Human vs. Machine: A Framework of Responsibilities and Duties of Transnational Corporations for Respecting Human Rights in the Use of Artificial Intelligence

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"We strongly believe that enshrining AI ethics in human rights is the best way to make AI a positive force in our collective future."

Salil Shetty, Amnesty International,

Artificial Intelligence for Good Summit (June 7, 2017)

The use of artificial intelligence is spreading rapidly through all types of industries, and with this expansion comes various implications for international human rights standards. This Note analyzes the current responsibilities, if any, of transnational corporations deploying artificial intelligence through products and services to avoid human rights violations, and then proposes a framework for what their responsibilities should be.

First, this Note explores the current uses of artificial intelligence in the global business setting and enumerates the human rights standards that could potentially be violated by such practices. Then, this Note argues for using several international mechanisms to be used to hold transnational corporations responsible and accountable for the harmful use of artificial intelligence.

Specifically, the World Bank should adopt policies that limit loans for development projects that plan to use products that could negatively impact human rights through their application of artificial intelligence. Further, this Note proposes expanding the use of the Global Magnitsky Act's permission to impose asset freezes and travel bans on transnational corporations that cause or perpetrate human rights abuses through artificial intelligence, which can serve as both a deterrent and a tool for accountability. This Note also discusses the prospects of a new international treaty to regulate the corporate use of artificial intelligence. Separately, the use of voluntary, private international arbitration could settle cases outside of international judicial settings, especially given that transnational corporations may be more willing to comply with such a mechanism. Finally, this Note explores and then rejects the idea of holding the actual technology accountable, i.e., robot ethics.

INTRODUCTION

The development of tools employing artificial intelligence and machine learning technology is accelerating rapidly, and with that will come both benefits and downsides.[1] As the technology industry continues to grow and reshape the way society interacts with a globalized world, the regulation of these technological breakthroughs has fallen behind.[2] As transnational corporations begin to incorporate artificial intelligence and machine learning technology into their products and services,[3] the spread of that technology has far-reaching implications for international human rights standards.

I. FRAMING THE ISSUE

A. The Current Corporate Uses of Artificial Intelligence

Artificial intelligence is difficult to define, and practitioners have not reached a consensus on its definition.[4] However, one definition of artificial intelligence describes it as "a branch of computer

1. Bob Violino, *Risky AI business: Navigating regulatory and legal dangers to come*, CIO, (Feb. 19, 2018, 3:00 AM), https://www.cio.com/article/3256031/artificial-intelligence/risky-ai-business-navigating-regulatory-and-legal-dangers-to-come.html [https://perma.cc/TT7D-3VM9].

2. Olivia Johanna Erdelyi & Judy Goldsmith, *Regulating Artificial Intelligence: Proposal for a Global Solution*, 2018 AAAI/ACM Conf. on AI, Ethics & Soc'y (Feb. 2–3, 2018), https://ssrn.com/abstract=3263992 [https://perma.cc/G78P-D8D7].

3. Violino, *supra* note 1.

4. EXECUTIVE OFF. OF THE PRESIDENT NAT'L SCI. & TECH. COUNCIL COMMITTEE ON TECH., PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE 6 (2016), https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf [https://perma.cc/9GGV-ERRH].

science dealing with the simulation of intelligent behavior in computers" or "the capability of a machine to imitate intelligent human behavior."[5] Specifically, machine learning, a subset of artificial intelligence, can be defined as code that permits a computer program to continue to improve performance without additional human intervention or further explanations on how to complete a task.[6] For this broadly-defined technology to be regulated effectively, it is important to understand how businesses, and transnational corporations in particular, employ the technology.

For corporate purposes, artificial intelligence has three functions that it can use to aid businesses: (1) automating business processes; (2) analyzing data and providing business insight; and (3) engaging with customers and employees without the need for human interaction.[7] Researchers Thomas Davenport and Rajeev Ronanki examined 152 businesses' projects using "cognitive technology," which is synonymous with artificial intelligence technology, and found that the automation of digital and physical tasks was its most common use.[8] This included the automation of financial and back-office administrative tasks. According to the data, seventy-one of the 152 projects (forty-six percent total) were categorized as "robotics and cognitive automation;" fifty-seven (or thirty-eight percent of the sample) fell into the "cognitive insight" category and only twenty-four (sixteen percent of the sample) were defined as "cognitive engagement projects."[9] The authors posit that the first category is the easiest and cheapest use of the technology for a company to employ, and will produce a high return on investment.[10] The second category, however, is likely to have the greatest impact on certain human rights laws, such as the right to privacy and the right to freedom from discrimination,[11] because cognitive insight encompasses machines that

5. *Artificial intelligence*, MERRIAM-WEBSTER ONLINE DICTIONARY, https://www.merriam-webster.com/dictionary/artificial%20intelligence [https://perma.cc/RKM7-UC26] (last visited Oct. 19, 2019).

6. Anusha Sharma, *Difference between Machine Learning and Artificial Intelligence*, GEEKSFORGEEKS, https://www.geeksforgeeks.org/difference-between-machine-learning-and-artificial-intelligence/ [https://perma.cc/H66D-6NUH] (last visited Oct. 18, 2019).

7. Thomas H. Davenport & Rajeev Ronanki, *Artificial Intelligence for the Real World*, HARV. BUS. REV. (Jan.–Feb. 2018), https://hbr.org/2018/01/artificial-intelligence-for-the-real-world [https://perma.cc/SN94-SKZZ].

8. *Id.*

9. *Id.*

10. *Id.*

11. G.A. Res. 217 (III) A, Universal Declaration of Human Rights, U.N. Doc. A/810, arts. 12, 7 (Dec. 10, 1948) [hereinafter UDHR].

can learn to predict consumer behavior, identify fraud, automate targeting of personal advertisements, and conduct mass data analytics.[12]

Another study by the Harvard Business Review found that another area of increasing use of artificial intelligence in corporations is to detect security intrusions to the company's server and resolve the IT issues of internal users (such as employees).[13] The researchers note that the easily-adopted uses of artificial intelligence in corporations involve machine-to-machine interaction, as opposed to machine-to-human interaction, or the automation of human tasks.[14] This is not to suggest that other uses involving a humanlike nature are not also common, but the first adoption of the technologies in most companies will typically be the automation of computer-run transactions. However, more nefarious uses of artificial intelligence are already cropping up in industry. For example, a Chinese insurance company, Ping An, uses an artificial intelligence-run lie detector to determine whether its loan applicants require further scrutiny before issuance.[15] Other human-facing uses include using artificial intelligence to comb through job applications (a tool used by Accenture and Johnson & Johnson).[16] These practices pose the risk of subjecting individuals of certain population groups to discriminatory lie detection or biased rejection of applications.

The rise of artificial intelligence adoption is not restricted to the United States but is growing on a global scale. China is working towards developing a national surveillance system with the use of Megvii Technology Limited's program Face++, a facial recognition software that will be able to detect faces within images and store these faces for future analysis of characteristics, including the age, gender, emotion, and ethnicity of the person.[17] The 2015 Tractica

12. Davenport & Ronanki, *supra* note 7.

13. Satya Ramaswamy, *How Companies Are Already Using AI*, HARV. BUS. REV. (Apr. 14, 2017), https://hbr.org/2017/04/how-companies-are-already-using-ai [https://perma.cc/33Y8-AP5N].

14. *Id.*

15. *Special Report: Non-tech businesses are beginning to use artificial intelligence at scale*, ECONOMIST (Mar. 31, 2018), https://www.economist.com/special-report/2018/03/31/non-tech-businesses-are-beginning-to-use-artificial-intelligence-at-scale [https://perma.cc/T6MQ-UKJF].

16. *Id.*

17. Simon Denyer, *China's Watchful Eye*, WASH. POST (Jan. 7, 2018), https://www.washingtonpost.com/news/world/wp/2018/01/07/feature/in-china-facial-recognition-is-sharp-end-of-a-drive-for-total-surveillance/?utm_term=.2d13860262cb [https://perma.cc/J2W9-3MYW].

Report for Artificial Intelligence for Enterprise Applications projected that the total global revenue for artificial intelligence in 2019 would be over $2 billion, with more of the revenue concentrated in the Asia Pacific than any of the other global regions.[18]

B. The Human Rights Potentially Implicated by Corporate Uses of Artificial Intelligence

Based on the business uses for artificial intelligence previously outlined, some of the potential human rights at stake include: the right to privacy;[19] the right to freedom of thought;[20] the right to freedom of expression;[21] the right to security;[22] the right to be free from discrimination;[23] the right to peaceful assembly and association;[24] the right to work and free choice of employment;[25] and finally, the right "to a social and international order in which the rights and freedoms set forth in this Declaration can be fully realized," as enshrined in the Universal Declaration of Human Rights ("UDHR") Article 28.[26] Based on this list, the rights-holders potentially involved include not only the end-users of the products or services provided by the transnational corporations, but employees whose companies use artificial technology to manage workflow and third parties that could potentially be affected by the consumption of the corporations' products.

The rights outlined in the UDHR are not enforceable, as the UDHR is not a treaty that states can sign and ratify; it is a set of standards that has served as the basis for future treaties that have binding force.[27] Rather, many of the UDHR provisions are deemed to

18. TRACTICA ARTIFICIAL INTELLIGENCE FOR ENTERPRISE APPLICATIONS (2015), *available at* https://www.tractica.com/wp-content/uploads/2015/04/AIE-15-Brochure.pdf [https://perma.cc/V9T7-BM4A].

19. UDHR, *supra* note 11, art. 12; International Covenant on Civil and Political Rights art. 17, Dec. 16, 1966, 999 U.N.T.S. 171 [hereinafter ICCPR].

