively negligent.[226] The jury found it dispositive that the robotics plant had a supervisor who "had almost no training regarding robots and knew little about them" on shift at the time of the injury.[227]

AI Risks in Public Settings. The weakest case for establishing voluntariness for assumption of risk lies in public places where bystanders are injured by an AI technology. That is because injured bystanders usually have no knowledge nor do they give explicit or implicit consent to engage with the particular risk merely by being out in the world. As examples, courts have held that bystanders who did not intend to watch fireworks displays did not assume the risk of injury[228] and that a bystander-plaintiff injured by a machine pushed by a road grader did not assume the risk of injury.[229]

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[219] *Broyles*, 517 Fed. App'x at 352.

[220] *Id.* at 350, 352.

[221] *Id.* at 352.

[222] *See, e.g.*, Bynum v. Esab Grp., Inc., No. 173473, 1996 WL 33364133, at *1 (Mich. Ct. App. June 4, 1996).

[223] Budris v. Robotic Res., R2, Inc., No. cv-91036468, 1997 WL 408717, at *3 (Conn. Super. Ct. July 11, 1997), *modified on reh'g*, No. cv-91036468, 1998 WL 46224 (Conn. Super. Ct. Jan. 22, 1998).

[224] *Id.* at *1, *3.

[225] *Id.* at *3.

[226] *Id.* at *1, *3.

[227] *Id.* at *3.

[228] *See* Bradley v. Andrews, 51 Vt. 530, 534 (1879).

[229] *See* Barr v. Rivinius, Inc., 373 N.E.2d 1063, 1068 (Ill. App. Ct. 1978) ("[I]t is difficult to visualize a fact pattern which would admit of application of the doctrine of assumption of risk to a bystander.").

In rare instances, however, courts have allowed defendants to invoke assumption of risk against bystanders. For example, one court held that the plaintiff's status as "neither a consumer nor a user" of the car did not preclude the application of the defense, noting that "even bystanders are subject to the defense of assumption of risk."[230] Another court permitted the defense when a coworker backed a forklift into her, noting that the forklift's warning devices (mirrors, flashing light, and beeper) were to warn bystanders, not the driver.[231]

The most notable case of a bystander injured by AI technology is that of a pedestrian injured by an autonomous Uber vehicle in Arizona.[232] The case settled out of court,[233] but one can understand why Uber could not rely on assumption of risk defense—this bystander neither voluntarily nor knowingly accepted the risks of the technology. In another example that took place in China, two people were standing on an escalator in a shopping mall when a robot incorrectly entered the escalator and toppled over on to them.[234] While the individuals may have voluntarily come to the shopping mall, it would be hard to show that they both volunteered to interact with and appreciated the risk associated with an esclator-riding robot. Such scenarios may become more frequent as Amazon, FedEx, and others continue to roll-out their "Scout" and "Starship" delivery robots on public sidewalks across the country and abroad.[235]

In sum, there is wide variety in the likelihood of a defendant establishing the voluntary requirement, an analysis that depends on the contextual circumstances of the injury. Although not all of these robots examples may involve AI, one can imagine a number of scenarios where a plaintiff not just knowingly and voluntarily encounters AI but knowingly and voluntarily embraces the specific

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[230] Baker v. Chrysler Corp., 127 Cal. Rptr. 745, 751 (1976).

[231] Kochin v. Eaton Corp., 797 F. Supp. 679, 685 (N.D. Ind. 1992), *aff'd mem.*, 986 F.2d 1424 (7th Cir. 1993).

[232] Laurel Wamsley, *Uber Not Criminally Liable in Death of Woman Hit by Self-Driving Car, Prosecutor Says*, NPR (Mar. 6, 2019, 3:15 PM), https://www.npr.org /2019/03/06/700801945/uber-not-criminally-liable-in-death-of-woman-hit-by-self-driving-car-says-prosec [https://perma.cc/Y7NQ-WZ5M] (citing Letter from Sheila Sullivan Polk, Yavapai Cnty. Att'y, to Bill Montgomery, J., Maricopa Cnty. (Mar. 4, 2019) (available at https://assets.documentcloud.org/documents/5759641 /UberCrashYavapaiRuling03052019.pdf [https://perma.cc/8DTT-72MD])).

[233] *See* Kiara Alfonseca, *Uber Reaches Settlement with Family of Woman Killed by Self-Driving Car*, NBC NEWS (Mar. 29, 2018, 11:10 AM), https://www.nbcnews.com/news/us-news/uber-reaches-settlement-family-woman-killed-self-driving-car-n861131 [https://perma.cc/24WD-WL7A].

[234] @BNONews, TWITTER (Dec. 26, 2020, 6:50 PM), https://twitter.com/BNONews/status /1342981128836296704 [https://perma.cc/T8FQ-SABB].

[235] *See* Greg Nichols, *Amazon Delivery Robots Are Officially on the Streets of California*, ZDNET (Aug. 7, 2019), https://www.zdnet.com/article/amazon-delivery-robots-are-officially-on-the-streets-of-california/ [https://perma.cc/TR6F-VVKS]; Matthew Harris, *Company Admits Error After Northhampton Robot Crossed Road in Front of Oncoming Car*, NORTHANTSLIVE (Mar. 24, 2021, 7:56 PM), https://www.northantslive.news/news/company-admits-error-after-northampton-5221430 [https://perma.cc/Z3V7-NNGR].

risks and harms that cause damage. These AI-related harms can involve malfunctioning medical devices, properly functioning delivery robots, and many others. They can harm the users, their friends and family, their coworkers, and even complete strangers. While at first blush, assumption of risk in AI-related injuries may seem clear, in reality, the variations in the degree of knowing and voluntariness of engaging with AI may be quite varied and in need of more nuance than the current defense allows.