20. UDHR, *supra* note 11, art. 18; ICCPR, *supra* note 19, art. 18.

21. UDHR, *supra* note 11, art. 19; ICCPR, *supra* note 19, art. 19.

22. UDHR, *supra* note 11, art. 3; ICCPR, *supra* note 19, art. 9(1).

23. UDHR, *supra* note 11, art. 7; ICCPR, *supra* note 19, art. 26.

24. UDHR, *supra* note 11, art. 20; ICCPR, *supra* note 19, art. 22(1).

25. UDHR, *supra* note 11, art. 23; ICCPR, *supra* note 19, art. 6(2).

26. UDHR, *supra* note 11, art. 28.

27. *The Foundation of International Human Rights Law*, U.N., http://www.un.org/en/sections/universal-declaration/foundation-international-human-rights-law/index.html [https://perma.cc/2EHH-LHQP] (last visited Oct. 19, 2019).

be customary international law, which is technically binding on all states.[28] Alternatively, the rights as codified in the International Covenant on Civil and Political Rights ("ICCPR") and the International Covenant on Economic, Social and Cultural Rights ("ICESCR"), which were derived from the UDHR, are enforceable to the extent that the Human Rights Committee has been established to monitor the implementation of and compliance with the ICCPR; the Committee on Economic, Social and Cultural Rights ("CESCR") performs the same monitoring functions for the ICESCR.[29] However, countries must have signed and ratified these treaties in order to be subject to review by their respective committees. Both treaties also have Optional Protocols that countries can choose to ratify, which allow individual complaints to be filed before the committees.[30] However, these individual complaints can only be brought against the State Parties to the treaties for violations of the ICCPR and the ICESCR, not against other private individuals or corporations.[31]

For example, the right to privacy can be infringed upon by programs that store and track user data on websites and use this data to target advertisements through artificial intelligence pattern matching. Additionally, the chief scientist of Dolby Labs, Poppy Crum, stated during a 2018 TED Talk that "spy cameras" could soon be deployed to read people's thoughts and feelings, using artificial intelligence to match data from electroencephalogram ("EEG") caps, thermal images and heart rate monitors to define emotions and thoughts.[32] While technology with this capability is still in testing stages, Crum believes that one day, "[our] devices will know more

28. Hurst Hannum, *The UDHR in National and International Law*, 3 HARV. J. HEALTH & HUM. RTS. 144, 145 (1998).

29. *FAQ: The Covenant on Civil & Political Rights (ICCPR)*, AM. CIV. LIBERTIES UNION, https://www.aclu.org/other/faq-covenant-civil-political-rights-iccpr [https://perma.cc/D3QC-AGJJ] (last visited Oct. 19, 2019); *Committee on Economic Social and Cultural Rights*, OFFICE OF THE U.N. HIGH COMM'R FOR HUMAN RIGHTS [OHCHR], https://www.ohchr.org/EN/HRBodies/CESCR/Pages/CESCRIndex.aspx [https://perma.cc/9C9K-XBGW] (last visited Oct. 19, 2019).

30. *Human Rights Bodies - Complaints Procedures*, OHCHR, https://www.ohchr.org/en/hrbodies/tbpetitions/pages/hrtbpetitions.aspx [https://perma.cc/58P8-E7V8] (last visited Oct. 19, 2019).

31. *Id.*

32. Tim Collins, *Spy cameras could soon know what we're thinking and feeling simply by scanning our BODIES - and there may be no way to opt-out*, DAILY MAIL (Apr. 13, 2018, 11:45 AM), https://www.dailymail.co.uk/sciencetech/article-5611645/Future-devices-let-companies-scan-body-detect-mood-health.html [https://perma.cc/797S-NN9L].

about you than you will."[33] The right to freedom of thought and expression can be implicated by artificial intelligence that is tasked with analyzing user comments on websites and selectively removing comments that meet certain criteria. For example, Google's human rights think tank Jigsaw has developed an application programming interface ("API") called Perspective that uses machine learning to create a score for the harmful impact of a comment on a blog or article, allowing the content producers to decide what to do with the comment based on this score.[34] While this could be a useful tool for reducing toxic Internet trolling, the ethical issue stems from the fact that users will not know how artificial intelligence developed the score and who determined what is deemed harmful.

Security can also become an issue in the actual testing of artificial intelligence technology.[35] Given that artificial intelligence learns from the data it receives, engineers test technologies in the preproduction stage using real data sets requested from industry stakeholders who will eventually use the product.[36] This large transfer and storage of data across systems and platforms can lead to gaps in the security of the data governance structure housing the data and can expose this data to external groups.[37] Additionally, artificial intelligence code can pose a serious threat to humanity when it becomes available to those who want to develop autonomous weapons—weapons that do not require human intervention to target individuals.[38] Discrimination is also a growing concern with machine learning, particularly if those who develop the programs provide discriminatory information that the machine then learns from. For example, a study conducted by the MIT Media Lab found that an artificial intelligence-based facial recognition software was ninety-nine percent accurate when presented with images of white males, but had a thirty-

33. *Id*.

34. PERSPECTIVE API, https://perspectiveapi.com/#/home [https://perma.cc/HVN4-L7UV] (last visited Oct. 19, 2019).

35. Manish Prabhu, *Security and Privacy in Artificial Intelligence and Machine Learning — Part 1: Lay of the Land*, MEDIUM (July 28, 2018), https://towardsdatascience.com/security-and-privacy-in-artificial-intelligence-and-machine-learning-part-1-c6f607feb94b [https://perma.cc/MTH9-7XKP].

36. *Id*.

37. *Id*.

38. *Autonomous Weapons: An Open Letter From AI & Robotics Researchers*, FUTURE OF LIFE INSTITUTE, https://futureoflife.org/open-letter-autonomous-weapons/ [https://perma.cc/P9QP-MZQD] (last visited Sept. 13, 2019).

five percent error rate for women with darker skin.[39] Further, Amazon developed and then stopped using an artificial intelligence-based recruitment tool that demonstrated bias against female applicants.[40]

The right to peaceful assembly and association also becomes implicated if artificial intelligence is used to block users from posting on specific online forums or social media platforms, disabling them from contributing to conversations and associating with others. A 2011 report by the Center for American Progress demonstrates the important role that social media, through "data empowerment," plays in furthering freedom of association for political campaigns and nonprofit activity by describing the use of Facebook by Egyptians in organizing their citizens in a political movement to replace President Hosni Mubarak.[41] It also briefly discusses the successful use of social media in both the Tea Party's and Obama's campaigns.[42] These examples show the ways in which social media contributes to furthering the right to peaceful assembly and association, which artificial intelligence can disrupt.

The ability to work and freely choose employment unencumbered from artificial intelligence and automation is a long-term potential harm towards individuals if artificial intelligence becomes sophisticated enough to replace humans in specific workforces. According to former Google, Apple and Microsoft executive Kai-Fu Lee, up to forty percent of the *global* workforce will be replaceable by artificial intelligence in just fifteen to twenty years.[43] For exam-

39. Steve Lohr, *Facial Recognition Is Accurate, if You're a White Guy*, N.Y. TIMES (Feb. 9, 2018), https://www.nytimes.com/2018/02/09/technology/facial-recognition-race-artificial-intelligence.html [https://perma.cc/X8AG-BCLR].

40. Jeffrey Dastin, *Amazon scraps secret AI recruiting tool that showed bias against women*, REUTERS (Oct. 9, 2018, 11:12 PM), https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G [https://perma.cc/48TC-XNPR].

41. Peter Swire, *Social Networks, Privacy, and Freedom of Association*, 2011 CTR. FOR AMERICAN PROGRESS 1, 7, 16–17, *available at* https://cdn.americanprogress.org/wp-content/uploads/issues/2011/02/pdf/social_networks_privacy.pdf [https://perma.cc/46W6-442K] ("[S]ocial networking is becoming an important and increasingly large fraction of political and nonprofit activity. The Obama campaign, the Tea Party, and political movements around the world such as in Egypt have made social networking an integral part of their strategy. Nonprofits today that seek to engage their membership already rely heavily on social networks and other new media technology.").

42. *Id*. at 7.

43. Dan Robitzski, *Former Google Exec: AI Will Replace 40 Percent of Jobs in 15 Years*, FUTURISM (Jan. 10, 2019), https://futurism.com/the-byte/google-ai-jobs [https://perma.cc/W83D-BQFP]; *TechPlomacy Talk: Episode 14 - Kai-Fu Lee*, THE DANISH TECH

ple, many customer service roles have now been replaced by "chatbots."[44] Lee anticipates that the first jobs to be replaced will be "white collar" cognitive jobs, including back office and data entry positions.[45] He goes so far as to suggest that jobs including determining who gets a loan, writing a report on stock trends, radiology and pathology will also shortly be replaceable with artificial intelligence.[46] Finally, UDHR Article 28, which entitles everyone "to a social and international order in which the rights and freedoms set forth in [the UDHR] can be fully realized," can be implicated if the other rights mentioned become compromised.[47]

Organizations are starting to note the potential harms that artificial intelligence can cause. In 2016, the World Economic Forum released a list of nine ethical issues involved with the use of artificial intelligence. These included, in the Forum's own words: (1) unemployment; (2) inequality; (3) humanity; (4) artificial stupidity; (5) racist robots; (6) security; (7); evil geniuses; (8) singularity; and (9) robot rights.[48] There is definite overlap between the World Economic Forum's list and the aforementioned list of international human rights with the potential to be implicated, suggesting agreement in this area of concern.

The artificial intelligence community is divided on whether or not regulation in this space is necessary at this stage. Some researchers suggest that the artificial intelligence community acknowledges the need for new policies,[49] though other literature indicates that there is a divide within the community.[50] High-profile figures in the technology industry have staked out various positions on the issue.

AMBASSADOR (Jan. 29, 2019) (downloaded using iTunes).

44. Christopher Elliott, *Chatbots Are Killing Customer Service. Here's Why.*, FORBES (Aug. 27, 2018, 8:19 AM), https://www.forbes.com/sites/christopherelliott/2018/08/27/chatbots-are-killing-customer-service-heres-why/#7776b93f13c5 [https://perma.cc/G6R9-CR9G].

45. THE DANISH TECH AMBASSADOR, *supra* note 43.

46. *Id*.

47. UDHR, *supra* note 11, art. 28.

48. Julia Bossmann, *Top 9 ethical issues in artificial intelligence*, WORLD ECON. F. (Oct. 21, 2016), https://www.weforum.org/agenda/2016/10/top-10-ethical-issues-in-artificial-intelligence/ [https://perma.cc/R7D7-NV4E].

49. Erdelyi & Goldsmith, *supra* note 2, at 1.

50. *Does regulating artificial intelligence save humanity or just stifle innovation?*, THE CONVERSATION (Oct. 22, 2017, 7:48 PM), https://theconversation.com/does-regulating-artificial-intelligence-save-humanity-or-just-stifle-innovation-85718 [https://perma.cc/68EB-XVXS].

While Elon Musk and Stephen Hawking have both pushed for regulation, Mark Zuckerberg and Bill Gates believe that technology is not yet advanced enough at this stage to warrant regulatory intervention.[51] In July 2018, Microsoft President Brad Smith made a public call for government regulation in the use of artificial intelligence, and particularly for facial recognition technology.[52] Smith believes that Congress should be responsible for determining the best means of regulating artificial intelligence use in the United States.[53] Like Smith, this Note pushes for some level of regulation because large corporations frequently determine policy and take actions independently of governments, or in complicity with governments and international financial institutions.[54]

This Note will address what responsibilities exist, or should exist, for the use of artificial intelligence and machine learning by transnational corporations when it comes to protecting the international human rights norms and standards articulated in international law. It will examine methods under existing national and international law for holding transnational corporations accountable for potential human rights abuses caused by these technologies.

C. Types of Transnational Law Making and Current Regulation of Artificial Intelligence

Olivia Erdélyi and Judy Goldsmith identify various types of transnational lawmaking or "social ordering."[55] They list these as (1) international law; (2) global law; and (3) transnational law.[56] Au-

51. Jeremy Straub, *Elon Musk, Stephen Hawking want new regulation for AI — but at what cost?*, L.A. BIZ (Oct. 23, 2017), https://www.bizjournals.com/losangeles/news/2017/10/23/elon-musk-stephen-hawking-want-new-ai-regulation.html [https://perma.cc/CPG4-5YVV].

52. Brad Smith, *Facial recognition technology: The need for public regulation and corporate responsibility*, MICROSOFT ON THE ISSUES (July 13, 2018), https://blogs.microsoft.com/on-the-issues/2018/07/13/facial-recognition-technology-the-need-for-public-regulation-and-corporate-responsibility/ [https://perma.cc/P6NS-FQMJ].

53. *Id*.

54. LOUIS HENKIN, SARAH CLEVELAND, LAURENCE HELFER, GERALD NEUMAN & DIANE ORENTLICHER, HUMAN RIGHTS 213 (2d ed. 2009).

55. Erdelyi & Goldsmith, *supra* note 2, at 2.

56. *See id.* ("[I]nternational law with a dichotomous view towards national and international law; global law, which refers to legal norms of universal scope while also acknowledging the role of non-state actors in normmaking; transnational law, which can have several connotations in reference to norms with a more than national but less than

thors Marie-Laure Djelic and Sigrid Quack discuss global business regulation under the term "transnational governance," which they define as "the setting, application, and enforcement of rules with a cross-national or global scope."[57] This article will primarily be focused on the approaches of international law, which Erdélyi and Goldsmith define as having a "dichotomous view towards national and international law,"[58] and transnational governance, as previously defined by Djelic and Quack.

To understand how transnational corporations' use of artificial intelligence can be regulated internationally to protect human rights, we must first examine the ways in which domestic laws and best practices attempt to protect citizens from potential misuses of artificial intelligence. For example, the U.S. National Highway and Transportation Safety Administration created a set of voluntary guiding principles with the goal of supporting "the automotive industry, the States, and other key stakeholders as they consider and design best practices relative to the testing and deployment of automated vehicle technologies."[59]

Additionally, tort law has been used to allege liability for semi-autonomous artificial intelligence technology.[60] *Nilsson v. General Motors, LLC* was the first lawsuit to be brought against a self-driving vehicle that veered into plaintiff Nilsson's lane as he was driving behind it on a motorcycle, causing him to sustain injuries.[61] The Complaint, filed by Nilsson on January 22, 2018, alleged that defendant, General Motors LLC, breached its duty of care to "hav[e] its Self-Driving Vehicle operate in a manner in which it obeys the traffic laws and regulations."[62] It further alleged that the defendant's Self-Driving Vehicle drove in a negligent manner.[63] A joint notice of set-

global purview.").

57. Marie-Laure Djelic & Sigrid Quack, *Globalization and Business Regulation*, 44 ANN. REV. SOCIOL. 123, 124 (2018).

58. Erdelyi & Goldsmith, *supra* note 2, at 2.

59. U.S. DEP'T OF TRANSP., AUTOMATED DRIVING SYSTEMS 2.0: A VISION FOR SAFETY (2017), *available at* https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/13069a-ads2.0_090617_v9a_tag.pdf [https://perma.cc/G5HK-P7JG].

60. Huu Nguyen, *Artificial Intelligence Law is Here, Part One*, ABOVE THE LAW (July 26, 2018, 2:22 PM), https://abovethelaw.com/legal-innovation-center/2018/07/26/artificial-intelligence-law-is-here-part-one/#f1 [https://perma.cc/7FQE-4YCU].

61. Complaint at 3, Nilsson v. General Motors LLC, No. 4:18-cv-00471 (N.D. Cal. Jan. 22, 2018).

62. *Id.* at 4.

63. *Id.* at 3.

tlement was filed on May 30, 2018, and thus the case was not adjudicated and precedent was not set.[64]

Additionally, there are instances in which semi-autonomous technology may cause death, as alleged by the plaintiff in *Holbrook v. Prodomax Automation Ltd, et. al.* demonstrates an instance in which a semi-autonomous technology caused the death of an individual. There, William Holbrook, Personal Representative of the Estate of Wanda Holbrook, alleged negligent design and product liability claims against the defendants, the manufacturers of a "robot" that entered a section of the factory it was not supposed to, crushing Wanda Holbrook's skull while she was performing her maintenance duties as a technician, which resulted in her death the same day.[65] The litigation is still ongoing, with a Motion for Summary Judgment having been filed by one of the companies on September 25, 2018.[66] These two cases demonstrate an increasing desire to hold creators of semi-autonomous technology liable for the injuries they cause, which could arguably set precedent for claims to be brought against companies for harms caused by fully autonomous technology.

The concerns related to the spread of artificial intelligence vary from narrow issues of self-driving cars getting into accidents, to a fear that machines will learn to exist without humans.[67] However, this article is particularly concerned with the potential for artificial intelligence use to infringe on human rights standards articulated in international legal instruments, including the UDHR, the ICCPR and the ICESCR. For example, the Obama Administration's Executive Office of the President National Science and Technology Council Committee on Technology mentioned apparent biases in "risk prediction" tools that are being used in the criminal justice system. These are technological tools that use artificial intelligence to predict outcomes based on patterns found in data, and are used in the criminal

64. *See GM Settles First-Known Suit Over Self-Driving Car Crash*, MEDIUM (June 12, 2018), https://medium.com/@marcdgrossman/gm-settles-first-known-suit-over-self-driving-car-crash-b749db81d32d [https://perma.cc/ZA34-5B73].

65. Complaint at 3, Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219 (W.D. Mich. Mar. 7, 2017).

66. Motion for Summary Judgment, Holbrook v. Prodomax Automation Ltd., No. 1:17-cv-00219 (W.D. Mich. Sept. 25, 2018).

67. Jeremy Straub, *Does regulating artificial intelligence save humanity or just stifle innovation*?, THE CONVERSATION (Oct. 22, 2017, 7:48 PM), https://theconversation.com/does-regulating-artificial-intelligence-save-humanity-or-just-stifle-innovation-85718 [https://perma.cc/68EB-XVXS]; Arend Hintze, *What an artificial intelligence researcher fears about AI*, THE CONVERSATION (July 13, 2017, 10:51 PM), https://theconversation.com/what-an-artificial-intelligence-researcher-fears-about-ai-78655 [https://perma.cc/UHQ6-KJV4].

justice system both by judges for sentencing and bail hearings and prisoner officers when making parole decisions.[68] The use of these biased tools are likely to infringe on individuals' right to freedom from discrimination. Further, the U.N. Special Rapporteur on extreme poverty and human rights expressed concern that "[m]uch more attention needs to be given to the ways in which new technology impacts the human rights of the poorest Americans."[69] Finally, the U.N. Human Rights Council addressed the human rights impact of automation and artificial intelligence on older persons, including concerns about older persons' consent and their ability to make informed, autonomous choices, stating that "robots should not be able to substitute themselves for the decision-making of an older person."[70]

II: TRANSNATIONAL CORPORATIONS AND INTERNATIONAL HUMAN RIGHTS LAW

Since the 1970s, transnational governance has grown exponentially with the rise of globalization.[71] Part of transnational governance as it relates to corporations is its nature as "soft law," comprised of norms, standards, codes of conduct and guidelines, all of which cannot be sanctioned in the same manner as traditional domestic laws and thus cannot be enforced or made binding.[72] Although international law does provide some elements of what might be considered "hard law," including decisions by some international courts that are meant to be taken as binding, compliance with international legal judgments is still not 100 percent.[73] The nature of international

68. NAT'L SCI. AND TECH. COUNCIL, EXEC. OFFICE OF THE PRESIDENT, PREPARING FOR THE FUTURE OF ARTIFICIAL INTELLIGENCE 30 (2016), *available at* https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/microsites/ostp/NSTC/preparing_for_the_future_of_ai.pdf [https://perma.cc/9GGV-ERRH].

69. Julia Angwin, Jeff Larson, Surya Mattu, and Lauren Kirchner, *Machine Bias*, PROPUBLICA (May 23, 2016) https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing [https://perma.cc/BJN9-6G9N].

70. Philip Alston, United Nations Special Rapporteur on extreme poverty and human rights, *Statement on Visit to the USA, by Professor Philip Alston, United Nations Special Rapporteur on extreme poverty and human rights*, UNITED NATIONS HUMAN RIGHTS OFFICE OF THE HIGH COMMISSIONER (Dec. 15, 2017), https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx [https://perma.cc/QEH3-34TE].

71. Djelic & Quack, *supra* note 57.

72. *Id*. at 29.

73. HENKIN ET AL., *supra* note 54.

law enforceability and compliance is something that must be taken into account when determining what the responsibilities and obligations of transnational corporations using artificial intelligence can or must be.