III. MINING THE INFORMED CONSENT MODEL TO REENVISION ASSUMPTION OF RISK

Contrary to the growing sentiment that assumption of risk no longer has a place in tort law, this Article argues that the all-or-nothing nature of the assumption of risk defense can be tempered by other means to more effectively balance the benefits of innovation with the costs to injured plaintiffs. Any assumption of risk analysis that focuses on what the plaintiff knew and whether they could fully comprehend the risks of an activity necessarily leads one to ponder comparative negligence, failure to warn, and consent. Each of these plays an important role in tort doctrine, and as one tries to tease out the differences between them, one necessarily ends up in mental gymnastics at the inconsistencies in the way the law treats these related doctrines.[236] The informed consent doctrine, in particular, stands out as having concepts similar to assumption of risk's voluntary and knowing requirements.[237]

As such, this Part first analyzes a number of informed consent models from medicine, experimental procedures, and biometrics to mine for useful principles that might help reconcile the tensions associated with assumption of risk. It evaluates the innovation-risk-consent trilemma created by the tensions resulting from emerging technologies with unknown risks and the associated challenges to obtaining consent. It proposes two strategies to better address such a trilemma. Instead of a blanket abolition on assumption of risk with respect to AI injuries, it argues for a more nuanced approach that mirrors the informed consent model in two respects: (1) its heightened disclosure requirements, useful for better

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[236] *See* Robert L. Spell, *Stemming the Tide of Expanding Liability: The Coexistence of Comparative Negligence and Assumption of Risk*, 8 MISS. COLL. L. REV. 159, 162 (1988) ("The confusion . . . as to the proper role of assumption of risk in today's world of comparative negligence has been fueled . . . by the failure of the courts and commentators to recognize a consistent usage of assumption of risk."); Christopher D. Boatman, Note, *A Knight/Li News Update: A Detailed Analysis of the Case Law Suggests that We Should Return to a Consent-Based Assumption of Risk Defense*, 41 W. ST. U. L. REV. 57, 67-73 (2013) (describing how courts misinterpret and misapply case law pertaining to the "overlap" in assumption of risk and contributory negligence doctrines); Perez v. McConkey, 872 S.W.2d 897, 902 (Tenn. 1994) ("[T]he doctrine [of assumption of risk] has been a subject of controversy and confusion because . . . the term has been used by courts to refer to at least two different legal concepts . . . which also overlap both with the basic common-law principles of duty and with aspects of the doctrine of contributory negligence.").

[237] Spell, *supra* note 236, at 160.

addressing the asymmetric information that often exists between makers and users of emerging technologies, and (2) its use of an objective assessment of the "knowledge" element to better distribute the responsibility of precautions between the AI-driven technology makers and users. By opening the doctrine's interpretation to these concepts, this Article reenvisions the balance between innovation and consumer protection to better meet the objectives of tort law.

A. *Informed Consent Principles*

Scholars have noted both the commonalities and distinctions between assumption of risk and informed consent.[238] Although there are important distinctions between the two doctrines, most notably the fiduciary duty that doctors owe to their patients that does not exist in nonmedical settings, they have enough similarities to suggest some lessons may be gleaned for assumption of risk.[239] Both doctrines draw upon similar conceptions of acknowledging risks of an activity and both doctrines are based on a model where one party has superior knowledge to the individual who will be subject to the activity, where this knowledge needs to be conveyed to the individual, and where the individual must then have free choice to decide accordingly based on a risk assessment.[240] Even the risks associated with complicated medical procedures can find similarities to the complicated AI processes that occur within the "black box." As such, assumption of risk cases, particularly those involving an emerging technology, can benefit from informed consent principles. This Section provides just three examples of informed consent frameworks to assess whether they could be incorporated into assumption of risk analyses.

1.   Informed Consent in Medical Procedures

A first example of an informed consent regime exists between doctors and patients in medical malpractice cases. Although it has its origins in the intentional tort of battery,[241] courts today characterize the lack of informed

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[238] *See* Heidi M. Hurd, *Was the Frog Prince Sexually Molested?: A Review of Peter Westen's* The Logic of Consent, 103 MICH. L. REV. 1329, 1346 (2005) (discussing similarities and differences between informed consent and assumption of risk); Nadia N. Sawicki, *Choosing Medical Malpractice*, 93 WASH. L. REV. 891, 917 (2018) ("In effect, the physician's satisfaction of his legal duty to obtain informed consent operates as [an assumption of risk] 'defense' to any claim by the plaintiff that the physician should be liable for her injuries."); Moore, *supra* note 21, at 193 ("Informed consent to medical treatment is a *primary* assumption of risk.").

[239] Peter H. Schuck, *Rethinking Informed Consent*, 103 YALE L.J. 899, 921 (1994).

[240] *Id.* at 924-31.