A. Judicial Considerations of Transnational Corporate Liability

American courts have addressed whether foreign-domiciled corporations can be held liable for human rights abuses under the Alien Tort Statute (ATS), a federal law that grants federal courts jurisdiction over tort claims filed by non-U.S. citizens for violations of international law.[74] In *Kiobel v. Royal Dutch Petroleum,* the Second Circuit held that "imposing liability on corporations for violations of customary international law has not attained a discernible, much less universal, acceptance among nations,"[75] effectively stating there is no substantive customary international law by which corporations can be held accountable. The petitioners in the case had alleged several violations of their human rights, including torture and unlawful detainment caused by the Nigerian government that had been aided and abetted by Dutch, British and Nigerian corporations.[76] Although the Supreme Court of the United States set this case for re-argument, it did not address the question on appeal of whether corporations are immune from tort liability under customary international law. It instead decided that the ATS did not allow U.S. courts to recognize a cause of action for violations of "the law of nations" occurring within another sovereign territory if it does not substantially "touch and concern" the U.S.[77]

The issue of whether foreign corporations can be named as defendants in an ATS claim was later addressed by the Supreme Court of the United States in April 2018 in *Jesner v. Arab Bank, PLC*.[78] The plaintiffs in this case alleged that the Arab Bank had

74. The Alien Tort Statute, 28 U.S.C. § 1350 (2012) ("The district courts shall have original jurisdiction of any civil action by an alien for a tort only, committed in violation of the law of nations or a treaty of the United States."); *The Alien Tort Statute Part I: What Is The ATS?*, CTR. FOR JUST. & ACCOUNTABILITY, https://cja.org/what-we-do/litigation/legal-strategy/the-alien-tort-statute/ [https://perma.cc/JE84-7ALX] (last visited Oct. 19, 2019).

75. Kiobel v. Royal Dutch Petroleum, 621 F.3d 111, 145 (2d Cir. 2010) (emphasis added).

76. *Id*. at 123.

77. Kiobel v. Royal Dutch Petroleum Co., 569 U.S. 108, 127 (2013).

78. Jesner v. Arab Bank, PLC, 138 S. Ct. 1386 (2018).

knowingly funded terrorist attacks that injured or killed the individuals they were suing on behalf of.[79] The Supreme Court held that foreign corporations cannot be sued pursuant to the ATS, agreeing with the decision in *Kiobel v. Royal Dutch Petroleum*. However, this holding appears to leave open the option for non-U.S. citizens to bring torts claims against transnational corporations that are domiciled in the U.S. under the ATS.

A U.K. Court of Appeals also recently dismissed a claim brought against Royal Dutch Shell for human rights abuses caused by its Nigerian subsidiary in Nigeria.[80] In *Okpabi v Royal Dutch Shell*, the Court of Appeals held that the British parent company could not be held responsible for the actions of its subsidiary. One of the reasons the court gave was that the parent Shell company did not have operational control over its Nigerian subsidiary, although a critique of this decision points out that the case was dismissed prior to all of the corporate documents having been disclosed to the plaintiffs.[81] This case was a departure from an earlier U.K. holding, *Chandler v Cape Plc*, that allowed an employee of a subsidiary to a U.K.-based company to recover damages for exposure to asbestos at his place of work.[82] However, *Chandler* is notably distinct from *Okpabi*, because it involved a duty of care that the parent company owed to an employee of the subsidiary, not a parent company's failure to prevent human rights abuses caused by one of its subsidiaries. These lines of cases in the U.S. and the U.K. demonstrate a general lack of willingness on the part of the courts to recognize the liability of corporations for human rights abuses.

Outside the realm of adjudication, international discussion of corporate responsibility arose following the eight-story building collapse in Dhaka, Bangladesh in 2013, which led to a 1,134-person death toll.[83] Workers had pointed out cracks in the building but were

79. *Id.* at 1393.

80. Okpabi v. Royal Dutch Shell Plc [2018] EWCA (Civ) 191 (Eng.).

81. *Id*. at 51; Gabriela Quijano, *Okpabi v Royal Dutch Shell: An opportunity to honour international standards or another instance of corporate impunity?*, BUS. & HUM. RTS. RES. CTR., https://www.business-humanrights.org/en/okpabi-v-royal-dutch-shell-an-opportunity-to-honour-international-standards-or-another-instance-of-corporate-impunity [https://perma.cc/7Z77-G8XK] (last visited Sept. 27, 2019).

82. Chandler v. Cape Plc, [2012] EWCA (Civ) 525 (Eng.).

83. *Rana Plaza building collapse, April 2013*, BUS. & HUM. RTS. RES. CTR., https://www.business-humanrights.org/en/rana-plaza-building-collapse-april-2013 [https://perma.cc/L8HG-RXJC] (last visited Jan. 28, 2019); Amy Westervelt, *Two years after Rana Plaza, have conditions improved in Bangladesh's factories?*, GUARDIAN (April 24, 2015, 6:41 PM), https://www.theguardian.com/sustainable-business/2015/apr/24/

told by factory management that it was safe to enter the following day, which was when the building collapsed.[84] This collapse led to the widespread recognition of insecure working conditions in the garment industry in Bangladesh.[85] The Rana Plaza Donors Trust Fund was set up and administered by the International Labor Organization following the collapse to compensate victims and their families, which raised $21.5 million by 2015 with voluntary support from global clothing brands including H&M, Walmart and the Gap.[86] Furthermore, the collapse has led to changes in the governance of the Bangladesh garment industry, which is the world's second largest exporter of garments.[87] By 2015, thirty-five factories were closed down due to a failure to comply with structural standards, and seventy-five percent of the 3,508 factories in Bangladesh had undergone fire and safety inspections; this came after an era where factory permits were being granted without site visits.[88] Some retail companies took responsibility for the crisis by aiding Bangladesh in improving its safety conditions.[89] However, at least forty percent of the country's factories, largely catering to smaller brands and retailers, had yet to benefit from the reforms put in place by the two year anniversary of the collapse.[90] The Bangladesh building collapse demonstrates another way in which transnational corporations can be accountable for human rights abuses. The global attention brought to the crisis spurred corporate responsibility independent of the legal system, which provides some hope that human rights violations can be addressed on a voluntary basis. However, because this is a voluntary response, any resulting corporate responsibility is not enforceable should the companies decide to stop assisting the crisis at any given time.

bangladesh-factories-building-collapse-garment-dhaka-rana-plaza-brands-hm-gap-workers-construction [https://perma.cc/82MW-KGPU].

84. Westervelt, *supra* note 83.

85. Jim Yardley, *Report on Deadly Factory Collapse in Bangladesh Finds Widespread Blame*, N.Y. TIMES (May 22, 2013), https://www.nytimes.com/2013/05/23/world/asia/report-on-bangladesh-building-collapse-finds-widespread-blame.html [https://perma.cc/UB98-VDJQ].

86. Westervelt, *supra* note 83.

87. *Id.*; Yardley, *supra* note 85.

88. Westervelt, *supra* note 83.

89. *Id.* ("[B]oth paying for factories to be upgraded and working with government agencies and nongovernmental organizations to draft guidelines and strategies for improving the lot of garment workers.").

90. *Id.*

B. U.N. Attempts at Defining Transnational Corporate Responsibility with Respect to Human Rights

The U.N. Sub-Commission on the Promotion and Protection of Human Rights, pursuant to Resolution 2003/16 of August 2003, proposed draft norms in document Sub.2/2003/12/Rev.2 on August 26, 2003 (the Sub-Commission Norms), which created a series of obligations for businesses with respect to human rights.[91] In addition to creating duties for transnational corporations, the Sub-Commission Norms determined that states have a responsibility to ensure the protection and respect of human rights by corporations at the national and international levels.[92] The Commission on Human Rights, in its 56th Session, determined that these Norms have no legal standing, but it nevertheless confirmed the "importance and priority [the Norms] accord to the question of the responsibilities of transnational corporations and related business enterprises with regard to human rights," which set the stage for the future Zero Draft treaty, to be discussed in Part III.[93] Although not legally binding, an analysis of the Sub-Commission Norms provides context for the ways in which the U.N. perceives transnational corporate responsibility and its enforcement.

Under the General Obligations set out in the Sub-Commission Norms:

> "[w]ithin their respective spheres of activity and influence, transnational corporations and other business enterprises have the obligation to promote, secure the fulfilment of, respect, ensure respect of and protect human rights recognized in international as well as national law, including the rights and interests of indigenous peoples and other vulnerable groups."[94]

More specifically, the Sub-Commission Norms require transnational corporations to ensure through their business activities the

91. U.N., ECON. & SOC. COUNCIL, Comm'n on Human Rights, Sub-Comm'n on the Promotion and Prot. of Human Rights, Economic, Social and Cultural Rights: Norms on the responsibilities of transnational corporations and other business enterprises with regard to human rights, U.N. Doc. E/CN.4/Sub.2/2003/12/Rev.2, (Aug. 26, 2003) [hereinafter Norms].

92. *Id.* at 4.

93. OHCHR, Responsibilities of transnational corporations and related business enterprises with regard to human rights, U.N. Doc. E/CN/4-Dec-2004/116, (Apr. 20, 2004); *Binding Treaty*, BUS. & HUM. RTS. RES. CTR., https://www.business-humanrights.org/en/binding-treaty [https://perma.cc/6RSR-R9NJ] (last visited Sept. 27, 2019).

94. Norms, *supra* note 91, at 4.

right to equal opportunity and non-discriminatory treatment; the right to security; the rights of workers, including the right to an adequate standard of living and the right to collective bargaining; the respect for "national sovereignty and human rights;"[95] assurance of consumer protections, including fair market practices and safe and high-quality goods and services; and finally, protection for the environment.[96] Several of these duties mimic the same rights as outlined in the UDHR, the ICCPR, and the ICESCR, including the right to security and non-discrimination. According to Paragraph 16 of the Sub-Commission Norms, periodic monitoring will be conducted by the U.N. and "other international and national mechanisms already in existence or yet to be created."[97] Organizations and other stakeholders are encouraged to provide input on compliance with these Norms, and complaints can be made for violations of these Norms to the U.N. States are required to adopt domestic laws and administrative frameworks to ensure that transnational corporations implement the Norms.[98]

The obligations outlined in the Sub-Commission Norms could provide a framework for the responsibilities that transnational corporations will have with respect to developing and using artificial technology. Importantly, the Preamble of the Sub-Commission Norms noted that "*new* international human rights issues and concerns are continually emerging and that transnational corporations and other business enterprises often are involved in these issues and concerns, such that *further* standard-setting and implementation are required at this time and in the future."[99] This language provides for the creation of new regulations obligating transnational corporations to continue to adopt standards and customs with respect to future developments in both human rights law and corporate developments, which one can assume includes the development of artificial intelligence. While the Sub-Commission Norms do not specify who would be responsible for the development of new standards in accordance with emerging human rights issues, the Human Rights Commission in 2004 noted the need to consult with "[s]tates, transnational corporations, employers' and employees' associations, relevant international organizations and agencies, treaty monitoring bodies and nongovernmental organizations" when developing additional guidelines on this top-

95. *Id.* at 4–5.