[241] Informed consent negates the unconsented touching element of a battery. *See, e.g.*, Lloyd v. Kramer, 503 S.E.2d 632, 635 (Ga. Ct. App. 1998) ("A valid general consent negates any actionable claim for battery."); Alex Geisinger, *Does Saying "Yes" Always Make It Right? The Role of Consent in Civil Battery*, 54 U.C. DAVIS L. REV. 1853, 1877 (2021).

consent as a negligent act.[242] Courts and scholars have noted both the commonalities and distinctions between assumption of risk as a defense to products or negligence claims and the informed consent doctrine. One scholar differentiated the doctrines of informed consent and products liability on the grounds that, while health care providers are under a fiduciary duty to their patients, products sellers are not under a fiduciary duty to their customers.[243] Consequently, a physician is required to make more complete disclosures to a patient than a product seller must make to a customer.[244] Beyond disclosing reasonable information about proposed treatment, a physician also must disclose reasonable alternatives.[245] A product seller, however, is under no such obligation.[246] In fact, imposing such a duty would cut directly against a seller's competitive interests; it would make little sense to force a seller to disclose its competitor's products to a customer.[247]

Depending on the jurisdiction, courts use two different standards to assess the adequacy of the information provided by a physician. Under the "professional" standard, a jury decides whether a physician disclosed information that other physicians possessing the same skills and practicing in the same or a similar community would disclose in a similar situation.[248] Under the "prudent patient" standard, a jury decides whether other information would have been considered by a reasonable patient in making a decision.[249]

Critically, the viability of a patient's informed consent cases hinges on showing that a reasonably prudent person in the patient's medical condition would not have chosen the procedure had she been fully informed.[250] In applying

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[242] *See* Cobbs v. Grant, 502 P.2d 1, 8 (Cal. 1972) (noting that courts have historically split on whether informed consent falls under a negligence or battery theory and adopting a negligence theory). The negligence version of informed consent differs by jurisdiction, but often involves an allegation that the doctor fell below the standard of care requiring consent by not disclosing the appropriate level of information given the circumstances. *See* Hawk v. Chattanooga Orthopaedic Grp., P.C., 45 S.W.3d 24, 32 (Tenn. Ct. App. 2000).

[243] Schuck, *supra* note 239, at 921 ("[A] physician must always act in the patient's interests, whereas product sellers can, within broad limits, ignore or even subvert their customers' interests.").

[244] *Id.*

[245] *Id.*

[246] *Id.*

[247] *See id.*

[248] *See* Timothy J. Paterick, Geoff V. Carson, Marjorie C. Allen & Timothy E. Paterick, *Medical Informed Consent: General Considerations for Physicians*, 83 Mayo Clinic Proc. 313, 315 (2008) (explaining that professional standard requires disclosure based on what other physicians with same skills in similar community would do in a similar situation).

[249] *See, e.g.*, Canterbury v. Spence, 464 F.2d 772, 791 (D.C. Cir. 1972) (concluding that court should resolve causality based on what prudent patient in patient's position would have decided).

[250] *See, e.g.*, Willis v. Bender, 596 F.3d 1244, 1256 (10th Cir. 2010) (noting that what reasonable patient would find relevant differs from what reasonable practitioner would have disclosed).

this objective standard, courts focus on the preferences of a reasonable person rather than the subjective values of an individual patient.[251] Although some scholars have argued against the objective standard used in informed consent cases,[252] this objective standard may be useful in analyzing assumption of risk cases.

2.   Informed Consent in Human Clinical Trials

A second example of an informed consent regime is that in place for experimental medical technologies and associated human clinical trials. In the clinical research context, informed consent plays an important role in establishing that the research participant will not be receiving standard medical care.[253] Without informed consent, such researchers may be vulnerable to negligence suits for nonstandard medical care.[254] In the Tuskegee Syphilis Study, for instance, researchers failed to obtain informed consent in a federally funded study that withheld penicillin from the participants to study the course of the untreated disease.[255] In the wake of this study, Congress created both a national commission to protect human subjects and the current informed consent model in the United States.[256]

Although medical scenarios are often not the norm in assumption of risk cases, the elements of the two are strangely familiar. As discussed above, whereas assumption of risk requires (1) knowingly and (2) voluntary engaging

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[251] *See, e.g.*, Dries v. Gregor, 424 N.Y.S.2d 561, 565 (App. Div. 1980) (stating that right to recover only exists "when it can be shown objectively that a reasonably prudent person would have decided against the procedures actually performed"). One known exception is for elective surgeries, such as plastic surgeries, where courts are helpless to evaluate the adequacy of informed consent without reference to that patient's subjective preferences. *See* Zalazar v. Vercimak, 633 N.E.2d 1223, 1226 (Ill. App. Ct. 1993).

[252] Evelyn M. Tenenbaum, *Revitalizing Informed Consent and Protecting Patient Autonomy: An Appeal to Abandon Objective Causation*, 64 OKLA. L. REV. 697, 698 (2012) (arguing that courts should abandon objective causation in favor of a standard "that recognizes the importance of individual preferences and priorities").

[253] *See* Grimes v. Kennedy Krieger Inst., Inc., 782 A.2d 807, 851 (Md. 2001) (explaining that subjects place trust in medical researchers to protect them from harm in experimental research such that researchers should "completely and promptly inform the subjects of potential hazards").

[254] *See, e.g.*, Stewart v. Cleveland Clinic Found., 736 N.E.2d 491, 501-02 (Ohio Ct. App. 1999) (allowing estate of plaintiff who participated in cancer treatment clinical trial to introduce expert testimony and documentary evidence to support negligence claim of lack of informed consent). As always, however, the scope of the informed consent is limited, and the research participant can still sue for negligent acts that exceed the scope of the consent. *See, e.g.*, Molé v. Jutton, 846 A.2d 1035, 1045-46 (Md. 2004) (permitting negligence claim for medical procedure performed beyond scope of patient's informed consent).

[255] Ronni E. Fuchs & Scott G. Robinson, *Strict Liability for Lack of Informed Consent in Clinical Trials*, TROUTMAN PEPPER (Apr. 3, 2018), https://www.troutman.com/insights/strict-liability-for-lack-of-informed-consent-in-clinical-trials.html [https://perma.cc/DWT9-8U74].

[256] *Id.*

with the risk, informed consent for clinical trials requires one additional step—
the disclosure of the information needed to make an informed decision. After
that, it requires an (1) understanding of what has been disclosed (i.e., knowing)
and (2) a voluntary decision by the research subject.[257] Nineteen agencies adhere
to the Federal Policy for the Protection of Human Subjects (the "Common
Rule") for standards governing informed consent for human clinical trial
participants,[258] standards that are substantially similar to the Food and Drug
Administration's ("FDA") informed consent framework for FDA-regulated
clinical trials.[259] In addition to specifics concerning procedures, expected
benefits, confidentiality, post-injury treatment, and contact information, the
informed consent regulations for clinical trials reiterate the need for the
disclosure of "risks or discomforts"[260] and the need for participation to be
voluntary.[261]

   Similar to volunteers for experimental clinical trials, patients who opt for
experimental treatments are also assumed to have appreciated the risks involved.
In the tort context, courts have generally taken the position that if a plaintiff
consents to use experimental methods that deviate from the standard of care
established by modern, accepted technologies, she is more likely to be found to
have assumed the risk.[262] For instance, the Second Circuit has repeatedly held
that plaintiffs who opted for nonconventional cancer treatments instead of
medically advised surgical treatments have assumed the risks of any injuries.[263]

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[257] Looney v. Moore, 886 F.3d 1058, 1064-67 (11th Cir. 2018).

[258] *Federal Policy for the Protection of Human Subjects ('Common Rule')*, U.S. DEP'T
HEALTH & HUM. SERVS., https://www.hhs.gov/ohrp/regulations-and-policy/regulations
/common-rule/index.html [https://perma.cc/Y25F-MVXZ] (last updated Mar. 18, 2016). The
Food and Drug Administration harmonizes its regulations with the Common Rule where
allowed by law. *See* Federal Policy for the Protection of Human Subjects, 82 Fed. Reg. 7149,
7149-50 (Jan. 19, 2017) (codified at 45 C.F.R. pt. 46 (2022)).

[259] 21 C.F.R. § 50.25(a) (2022) (describing basic elements of informed consent). The
Common Rule adds one supplemental element regarding statement "about any research that
involves the collection of identifiable private information or identifiable biospecimens." 45
C.F.R. § 46.116(b)(9).

[260] 21 C.F.R. § 50.25(a)(2).

[261] 21 C.F.R. § 50.25(a)(8). The Common Rule does not have a private right of action,
however, and is administratively enforced. *See* Wright v. Fred Hutchinson Cancer Rsch. Ctr.,
269 F. Supp. 2d 1286, 1289-90 (W.D. Wash. 2002).

[262] Schneider v. Revici, 817 F.2d 987, 996 (2d Cir. 1987) (holding that jury could find that
plaintiff assumed risk of unconventional treatment when conventional option was available);
Srock *ex rel.* Estate of Srock v. United States, 462 F. Supp. 2d 812, 827 (E.D. Mich. 2006)
(holding that plaintiff's decedent assumed risk of flying experimental airplane); Lopez *ex rel.*
Estate of Lopez v. Resort Airlines, Inc., 18 F.R.D. 37, 39 (S.D.N.Y. 1955) (holding that
airplane passengers no longer generally assume risk when flying on established and
conventional airplanes).

[263] *Schneider*, 817 F.2d at 996; Boyle *ex rel.* Estate of Zyjewski v. Revici, 961 F.2d 1060,
1063 (2d Cir. 1992) (holding that plaintiff assumed risk of nonconventional treatment even
without consent form because "a patient may expressly assume the risk of malpractice and

A similar receptiveness to assumption of risk exists with respect to experimental drug manufacturers. The Restatement (Second) of Torts protects sellers of unavoidably unsafe experimental drugs from strict liability and places the assumption of risk burden on patients who chose the experimental medications.[264] Relieving experimental drug manufacturers from strict liability is justified by their utility to the public and insufficient time and opportunity to assure safety[265]—as the FDA recently exemplified by granting emergency experimental approvals for several COVID-19 vaccines.[266]

The Public Readiness and Emergency Preparation ("PREP") Act, which grants manufacturers immunity for responding to a public health emergency,[267] was critical to protect manufacturers who put products forward during COVID-19 for sale under FDA Emergency Use Authorizations.[268] PREP originated from an increased concern about the need to bolster the United States' countermeasures against chemical, biological, radiological, and nuclear agents following both the September 11 terrorist attacks and the mailing of anthrax-

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dissolve the physician's duty to treat a patient according to the medical community's accepted standards"); *see also* Spar v. Cha, 907 N.E.2d 974, 982 n.2 (Ind. 2009) (noting that a doctor may be relieved of ordinary care in the "exceptional circumstance . . . when a patient elects to forego conventional care and instead requests experimental treatment"); Storm v. NSL Rockland Place, LLC, 898 A.2d 874, 884 n.41 (Del. Super. Ct. 2005) (noting that ordinary care might be waived if "patient gives informed consent to undergo an experimental medical procedure where the standards of care have not yet been fully developed or consents to medical treatment modalities known to be outside of the medical mainstream"). As AI medical technologies continue to advance, one interesting wrinkle will be whether physicians will be able to use assumption of risk to protect themselves against patients who refuse a novel, but more accurate AI treatment.

[264] RESTATEMENT (SECOND) OF TORTS § 402A cmt. k (AM. L. INST. 1965).