96. *Id.* at 5–6.

97. *Id.* at 6.

98. *Id.*

99. Norms, *supra* note 91, at 4 (emphasis added).

ic.[100]

Additionally, Section F(13) of the Sub-Commission Norms ("obligations with regard to consumer protection") states that transnational corporations shall observe the precautionary principle, which has particular relevance when considering the regulation of a continually developing field such as artificial intelligence technology.[101] The precautionary principle, first included in the Amsterdam Treaty prior to the establishment of the European Union,[102] was defined by the Science & Environmental Health Network in 1998 as an action to be taken "[w]hen an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically."[103]

While this particular definition only includes human *health* as opposed to more general human *rights*, an argument can be made that the object and purpose of the precautionary principle requires general caution when using new technology in the face of uncertain outcomes. This can be noted in the 1998 Wingspread Consensus Statement on the Precautionary Principle, which concluded that "[c]orporations, government entities, organizations, communities, scientists and other individuals must adopt a precautionary approach to *all* human *endeavors*."[104] This broad interpretation of the implementation of the Precautionary Principle would encompass activities beyond those that would only impact the environment and human health, including other human rights abuses. Furthering this point, in 2000, the European Commission expanded the application of the principle to include consumer protection, which is not a human health concern.[105] These additions indicate that the use of artificial intelligence by transnational corporations should also be subject to

100. OHCHR, *supra* note 93, at 1.

101. Norms, *supra* note 91, at 5.

102. John Graham, *The Perils of the Precautionary Principle: Lessons from the American and European Experience*, HERITAGE FOUND. (Jan. 15, 2004), https://www.heritage.org/government-regulation/report/the-perils-the-precautionary-principle-lessons-the-american-and [https://perma.cc/3GXD-GL33].

103. *Precautionary Principle FAQs*, SCI. & ENVTL. HEALTH NETWORK (Mar. 5, 2013), https://www.sehn.org/sehn/precautionary-principle-faqs [https://perma.cc/V69S-GXH3] (last visited Feb. 1, 2019).

104. *Wingspread Conference on the Precautionary Principle*, SCI. & ENVTL. HEALTH NETWORK (Aug. 5, 2013), https://sehn.org/wingspread-conference-on-the-precautionary-principle [https://perma.cc/PT4S-PNHE] (last visited Feb. 1, 2019) (emphasis added).

105. Graham, *supra* note 102.

the Precautionary Principle.

The downside to the Precautionary Principle, and the caveat of over-regulation in general, is a stall in innovation and development, including of technologies that might benefit society and help further human rights.[106] Requiring too much risk management could halt the development of artificial intelligence tools that could be beneficial to the protection of and respect for human rights. Furthermore, John Graham, in remarks made before the Heritage Foundation, cautioned against the misuse of the principle, or "precaution without principle."[107] In particular, Graham warned that "the principle may be easily manipulated by commercial interests for rent-seeking purposes."[108] These risks suggest that, when defining more thorough responsibilities of transnational corporations with respect to artificial intelligence use, the precautionary principle needs to be defined so as not to misconstrue its meaning in the Sub-Commission Norms nor subject innovation and development to an exorbitant amount of regulation.

Although the Sub-Commission Norms are merely draft language, Davis Weissbrodt and Muria Kruger suggest that these are the first proposed obligations for transnational corporations that would be deemed non-voluntary.[109] The obligation can be found in the language of the Sub-Commission Norms under Paragraph 16: "[t]ransnational corporations and other business enterprises *shall* be subject to periodic monitoring and verification by U.N., other international and national mechanisms already in existence or yet to be created, regarding application of the Norms;" and Paragraph 18: "[t]ransnational corporations and other business enterprises *shall* provide prompt, effective and adequate reparation to those persons, entities and communities that have been adversely affected by failures to comply with these Norms through, *inter alia*, reparations, restitution, compensation and rehabilitation for any damage done or property taken. In connection with determining damages, in regard to criminal sanctions, and in all other respects, these Norms *shall* be applied by national courts and/or international tribunals, pursuant to national and international law."[110] The use of "shall" implies that the

106. Straub, *supra* note 67; Graham, *supra* note 102.

107. Graham, *supra* note 102.

108. *Id.*

109. David Weissbrodt & Muria Kruger, *Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights*, 97 AM. J. INT'L L. 901, 903 (2003).

110. Norms, *supra* note 91, at ¶ 18 (emphasis added).

transnational corporations would not be able to opt out of the U.N. monitoring or application of the Norms by national courts and international tribunals. Additionally, the Sub-Commission Norms required the creation of a complaint mechanism to allow stakeholders to submit information regarding businesses that are not in compliance with the Norms.[111] However, the mechanism was never created.

Further, Weissbrodt and Kruger argue that the numerous implementation provisions of the Sub-Commission Norms suggest that this is more than an aspirational code of conduct.[112] Prior to the drafting of the Sub-Commission Norms, Weissbrodt and Kruger noted a series of voluntary or unsuccessful initiatives that attempted to hold businesses accountable for human rights violations, including language drafted by the U.N., which created an international code of conduct and the International Labor Organization's adoption of the Tripartite Declaration Principle Concerning Multinational Enterprises.[113]

In 2006, the Commission on Human Rights elaborated on its decision not to give the Sub-Commission Norms legal standing.[114] In the Interim Report, the Commission on Human Rights noted that the Sub-Commission Norms, although containing useful elements, do not properly allocate responsibilities for human rights preservation between States and corporations.[115] It further stated that the Norms claimed to be both non-voluntary and merely a reflection of "international legal principles applicable to business with regard to human rights," creating confusion as to their actual legal nature.[116]

In 2011, the Commission on Human Rights endorsed the Guiding Principles on Business and Human Rights in Resolution 17/4. The Guiding Principles are considered a set of standards and practices that all States and all businesses should follow. This can be seen in the introductory language, which states that the Principles will "apply to all States and to all business enterprises, both transnational and others, regardless of their size, sector, location, ownership

111. *Id.* ¶ 16.

112. Weissbrodt & Kruger, *supra* note 109, at 913.

113. *Id.* at 902–03.

114. U.N., Econ. & Soc. Council, Comm'n on Human Rights, Interim Report of the Special Representative of the Secretary-General on the Issue of Human Rights and Transnational Corporations and Other Business Enterprises, ¶ 56, U.N. Doc. E/CN.4/2006/97 (Feb. 22, 2006).

115. *Id.* ¶ 66.

116. *Id.* ¶ 60.

and structure."[117] However, the introduction also makes it clear that these Principles are not mandatory: "[n]othing in these Guiding Principles should be read as creating new international law obligations, or as limiting or undermining any legal obligations a State may have undertaken or be subject to under international law with regard to human rights."[118] The Principles are broken down into three categories: (1) the state duty to protect human rights; (2) the corporate responsibility to protect human rights; and (3) access to remedies. The actual language of the Principles is also notably voluntary in nature, stating that "[s]tates *should* promote respect for human rights by business enterprises with which they conduct commercial transactions,"[119] as opposed to "will" or "must" and that businesses "*should* express their commitment to meet this responsibility through a statement of policy" and "*should* carry out human rights due diligence."[120] To truly hold transnational corporations responsible, the language in future guidance and best practices should be more mandatory and reflect obligations rather than suggestions.

The Sub-Commission Norms and the Guiding Principles demonstrate efforts at defining transnational corporate responsibility for human rights, although they were not entirely successful. Putting aside the critiques of the Norms raised by the Commission on Human Rights in 2006, some of the aforementioned provisions would provide a solid foundation for the regulation of the corporate use of artificial intelligence. However, one of the primary challenges in determining what the responsibilities of transnational corporations should be for harmful artificial intelligence systems is the difficulty in "detecting the harm and determining and proving causation."[121]

The artificial intelligence community is beginning to propose strategies to mitigate harms caused by artificial intelligence, but none of these are internationally legal in scope.[122] In a report by the

117. Office of the High Comm'r of Human Rights, Guiding Principles on Business and Human Rights 1, U.N. Doc. HR/PUB/11/04 (2011), *available at* https://www.ohchr.org/documents/publications/GuidingprinciplesBusinesshr_eN.pdf [https://perma.cc/96NT-JND9].

118. *Id*.

119. *Id*. at 8.

120. *Id*. at 16–17 (emphasis added).

121. Filippo Raso, Hannah Hilligoss, Vivek Krishnamurthy, Christopher Bavitz & Levin Kim, ARTIFICIAL INTELLIGENCE & HUMAN RIGHTS: OPPORTUNITIES & RISKS 55 (2018), *available at* https://cyber.harvard.edu/sites/default/files/2018-09/2018-09_AIHumanRightsSmall.pdf [https://perma.cc/SQZ7-V4F5].

122. Darrell M. West, *The Role of Corporations in Addressing AI's Ethical Dilemmas*,

Brookings Institution, Darrell West recommended more corporate-driven solutions, which included: hiring company ethicists; having an artificial intelligence code of ethics; instituting artificial intelligence review boards; requiring internal artificial intelligence audit trails; implementing artificial intelligence training programs; and having a means of remediation for artificial intelligence damages or harm.[123] The following section will propose an international legal framework for addressing not only ethical concerns raised by artificial intelligence, but those specifically concerning human rights violations.

III: DEVELOPING A FRAMEWORK OF FUTURE DUTIES FOR TRANSNATIONAL CORPORATIONS WITH RESPECT TO THE MISUSE OF ARTIFICIAL INTELLIGENCE

The following section proposes a series of legal mechanisms that could be adopted and deployed to regulate transnational corporations' use of artificial intelligence in their goods and services in a manner that would be deemed an infringement on human rights.