[265] *Id.*

[266] *See Emergency Use Authorization for Vaccines Explained*, FDA (Nov. 20, 2020), https://www.fda.gov/vaccines-blood-biologics/vaccines/emergency-use-authorization-vaccines-explained [https://perma.cc/8XKC-9L4E]; *see also* Press Release, FDA, FDA Takes Additional Action in Fight Against COVID-19 by Issuing Emergency Use Authorization for Second COVID-19 Vaccine (Dec. 18, 2020), https://www.fda.gov/news-events/press-announcements/fda-takes-additional-action-fight-against-covid-19-issuing-emergency-use-authorization-second-covid [https://perma.cc/DK2H-F4TU].

[267] Public Readiness and Emergency Preparedness Act, Pub. L. No. 109-148, div. C, §§ 2-3, 119 Stat. 2680, 2818, 2818-2832 (2005) (codified at 42 U.S.C. §§ 247d-6d to -6e); *see also PREP Act Q&As*, U.S. DEP'T HEALTH & HUM. SERVS., https://www.phe.gov/Preparedness/legal/prepact/Pages/prepqa.aspx [https://perma.cc/G2YQ-GPL8] (last updated Dec. 22, 2021).

[268] Jordan Lipp, *The PREP Act: Defending Product Liability and Professional Liability Litigation Involving COVID-19 Countermeasures*, 88 DEF. COUNS. J. 1, 11-12 (2021); *PREP Act Immunity from Liability for COVID-19 Vaccinators*, U.S. DEP'T HEALTH & HUM. SERVS., https://www.phe.gov/emergency/events/COVID19/COVIDvaccinators/Pages/PREP-Act-Immunity-from-Liability-for-COVID-19-Vaccinators.aspx [https://perma.cc/V87K-5XTG] (last updated Apr. 13, 2021).

laced letters throughout the country.[269] The Project BioShield Act of 2004 was intended to address these concerns[270] by, among other things, encouraging the development of new countermeasures against terrorism agents and enabling the Secretary of Health and Human Services to expedite the award for research grants.[271] The drug and device manufacturer industries, however, were disincentivized from creating such countermeasures because of the absence of an indemnity provision in the Act.[272] Thus, Congress passed the PREP Act, granting covered entities immunity from tort liability relating to the development of medical countermeasures for use against diseases or during public health emergencies.[273] A similar protection can be found in judicial decisions that preempted state tort claims for medical devices that completed the FDA's stringent premarket approval process.[274]

Without analogous protections, AI creators may be similarly disincentivized from developing socially beneficial AI. As such, one could imagine Congress similarly limiting liability for AI creators to encourage development of useful systems. This begs the question of what AI uses are sufficiently valuable to justify such civil immunity, a thorny issue for future debate.

When considering these policy implications for AI, it may be important that many AI-driven technologies are not purely recreational, but transformative for society, similar to the other "novel" technologies like electricity, locomotives, and automobiles of our past. AI has many applications in medicine, energy, construction, commerce, and other areas with the goal of serving important safety and efficiency purposes and, as such, future courts may balance the value of the technological innovation against the risks.[275]

3.   Informed Consent Required by Biometric Laws

A last example of an informed consent regime involves the privacy disclosures concerning biometric data. Biometric data is often defined as biological identifiers unique to an individual.[276] A growing number of states

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[269] William Chanes Martinez, *How to Get Away with Immunity: FDA's Emergency Use Authorization Scheme and PREP Act Liability Protection in the Context of COVID-19*, 33 LOY. CONSUMER L. REV. 128, 143 (2021).

[270] *Id.*

[271] *Id.*

[272] *Id.* at 144-45.

[273] *Id.* at 145.

[274] Riegel v. Medtronic, Inc., 552 U.S. 312, 322-24 (2008) (holding negligence and strict liability claims preempted because state safety and effectiveness standards differ from federal standards).

[275] Estate of Frant v. Haystack Grp., Inc., 641 A.2d 765, 770 (Vt. 1994) (explaining that emerging technologies can minimize risks, so someone only assumes those risks that are not protected by new technology); Lascheid v. City of Kennewick, 154 P.3d 307, 311 (Wash. Ct. App. 2007) (holding that even when plaintiff assumes risk of dangerous activity, defendant still has duty of care to implement available safety technology).

[276] *See, e.g.*, 740 ILL. COMP. STAT. ANN. 14/5(c) (2021).

have enacted privacy laws surrounding the use of an individual's biometric data, some of which include a critical disclosure requirement.[277] The strongest such law, Illinois's BIPA, requires that "an entity provide written notice that it is collecting biometric information, its purpose for doing so, and the length of such collection and obtain a written release from the person whose information it is collecting."[278]

Courts are beginning to engage with the consent element of these laws. For example, courts have allowed claims to proceed where an employer failed to obtain consent prior to collecting the biometric data.[279] As discussed above, courts have even addressed the viability of an assumption of risk defense based on "voluntary" employment, rejecting it where an employer failed to comply with such disclosure requirements because the "[t]he full ramifications of biometric technology are not fully known."[280] Extending this logic to the use of AI-driven technologies, many of which use biometric data as their key inputs,[281] it appears consistent to consider a similar form of disclosure prior to use of those AI technologies whose ramifications are also not yet fully known.

B. *Disclosure: Products Liability, Assumption of Risk, and Artificial Intelligence*

Together, these informed consent regimes can help inform the innovation-risk-consent trilemma facing emerging technologies. The first way that these informed consent discussions can assist in assumption of risk analyses concerns the disclosures required. Because much AI of consequence is embedded in products, products liability claims are particularly relevant. In addition to

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[277] *See, e.g.*, ARK. CODE ANN. § 4-110-104 (2021) (requiring businesses to implement security procedures to protect biometric data from unauthorized access and disclosure); CAL. CIV. CODE § 1798.110 (West 2021) (providing that person may request that business collecting biometric data disclose several aspects about nature of the collection); N.Y. GEN. BUS. LAW § 899-bb (McKinney 2021) (requiring businesses to "maintain reasonable safeguards to protect the security, confidentiality and integrity" of biometric data); TEX. BUS. & COM. CODE ANN. § 503.001 (West 2021) (providing that "person may not capture a biometric identifier" without prior consent); WASH. REV. CODE ANN. § 19.375.020 (West 2021) (prohibiting any company or individual from entering biometric data "in a database for a commercial purpose, without first providing notice [or] obtaining consent").

[278] Snider v. Heartland Beef, Inc., 479 F. Supp. 3d 762, 772 (C.D. Ill. 2020) (citing 740 ILL. COMP. STAT. ANN. 14/15(b)).

[279] *See* Roberson v. Maestro Consulting Servs., LLC, 507 F. Supp. 3d 998, 1019-20 (S.D. Ill. 2020) (denying motion to dismiss even in presence of consent forms because defendants failed to show consent forms were signed before data collection began); Figueroa v. Kronos Inc., 454 F. Supp. 3d 772, 783 (N.D. Ill. 2020) (denying motion to dismiss in action alleging that employer obtained employees' biometric data upon enrollment without first informing them or obtaining from them a written release).

[280] *Snider*, 479 F. Supp. 3d at 773 (quoting 740 ILL. COMP. STAT. ANN. 14/5(f)).

[281] *See* George Platsis, *When Your Heartbeat Becomes Data: Benefits and Risk of Biometrics*, SEC. INTEL. (Aug. 21, 2020), https://securityintelligence.com/posts/biometrics-for-enterprise-security/ [https://perma.cc/S9GH-V6WF].

negligence claims,[282] which are based on the fault of the defendant, plaintiffs can also bring one or more of three strict products liability claims: manufacturing defects, design defects, or failure to warn claims. If the "defect" was limited to one of many AI-driven products, a plaintiff may have a manufacturing defect claim. But if a manufacturer could have designed an AI algorithm differently, perhaps in a way that lowers performance but also lowers risk, a plaintiff could assert a design defect claim.[283] If the plaintiff was unaware of the defect, however, the defendant is unlikely to raise an assumption of risk defense.[284] Some even argue that manufacturing defects should not be applied to machine learning AI systems because they self-learn through their individual experiences, rendering them incomplete when sold.[285]

But the assumption of risk defense is most likely to arise in the context of failure to warn claims because an AI-driven product may function properly (within the boundaries set by its design parameters), but in unanticipated ways.[286] Failure to warn generally requires that a plaintiff establish that the seller knew the product was dangerous and that a warning could be effectively

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[282] For instance, if an AI manufacturer's "system is used in a foreseeable way and yet becomes a source of harm, a plaintiff could assert that the manufacturer was negligent in not recognizing the possibility of that outcome." John Villasenor, *Products Liability Law as a Way to Address AI Harms*, BROOKINGS INST. (Oct. 31, 2019), https://www.brookings.edu /research/products-liability-law-as-a-way-to-address-ai-harms/ [https://perma.cc/5JT6-CT5F].

[283] *Id.* ("Suppose that, based on the experience of reading thousands of MRI images, the AI system evolves in a manner that makes it better at identifying some abnormalities but significantly worse at identifying others. This could lead to an allegation of a design defect, with the plaintiff arguing that the human designers . . . could have and should have built the AI system so that it would evolve in ways that would avoid trading off performance enhancements on some abnormalities with performance degradation on others.").

[284] *See* Tillman v. C.R. Bard, Inc., 96 F. Supp. 3d 1307, 1354 (M.D. Fla. 2015) ("In the absence of any evidence that Tillman discovered the defective condition of the Filter, Bard cannot maintain its . . . assumption of risk defense."); Rahmig v. Mosley Mach. Co., 412 N.W.2d 56, 74 (Neb. 1987) ("Without knowledge that the Monster's hydraulic system was deficient and, therefore, without his appreciation of the danger consequent to that condition in the machine, Rahmig could not assume the risk from the Monster's particular design defect.").

[285] *See* Curtis E.A. Karnow, *The Application of Traditional Tort Theory to Embodied Machine Intelligence*, *in* ROBOT LAW 51, 69 (Ryan Calo, A. Michael Froomkin & Ian Kerr eds., 2016) ("[I]t would be entirely illogical to apply manufacturing defect liability to autonomous robots that, as they come off the assembly line (as it were), are all exactly the same and, for purposes of my argument here, conform to design—at least as they are when delivered into the hands of the consumer."). Even where a "robot," an automatic signaling device, failed to operate as expected and warn of the danger of an oncoming train, a court held a plaintiff contributorily negligent when she drove into a train crossing and was subsequently struck by the train. Whiffin v. Union Pac. R.R., 89 P.2d 540, 550 (Idaho 1939).

[286] *See* Bill Hibbard, *Avoiding Unintended AI Behaviors*, *in* ARTIFICIAL GENERAL INTELLIGENCE: 5TH INTERNATIONAL CONFERENCE 107, 111-15 (Joscha Bach, Ben Goertzel & Matthew Iklé eds., 2012).

communicated and used.[287] A seller must warn about dangers if they know or should have known of a dangerous risk unless it is undisputed common knowledge.[288] In a failure to warn action, the person "to whom such warnings are provided must be in a position to reduce or prevent product-caused harm"[289]—thus, the viability of these cases often turns on the comprehensiveness of the warnings and the plaintiff's ability to demonstrate that they would have heeded more comprehensive warnings.