Notably missing from this framework is a discussion of how international courts and tribunals ("ICTs") can be used to hold transnational corporations accountable. This is due to the difficulty in enforcing international judgments, the lack of compliance that typically follows a judgment and some of the limitations of ICTs' jurisdiction to hear the types of claims that would be required in this context.[124]

However, this paper is not of the position that international courts and tribunals will *never* be a useful tool for promoting transnational corporate responsibility, or even for abuses caused by artificial intelligence misuse. Particularly, the International Court of Justice ("ICJ"), the United Nation's adjudicatory body, has advisory jurisdiction to issue opinions on matters that have been requested by U.N. organs, such as the General Assembly, and specialized agencies.[125] To date, the ICJ has not issued an opinion on transnational corporate liability or its jurisdiction to hear claims brought against transnational businesses, and it has also not addressed the use of artificial intelligence.[126] However, an advisory opinion concerning these topics

BROOKINGS INST. (Sept. 13, 2018), https://www.brookings.edu/research/how-to-address-ai-ethical-dilemmas/ [https://perma.cc/4JY4-ASJX].

123. *Id.*

124. *See* HENKIN ET AL., *supra* note 54.

125. *Id.*

126. *See generally List of All Cases*, INT'L CT. J., https://www.icj-cij.org/en/list-of-all-

could be requested by the U.N. or its member states, which might then set the stage for cases alleging human rights abuses caused by transnational corporations.

Additionally, the International Criminal Court ("ICC") has jurisdiction over claims asserted against individuals. However, there are two limitations to its jurisdiction to adjudicate claims against transnational corporations: (1) under the Rome Statute, the ICC can only adjudicate cases against *natural* persons, not *legal* persons, effectively ruling out claims against corporations; and (2) it can only hear such claims for violations with a certain gravity: international crimes of genocide, crimes against humanity, and war crimes, in which case an artificial intelligence-caused human rights abuse would have to rise to the level of these crimes before the ICC could adjudicate.[127]

Finally, regional tribunals, such as the European Court of Human Rights ("ECHR"), could also become a useful tool for bringing regional claims for the misuse of artificial intelligence against transnational corporations in the future. However, the ECHR notably will not hear cases until "all domestic remedies have been exhausted," and therefore is unlikely to be the first avenue for addressing a claim.[128] It will also only hear claims against State Parties to the European Convention on Human Rights, ruling out claims brought against transnational corporations.[129] Furthermore, the ECHR in the case *Özel v. Turkey* declined to opine on the impact of businesses on human rights, instead choosing to discuss what the state responsibilities were for protecting individuals from harms caused by corporations. This precedent suggests that the ECHR might not currently be willing to adjudicate cases of the misuse of artificial intelligence by transnational corporations.[130]

Although a discussion of ICTs is beyond the scope of this article, it is worth addressing in future research, including the potential establishment of an ad hoc criminal tribunal, not constrained by the "natural person" limitation under the Rome Statute, to hear claims of human rights abuses caused by the misuse of artificial intelligence.

cases [https://perma.cc/3XEZ-LL8N] (last visited Oct. 24, 2019).

127. Rome Statute of the International Criminal Court, July 17, 1998, 2187 U.N.T.S. 90.

128. Convention for the Protection of Human Rights and Fundamental Freedoms art. 35, ¶ 1, Nov. 4, 1950, 213 U.N.T.S. 221.

129. *Id*., art. 34.

130. Lieselot Verdonck, *How the European Court of Human Rights Evaded the Business and Human Rights Debate in Özel v. Turkey*, 2 TUR. COM. L. REV. 111, 118 (2016).

A. World Bank Policies

One initial way to prevent harms caused by the use of artificial intelligence is through conditional funding by the World Bank for development projects that seek to use this technology. The World Bank is a development organization that addresses challenges faced by developing countries.[131] Funding is provided by two organizations within the World Bank Group: the International Bank for Reconstruction and Development ("IBRD"), which provides loans and assistance to middle and low-income countries, and the International Development Association ("IDA"), which provides interest-free loans and technical assistance to the poorest countries (collectively, the World Bank).[132] The World Bank is a large source of funding for development projects: it currently funds 13,768 projects in 174 countries, making it a potentially valuable mechanism for combating human rights abuses that arise through the misuse of artificial intelligence.[133] Between 2014 and 2018, the IBRD's funding ranged from $17,389 million in 2018 to $22,532 million in 2016 in gross disbursements, with its top borrowers for 2018 including India, Egypt, Indonesia and China.[134] In 2018, $324 million was allocated for development projects in the Information and Communications Technologies (ICT) sector, which projects involving artificial intelligence would fall under.[135] The IDA's funding between 2014 and 2018 ranged from $12,718 million in 2017 to $14,383 million in 2018. Its top borrowers were Ethiopia, Bangladesh, Nigeria and Pakistan, and it committed $419 million to the ICT sector in 2018.[136]

In 2013, the World Bank adopted a series of standards for investment loans to be provided by the bank for the resettlement of displaced persons.[137] While the standards are targeted towards all dis-

131. *Commonly Asked Questions About the World Bank Group*, WORLD BANK, http://web.worldbank.org/archive/website00903F/WEB/OTHER/70483401.HTM [https://perma.cc/77SS-3CGN] (last visited Sept. 11, 2019).

132. *Id.*

133. *Projects & Operations*, WORLD BANK, http://projects.worldbank.org/ [https://perma.cc/HS9H-AW2H] (last visited Sept. 11, 2019).

134. WORLD BANK, ANNUAL REPORT 2018, at 83–84 (2018), http://documents.worldbank.org/curated/en/630671538158537244/pdf/The-World-Bank-Annual-Report-2018.pdf [https://perma.cc/P86F-FNRN].

135. WORLD BANK, *supra* note 134, at 82.

136. *Id*. at 86–88.

137. *See* WORLD BANK, OPERATIONAL MANUAL OP 4.12: INVOLUNTARY RESETTLEMENT (rev. 2013), *available at* https://policies.worldbank.org/sites/ppf3/PPFDocuments/090224b0822f89db.pdf [https://perma.cc/SVK3-WQXM].

placed individuals, particular attention is given to vulnerable populations, such as indigenous persons who rely primarily on their land as an economic resource for their livelihood. As artificial intelligence becomes a larger focus of development work, more loans could likely be requested for projects that will involve this technology, such as predictive models for emergency response and disaster relief or the introduction of artificially intelligent agriculture.[138] When this becomes the case, a similar policy could be adopted for the Bank-assisted investment loans for projects that will include the use of artificial intelligence and that have the potential to impact international human rights standards. These harms could include projects that would automate so many tasks, they would damage the emerging economy and remove jobs for individuals who require the income, which is counterintuitive to the goal of the World Bank.[139] Given the ability of artificial intelligence technologies to reach a multitude of people, conditioning funding on a careful review of how the technology will be employed would ensure that harms are prevented.

The objective of the policy, OP/BP 4.12, *Involuntary Resettlement* (the Resettlement Policy), is to avoid or minimize the damage caused by involuntary resettlement as a result of development projects.[140] It requires that any forced resettlement that cannot be avoided be developed in a sustainable manner that allows the displaced population to benefit from the project, and to be assisted in resettling.[141] A similar policy for certain harms caused by artificial intelligence use by transnational corporations can be envisioned. Arguably, the harms created by projects that misuse artificial intelligence have the potential to reach a similar scale as the harms from forced resettlement, at least in the number of people affected, if not in the level of gross violation.

The Resettlement Policy applies to any portion of the Bank-assisted project, "regardless of the source of financing."[142] This means that the World Bank does not have to be the *sole* source of

138. Sameer Maskey, *AI for Humanity: Using AI to Make a Positive Impact in Developing Countries*, FORBES (Aug. 23, 2018), https://www.forbes.com/sites/forbestechcouncil/2018/08/23/ai-for-humanity-using-ai-to-make-a-positive-impact-in-developing-countries-2/#e694dcc1b08a [https://perma.cc/AD5H-XB63].

139. Kai-Fu Lee, Opinion, *AI Could Devastate the Developing World*, BLOOMBERG (Sept. 17, 2018), https://www.bloomberg.com/opinion/articles/2018-09-17/artificial-intelligence-threatens-jobs-in-developing-world [https://perma.cc/WG6L-KXJA].

140. WORLD BANK, *supra* note 134, ¶ 2(a).

141. *Id.* ¶¶ 2(b)–(c).

142. *Id.* ¶ 4.

project funding for the policy to apply. This language allows for a wider range of projects to be captured by the policy, providing greater protection for individuals. A policy that mimics the Resettlement Policy for artificial intelligence-related harmful projects should adopt the same, or similar, language for this reason.

The Resettlement Policy requires the borrower to prepare a resettlement plan or resettlement policy framework that includes: informing potentially displaced persons of their options and rights pertaining to resettlement; providing assistance to such individuals during displacement, including relocation services or temporary housing; and providing transitional support, including credit facilities and development assistance.[143] This plan will be considered during the World Bank's appraisal of the project. Any costs associated with the resettlement plan or policy will be factored into the total cost of the project.[144]

According to the policy, the borrower will be responsible for implementing and monitoring the project, while providing regular updates on the status of the implementation to the World Bank and remaining subject to its oversight. Furthermore, the World Bank will assist the borrower when needed in the form of assessments on potential resettlement plans, finances for technical assistance related to the implementation of the plans, and finances for the investment costs related to resettlement.[145]

Adopting a similar policy for projects employing the use of artificial intelligence should follow the same format as the Resettlement Policy. Borrowers should similarly have to submit a plan or policy framework that addresses the potential threats to human rights, strategies for informing the at-risk population, and plans to mitigate the harm caused to individuals whose rights have been violated. For example, to the extent that jobs are replaced by machines, corporations should have to ensure that new jobs, or job training programs, are created. The World Bank would consider this information during the loan appraisal and would monitor the human rights violations and subsequent mitigations during the plan's deployment. While this policy would not capture the artificial intelligence-related projects not funded by the World Bank, it would still provide a level of protection not currently in existence.

143. *Id.* ¶ 6.

144. *Id.* ¶ 20.

145. *Id.*

B. Global Magnitsky Act

Another potential strategy could be expanding the use of the Global Magnitsky Human Rights Accountability Act (Magnitsky Act) to include abuses caused by transnational corporations' use of artificial intelligence. Although the legislation was originally conceived of and adopted in the United States, five more countries have since created Magnitsky Act-type sanctions legislation: Canada, the United Kingdom, Estonia, Latvia and Lithuania.[146] For purposes of a discussion about the use of the Magnitsky Act to sanction corporate abuses through artificial intelligence, this Part will explore only the U.S. Global Magnisky Act in greater detail.

In Section 3 of the amended Magnitsky Act, passed by the U.S. Senate in 2015, the president is authorized to impose U.S. lawful entry and property sanctions against any foreign person (defined as an individual *or entity*) for specific actions, including "extrajudicial killings, torture, or other gross violations of internationally recognized human rights committed against individuals in any foreign country who seek to expose illegal activity carried out by government officials; or to *obtain, exercise . . ., or promote internationally recognized human rights and freedoms*."[147] (emphasis added). The inclusion of "entity" in the language of the Magnitsky Act indicates a potential use for the sanctioning power of the president against transnational corporations who commit violations of "human rights and freedoms" through the deployment of artificial intelligence products and services. One of the issues with this suggestion is that the Act only applies to foreign persons, not domestic ones, meaning U.S.-domiciled corporations would not be subject to the sanctions. That being said, if more states continue to adopt versions of the U.S. Global Magnitsky Act, it can be used as a cooperative cross-border regulation for abuses of human rights caused by artificial intelligence. Additionally, it would still grant the U.S. power to sanction

146. For example, in Canada the act is called the Justice for Victims of Corrupt Foreign Officials Act. *See* Brent Bambury, *Canada is Getting Its Own Magnitsky Act and Vladimir Putin Is Not Impressed*, CBC RADIO (Oct. 6, 2017), https://www.cbc.ca/radio/day6/episode-358-outsmarting-the-nra-canada-s-magnitsky-act-ham-radios-for-puerto-rico-music-in-dna-and-more-1.4329733/canada-is-getting-its-own-magnitsky-act-and-vladimir-putin-is-not-impressed-1.4329831 [https://perma.cc/GHW2-CLYS]; Forty-Four European Politicians, Opinion, *A Magnitsky Act for Europe Would Punish Human Rights Abusers and Despots*, CNN (Dec. 6, 2018), https://www.cnn.com/2018/12/06/opinions/a-magnitsky-act-for-europe-opinion-intl/index.html [https://perma.cc/99CZ-7BWQ].

147. Global Magnitsky Human Rights Accountability Act § 1263, 22 U.S.C. § 2656 (2016).

foreign companies that have used artificial intelligence in a manner that violates human rights.

The U.S. has already begun to set a precedent that could make the use of the Global Magnitsky Act to address transnational corporations' abuse of human rights through artificial intelligence possible. In December 2017, President Trump sanctioned international businessman Dan Gertler, a private individual, under the Global Magnitsky Act pursuant to Executive Order 13818 for amassing "his fortune through hundreds of millions of dollars' worth of opaque and corrupt mining and oil deals in the Democratic Republic of the Congo (DRC)."[148] Then in June 2018, pursuant to the same Executive Order, President Trump sanctioned fourteen *entities* owned or controlled by Gertler.[149] The Department of the Treasury noted that these fourteen entities did not constitute an exhaustive list of those that *could* be sanctioned under the Global Magnitsky Act for their affiliation with Gertler. The Treasury Department's Office of Foreign Asset Control applies a fifty percent rule whereby entities owned fifty percent or more by one individual, or individuals in the aggregate, whose property and interests are blocked pursuant to a Global Magnitsky Act Executive Order are also considered to be blocked.[150]

With this framework in mind, it is possible to conceive that transnational corporations whose products or services violate international human rights through the use of artificial intelligence could be sanctioned under the Global Magnitsky Act. The primary challenge with this approach, given the framework outlined, is that there would

148. *United States Sanctions Human Rights Abusers and Corrupt Actors Across the Globe*, U.S. DEP'T OF THE TREASURY (Dec. 21, 2017), https://home.treasury.gov/news/press-releases/sm0243 [https://perma.cc/ASP4-ZCE3]; Exec. Order No. 13818, 31 C.F.R 583 (2017).

149. *Treasury Sanctions Fourteen Entities Affiliated with Corrupt Businessman Dan Gertler Under Global Magnitsky*, U.S. DEP'T OF THE TREASURY (June 15, 2018), https://home.treasury.gov/news/press-releases/sm0417 [https://perma.cc/A726-L5MT].

150. U.S. DEP'T OF THE TREASURY, REVISED GUIDANCE ON ENTITIES OWNED BY PERSONS WHOSE PROPERTY AND INTERESTS IN PROPERTY ARE BLOCKED (2014), *available at* https://www.treasury.gov/resource-center/sanctions/Documents/licensing_guidance.pdf [https://perma.cc/WN6M-XNAJ] ("Persons whose property and interests in property are blocked pursuant to an Executive order or regulations administered by OFAC (blocked persons) are considered to have an interest in all property and interests in property of an entity in which such blocked persons own, whether individually or in the aggregate, directly or indirectly, a 50 percent or greater interest. Consequently, any entity owned in the aggregate, directly or indirectly, 50 percent or more by one or more blocked persons is itself considered to be a blocked person. The property and interests in property of such an entity are blocked regardless of whether the entity itself is listed in the annex to an Executive order or otherwise placed on OFAC's list of Specially Designated Nationals (SDNs).").

need to be an individual initially sanctioned in order to sanction the corporation. This would presumably require employing the equitable doctrine of piercing the corporate veil to sanction one of the shareholders or controlling officers of the company, as opposed to the company itself.[151] This doctrine can be applied when it would serve an injustice to observe the limited liability of the corporate form,[152] but the use of this doctrine has yet to be employed by the president in the context of issuing sanctions pursuant to the Global Magnitsky Act. Using this doctrine becomes complex in the transnational context. David Aronofsky proposed the adoption of what he termed "enterprise analysis" to enable a consistent standard for piercing the veil of transnational corporations.[153] If a consistent standard was applied, such as the one Aronofsky proposed, that the government could legally use for sanctioning directors and shareholders of companies, this would be one method for using the Global Magnitsky Act as an accountability tool for companies that cause human rights abuses through the use of artificial intelligence. Importantly, however, other countries adopting similar legislation would also need to allow such a doctrine to be used.

Additionally, because the U.S. has started to set a precedent for sanctioning private parties through its use of the Act against individuals and affiliate entities, it is not a stretch to assume that the government could begin to sanction corporations solely in their capacity as entities. While there is no language in the text of the Global Magnitsky Act that explicitly permits the president to sanction only entities, the definition of "Person" in the language reads as "[t]he term

151. David K. Millon, *Piercing the Corporate Veil, Financial Responsibility, and the Limits of Limited Liability*, 56 EMORY L. J. 1305, 1310 (2007).

152. NetJets Aviation, Inc. v. LHC Commc'ns, L.L.C., 537 F.3d 168, 177 (2d Cir. 2008).

153. David Aronofsky, *Piercing the Transnational Corporate Veil: Trends, Developments, and the Need for Widespread Adoption of Enterprise Analysis*, 10 N.C. J. INT'L. L. & COMM. REG. 31, 32 (1985) ("Such an analysis presumes the disregard of the corporate veil for liability, jurisdiction, and other legal purposes once common ownership, direction, and unity of economic purpose among corporate affiliates within the company can be shown. To overcome this presumption, a corporation would have to show that its conduct and economic status within an enterprise are completely unrelated to the dispute before the court. It could not rely solely upon legally separate corporate existence or observation of separate corporate formalities to overcome this presumption, except to the extent a specific statute permits such a defense. Meeting such a burden would be extremely difficult for parent corporations and their wholly owned subsidiaries absent express statutory authority to the contrary. This rule is consistent with the recent Supreme Court determination that a parent and its wholly owned subsidiary possess identical legal and economic interests as a matter of law.").

"person" means an individual *or entity*."[154] (emphasis added). The disjunctive "or" in the language suggests that perhaps an entity does not need to be connected to an individual in order to be sanctioned.

As noted previously, this mechanism only works on a country-by-country basis. Other countries aside from the U.S. are beginning to broaden their sanctions regimes to include laws similar to the Global Magnitsky Act.[155] Assuming that all nations are willing to adopt such legislation, this could become a powerful tool for holding transnational corporations and their directors accountable for human rights abuses that are facilitated by artificial intelligence and provide a mechanism for international cooperation in this field. However, a set of standards would have to be adopted to determine what constitutes a human rights abuse caused by artificial intelligence that is sufficient enough to warrant these sanctions. The nuance between artificial intelligence-created abuses and other abuses lies in the ability of transnational corporations to reach a massive population easily and rapidly through the internet or smartphone applications.

Thus, while some of the human rights violations that could result from the misuse of artificial intelligence do not appear to be as egregious as other abuses whose prohibitions have reached the level of a *jus cogens* norm, such as torture and genocide, the sheer scale of the technology could warrant the use of the Global Magnitsky Act. These standards would need to be determined by a coalition of stakeholders involved in human rights work and artificial intelligence development to ensure that the full scope of potential harms and related issues concerning the use of this technology are considered.

C. Voluntary Private Arbitrations

Another area for the potential regulation of transnational corporate responsibilities in the use of artificial intelligence is through private international arbitration. In such proceedings, resulting settlements would remain private, which would provide a strong incentive for transnational corporations to pursue this mechanism for the purpose of protecting their reputations.

This proposal could take a form similar to investor-State arbitration, which is when two states enter into a Bilateral Investment

154. Global Magnitsky Human Rights Accountability Act, *supra* note 147.

155. *The U.S. Global Magnitsky Act: Questions and Answers*, HUMAN RIGHTS WATCH (Sept. 13, 2017), https://www.hrw.org/news/2017/09/13/us-global-magnitsky-act [https://perma.cc/SYB4-CH8M].