The relationship of informed consent to failure to warn is striking.[290] Under both doctrines, a plaintiff who cannot otherwise identify any negligence on the part of the defendant has a remedy solely based on failure to disclose risks associated with the activity.[291] In this way, a failure to warn claim can be likened to informed consent disclosure requirements. Although assumption of risk may be disfavored in some products liability[292] and in most medical malpractice

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[287] RESTATEMENT (THIRD) OF TORTS: PRODS. LIAB. § 10 (AM. L. INST. 1998).

[288] Am. Tobacco Co. v. Grinnell, 951 S.W.2d 420, 438 (Tex. 1997).

[289] RESTATEMENT (THIRD) OF TORTS: PRODS. LIAB. § 10 cmt. h.

[290] *See, e.g.*, David E. Seidelson, *Lack of Informed Consent in Medical Malpractice and Product Liability Cases: The Burden of Presenting Evidence*, 14 HOFSTRA L. REV. 621, 641-51 (1986) (examining informed consent and failure to warn in products liability cases); Jon F. Merz, *On a Decision-Making Paradigm of Medical Informed Consent*, 14 J. LEGAL MED. 231, 239 (1993) ("The narrow focus of the courts' inquiries has reduced the doctrine of informed consent to a failure-to-warn law, which is seriously inadequate to support a priori decision-making by patients."); James A. Henderson, Jr. & Aaron D. Twerski, *Doctrinal Collapse in Products Liability: The Empty Shell of Failure to Warn*, 65 N.Y.U. L. REV. 265, 286-89 (1990) (discussing difference between risk-reduction and informed-choice warnings).

[291] Martin R. Studer, *The Doctrine of Informed Consent: Protecting the Patient's Right to Make Informed Health Care Decisions*, 48 MONT. L. REV. 85, 85 (1987).

[292] Further questions will arise in scenarios where a plaintiff misuses an AI product in an unforeseeable manner. *See* Owen, *supra* note 88, at 49. ("One reason the doctrine of misuse is difficult to apply is that there is no agreement on just what kind of legal doctrine it really is. While many lawyers speak loosely of a product misuse 'defense,' the common law principle of product misuse is more accurately viewed as a liability-limiting principle concerning the scope of a defendant's duty that involves the issues of negligence, product defect, scope of warranty, and proximate causation.").

cases,[293] it is more prominent in breach of informed consent[294] and failure to warn cases.[295]

If one goal is to better spread the responsibility for the use of emerging products between those who want to use them and those who want to provide them, courts may find it instructive to incorporate the disclosure requirements of informed consent into their assumption of risk analyses. Increasingly, most defendants will be sophisticated enough to include vast warning labels on their products. From drones to robots to autonomous vehicles, the instruction manuals for AI-driven technologies will be extensive. Most people do not read through the terms of service for the numerous apps used on their phones, the twenty-two page instruction manual for their drone, Roomba, or Alexa.[296] As such, a critical problem for plaintiffs is that it is difficult to allege that an additional warning would have changed behavior when most do not find it necessary to even read the warnings that already existed.

Warning labels and trainings may work fine for those engaged with "obvious AI," but as robots increasingly look more humanlike and as much of AI is embedded in a nonobvious way into processes that impact the end user, the pressure on affirmative disclosures increases. In fact, without increased disclosures, defendants may be rendered powerless to invoke assumption of risk.

C.   *Objective Knowledge: Negligence, Assumption of Risk, and Artificial Intelligence*

The second way that these informed consent discussions can assist in assumption of risk analyses concerns the "knowing" requirement. Instead of blind adherence to a subjective standard, this Section challenges whether this

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[293] *See, e.g.*, Storm v. NSL Rockland Place, LLC, 898 A.2d 874, 887 (Del. Super. Ct. 2005) (denying assumption of risk defense to assisted living facility based on public policy considerations). Assumption of risk may serve as a defense in medical malpractice cases only in limited circumstances. *See* Schwartz v. Johnson, 49 A.3d 359, 369 (Md. Ct. Spec. App. 2012) (explaining that assumption of risk defense is generally only available to medical malpractice defendants when "the patient refused treatment suggested by a physician . . . [or] the patient elects to follow unconventional medical treatment").

[294] *See Schwartz*, 49 A.3d at 372 ("Accordingly, we hold that, except in cases involving a refusal or delay in undergoing recommended treatment or the pursuit of unconventional medical treatment, a healthcare provider cannot invoke the affirmative defense of assumption of risk in a medical malpractice claim brought by his or her patient where a breach of informed consent has not been alleged.").

[295] *See, e.g.*, Hardeman v. Monsanto Co., 216 F. Supp. 3d 1037, 1040 (N.D. Cal. 2016) (allowing plaintiff's failure to warn claim against manufacturer to proceed despite inherently dangerous nature of manufacturer's products).

[296] *See* GoPro, Karma User Manual 14-15 (2016); iRobot, Roomba Vacuum Cleaning Robot Owner's Manual 30, https://irobot.in/uploads/owner-manual/owner-manual-content-12.pdf [https://perma.cc/J3CR-2W4T] (last visited Feb. 15, 2022); *see also* Caroline E. Mayer, *Why Won't We Read the Manual*, Wash. Post (May 26, 2002), https://www.washingtonpost.com/archive/business/2002/05/26/why-wont-we-read-the-manual/b7f08098-1d08-4d67-9e3e-8f3814f4d90a/.

approach continues to serve its original purpose. If a goal of torts is to incentivize all individuals in society to take the right amount of precaution to protect against injury, courts may find it helpful to reevaluate the standard applied to assess the plaintiff's knowledge. Instead, this Section demonstrates how an objective assessment of a plaintiff's knowledge with regards to AI-driven technologies may better achieve the delicate balance between innovation and consumer protection.

The vast majority of assumption of risk cases apply a subjective standard to evaluate whether the plaintiff "knew" of the risks associated with the activity that injured them. The problem with this subjective approach is that it allows a user to remain oblivious to risks that others in society understand in an effort to reap the benefits of the new technology. Very few plaintiffs will have had extensive experience with these new AI-driven technologies, many of which have only been on the market for a short time. Applying this subjective standard therefore runs the risk of courts denying assumption of risk in nearly 100% of cases, finding that plaintiffs could not possibly have "known" the risks of this new technology.

Instead of the subjective standard that has dominated the "knowing" analysis, this Section demonstrates the potential benefits of opening the door to another feature of informed consent analyses: an objective standard. It does not urge an objective standard to replace the subjective standard, but to instead assess on an individual level which standard should apply to the particular plaintiff. Consistent with historic emerging technology cases, where a plaintiff has some specialized knowledge or experience, a court should instruct the fact finder to use a subjective standard. But when a plaintiff has no specialized knowledge or experience, a court should apply an objective standard that assesses whether a reasonable person would have known and appreciated the risks. This establishes a floor for users of AI-driven technology, signaling to them that they should have an understanding of the risks at least as comprehensive as a reasonable person. It is also consistent with the scholars who have long argued in favor of comparative negligence and its objective standard as a better replacement for assumption of risk.[297] But keeping an adjusted and objective assumption of risk defense also serves to maintain an alternative defense where injuries arise, not from plaintiffs' negligence, but from their foolhardiness.

Introducing an objective analysis of knowing is not completely foreign to assumption of risk analysis. Maryland is one of the only jurisdictions to use an objective standard for assumption of risk, but it only applies when a plaintiff encounters risks that are open and obvious.[298] Where risks are latent, however,

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[297] *See* Simons, *supra* note 4, at 486-89.

[298] Borowicz v. Council of Unit Owners of the Pines at Dickinson, Inc., No. 1524, 2017 WL 4536002, at *4 (Md. Ct. Spec. App. Oct. 11, 2017) (holding that, unlike hidden black ice the white ice was "visible and obvious to [the plaintiff]" so "a reasonable person would have appreciated the risk of walking on that snow and ice"); Warsham v. James Muscatello,

Maryland's highest court has held that assumption of risk should be focused on the plaintiff's subjective knowledge, while also holding that "our prior case law suggesting an 'objective' test remains binding."[299] California also applies an objective standard in assumption of risk sporting cases, noting that to do otherwise would cause "drastic disparities in the manner in which the law would treat defendants who engaged in . . . the same conduct, based on often unknown, subjective expectations."[300]

In sum, in a number of other assumption of risk cases, including those involving new technologies like AI, the use of an objective standard may provide a better balance of responsibility between first-adopter plaintiffs and manufacturers. If tort law serves its theoretical justifications of deterrence, economic efficiency (placing the burden of precaution on the lowest provider), and compensation, then an objective standard could provide sufficient incentive for the manufacturers to take adequate precautions while imposing an incentive on users to rise to the level of knowledge about the AI to that of a "reasonable person."

CONCLUSION

Assumption of risk has a rich history in this country, one that has tried to find a balance between plaintiffs engaging with risks and defendants who offer risky activities. The world has only grown riskier since the time of "the Flopper," the amusement park ride replete with obvious risks that precluded recovery by a plaintiff subsequently injured by the ride.[301] As the pace of technology continues to march forward, the size and magnitude of the risks we are exposed to continue to expand. The risks associated with AI-driven technologies are not only more complicated, but also more pervasive. As such, Judge Cardozo's advice that the "timorous . . . stay at home" is not a sufficient remedy.[302]

But as with electricity, locomotives, and automobiles, AI-driven technology has the potential to benefit and transform society in unanticipated ways. Plaintiffs may be more eager to engage with AI-driven technologies, but less knowledgeable of the risks, meriting an analysis that is more nuanced than the traditional all-or-nothing recovery associated with the assumption of risk doctrine. Our understanding of knowledge needs to evolve to reflect the complexity and opacity of new technologies being used. Instead of continuing to perpetuate the subjective analysis associated with the knowing requirement

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Inc., 985 A.2d 156, 167 (Md. Ct. Spec. App. 2009) ("An objective standard is used to determine whether the risk was appreciated and understood and whether the action was voluntary.").

[299] Poole v. Coakley & Williams Constr., Inc., 31 A.3d 212, 229-30 (Md. 2011).

[300] Knight v. Jewett, 834 P.2d 696, 706 (Cal. 1992).

[301] Murphy v. Steeplechase Amusement Co., 166 N.E. 173, 174 (N.Y. 1929) ("The very name, above the gate, 'the Flopper,' was warning to the timid. If the name was not enough, there was warning more distinct in the experience of others.").

[302] *Id.*

of assumption of risk, this Article urges courts to consider an objective standard that could evolve in tandem with public understanding of these new technologies. It also urges consideration of stronger disclosure requirements consistent with informed consent frameworks. Taking these steps will better distribute the burden of knowledge between manufacturers and users of AI and better restore the balance between consumer protection and innovation.