Treaty to resolve any disputes arising from the development in a specific venue. International investor-State arbitration is not immediately thought of as an international human rights tool, but international investments and the disputes that arise from them have implications for the standards of human rights that are not always considered in the contract drafting or negotiation stages.[156] Already, investor-State arbitration has been used to resolve human rights claims that stem from the source of the contract.[157] Paula Henin argues that human rights law is starting to become more prominent in the field of investor-State arbitration because investors believe that the consideration of human rights in states' bilateral treaties will strengthen their position during arbitration.[158]

Dispute resolution clauses will need to consider the language used relative to the international arbitration conventions (such as the International Centre for Settlement of Investment Disputes Convention), the international human rights instruments and the precedents set by human rights international courts and tribunals. Bilateral Investment Treaty dispute resolution clauses would need to be redrafted to encompass human rights considerations, a process that should be done collaboratively among public and private actors. The clauses "must be broad enough to include [human rights] counterclaims, reflecting the consent of the parties."[159] This is important to include in the language because arbitral tribunals have limited jurisdiction over claims.[160]

Further, Eric De Brabandere points out that "compromissory clauses [those that provide for the submission of a dispute to arbitration] in investment treaties usually contain broad applicable law clauses referring to the application, besides domestic law, of 'international law.'"[161] With this in mind, stakeholders including human

156. Crina Baltag, *Human Rights and Environmental Disputes in International Arbitration*, Kluwer Arbitration Blog (July 24, 2018), http://arbitrationblog.kluwerarbitration.com/2018/07/24/human-rights-and-environmental-disputes-in-international-arbitration/ [https://perma.cc/4GH2-7APE].

157. Paula F. Henin, *The Jurisdiction of Investment Treaty Tribunals over Investors' Human Rights Claims: The Case against Roussalis v. Romania*, 51 COLUM. J. TRANSNAT'L L. 224, 226–27 (2012).

158. *Id*.

159. Baltag, *supra* note 156.

160. Eric De Brabandere, *Human Rights and International Investment Law*, *in* RESEARCH HANDBOOK ON FOREIGN DIRECT INVESTMENT (Markus Krajewski & Rhea Hoffmann eds.) (forthcoming) (manuscript at 2), https://ssrn.com/abstract=3149387 [https://perma.cc/4H8F-D7VH].

161. *Id*.

rights lawyers, investment-State arbitration lawyers and human rights ICTs can collaborate to find a means of using the broad language of compromissory clauses to ensure that the arbitral tribunals have jurisdiction to hear human rights claims. A standard International Chamber of Commerce (ICC) arbitration clause reads as follows: "[a]ll disputes arising out of or in connection with the present contract shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one or more arbitrators appointed in accordance with the said Rules."[162] Adding language to this clause to include consideration for human rights violations resulting from the contract could read as follows: "[f]urther, any violation of internationally accepted human rights arising out of or in connection with the present contract shall be settled by an international court or tribunal that has jurisdiction to hear such claims." Leaving the choice of forum broad in such a manner ensures that the victims of the human rights violation have options as to where they wish to litigate their claims. However, the states would ultimately need to decide to include this language in future bilateral investment treaties.

At least one ad hoc investment tribunal, acting under the rules of the International Centre for Settlement of Investment Disputes (ICSID), has found that a human rights-based counterclaim brought by a respondent state had met the specified requirements, including those of Article 46 of the ICSID Convention, which include the condition that the counterclaim arises directly out of the subject-matter of the dispute.[163] In *Urbaser v. Argentina*, the tribunal found that the language of the bilateral investment treaty at issue *was* broad enough to afford it jurisdiction over a human rights access to water counterclaim filed by Argentina for $190 million and "deemed the factual connection between the claim and the counterclaim to be 'manifest' since they were based on the same investment and involved claimants' compliance with the concession commitments at issue."[164] The counterclaim was ultimately rejected on the merits, but the important factor to note here is that the wording was sufficient to allow the human rights violation to be brought before the arbitral tribunal. This provides hope that future investment treaties regulating projects that use artificial intelligence can be brought before a tribunal for human rights violations if it can be shown that a transnational company's use of artificial intelligence was the cause of an internationally recog-

162. *Arbitration Clause*, INT'L CHAMBER OF COMMERCE, https://iccwbo.org/dispute-resolution-services/arbitration/arbitration-clause/ [https://perma.cc/CM2W-RES5].

163. De Brabandere, *supra* note 160, at 18.

164. *Id*. at 20.

nized human rights violation. Such harms could include a freedom of speech violation caused by an artificial intelligence algorithm that cleanses online forums of content promoting a specific type of opinion, or caused by the unconsented use of data for the development and testing of new artificial intelligence-based technologies.

To implement this idea, new investment and development contracts between companies and states would have to include a provision that grants jurisdiction to an international arbitral tribunal for harms that result from the use of artificial intelligence. Existing contracts could be amended to include an addendum of the same nature.

However, this mechanism would not work with respect to contracts between transnational corporations and other private parties, given that Bilateral Investment Treaties are negotiated between states. Thus, this should not be the sole regulatory mechanism for harms caused by corporate misuse of artificial intelligence.

D. Transnational Corporation Treaty

Another method of regulating corporate use of artificial intelligence is the creation of an international treaty that would outline the responsibilities of artificial intelligence use. Such a treaty could create obligations for member states and corporations of that nationality and establish periodic monitoring by a treaty body. Although a treaty of this nature has not been drafted yet, there is an ongoing attempt by the U.N. to regulate the activities of transnational corporations in treaty form.[165]

1. The U.N. Zero Draft

The Open-Ended Intergovernmental Working Group on Transnational Corporations and Other Business Enterprises with Respect to Human Rights (OEIGWG), established by Human Rights Council Resolution 26/9, has been tasked with creating a legally binding instrument to regulate transnational corporations.[166]

165. Permanent Mission of Ecuador to the United Nations, Note 4-7-158/2018 to United Nations High Commissioner for Human Rights (July 19, 2018), *available at* https://www.ohchr.org/Documents/HRBodies/HRCouncil/WGTransCorp/Session3/NoteVerbaleLBI.PDF [https://perma.cc/P7FL-LVPQ].

166. *Fourth session of the open-ended intergovernmental working group on transnational corporations and other business enterprises with respect to human rights*, U.N. HUM. RTS. COUNCIL, https://www.ohchr.org/EN/HRBodies/HRC/WGTransCorp/

OEIGWG was provided with "independent expertise and expert advice in order for it to fulfil its mandate," coupled with assistance and support from the U.N. High Commissioner for Human Rights.[167] After conducting deliberations on the topic of a human rights and business activities treaty during its initial sessions, on July 16, 2018, the OEIGWG published a draft treaty called the "Legally Binding Instrument to Regulate, In International Human Rights Law, The Activities of Transnational Corporations And Other Business Enterprises," also and hereafter referred to as the "Zero Draft."[168]

The scope of the Zero Draft extends beyond the use of artificial intelligence in goods and services provided by transnational corporations and could either broadly regulate such use or serve as a template for a narrower treaty specifically related to artificial intelligence. The Zero Draft is set to become a legally binding treaty, although some experts in the field are not convinced that compliance by member states will be achieved. Luis Yanes, a writer for *Opinio Juris*, believes that the draft treaty language repeats many of the mistakes associated with other human rights treaties, particularly the inability of its proposed moderating committee to reject incompatible states' reservations to the treaty.[169] He states that the "risk of noncompliance is ultimately unavoidable" given the current language of the Zero Draft, and that it is "essential that the treaty contains clear provisions that require state parties to incorporate into domestic law the set of rights and obligations enshrined in the instrument."[170] Additionally, Senior Legal Advisor at the International Commission of Jurists Carlos Lopez noted another limitation in the language of the Zero Draft: it does not grant personal jurisdiction to state parties' courts for business activities that only occur domestically.[171] He pos-

Session4/Pages/Session4.aspx [https://perma.cc/MM8F-28DD] [hereinafter Fourth Session].

167. Human Rights Council Res. 26/9, Elaboration of an international legally binding instrument on transnational corporations and other business enterprises with respect to human rights, 26th Sess., U.N. Doc. A/HRC/Res/26/9, at 2 (July 14, 2014) [hereinafter Human Rights Council Res. 26/9].

168. Fourth Session, *supra* note 166; Human Rights Council Res. 26/9, *supra* note 167.

169. Luis F. Yanes, *A Business and Human Rights Treaty: The Risks of Human Rights Counter-Diplomacy*, OPINIO JURIS (Sept. 8, 2018), https://opiniojuris.org/2018/08/09/a-business-and-human-rights-treaty-the-risks-of-human-rights-counter-diplomacy/ [https://perma.cc/H9GX-BPLE].

170. *Id.*

171. Carlos Lopez, *Towards an International Convention on Business and Human Rights (Part I)*, OPINIO JURIS (July 23, 2018), https://opiniojuris.org/2018/07/23/towards-an-international-convention-on-business-and-human-rights-part-i/ [https://perma.cc/9ACP-5GRF].

its that this jurisdictional discrepancy could lead to absurd judicial outcomes if violations that are punishable to transnational corporations are permissible to domestic companies.[172] A consideration of these two critiques should be factored into the next iteration of the Zero Draft, or into a draft of an artificial intelligence-specific treaty, to ensure that the mandate is complied with.

The scope of the Zero Draft suggests that this document could regulate transnational corporate use of artificial intelligence entirely: "[t]his Convention shall apply to human rights violations in the context of *any* business activities of a transnational character. This Convention shall cover *all* international human rights and those rights recognized under domestic law."[173] (emphasis added). However, Carlos Lopez opined that the language of Article 3(2) is unclear as to which rights are actually covered by the treaty, making it difficult for state parties to implement the provisions. Lopez's critique suggests that a separate and more specific treaty might be necessary to govern transnational corporate behavior with respect to artificial intelligence use, one that precisely outlines the international human rights that are at risk from such use (articulated in Part I).

Further, and in accordance with a suggestion discussed in Part III (f)(a) of this paper, the Zero Draft requires state parties ensure due diligence practices are adopted by transnational corporations.[174] The Zero Draft vests jurisdiction in state parties for claims to be brought in their courts where: "(a) such acts or omissions occurred or; (b) the Court of the State where the natural or legal person or association of natural or legal persons alleged to have committed the acts or omissions are domiciled."[175] Importantly, the Zero Draft also requires state parties to reciprocally recognize and enforce domestic judgments made pursuant to the Zero Draft in other state parties'

172. *Id*.

173. Open-Ended Intergovernmental Working Group On Transnational Corporations And Other Business Enterprises With Respect To Human Rights, *Legally Binding Instrument to Regulate, in International Human Rights Law, the Activities of Transnational Corporations and Other Business Enterprises Zero Draft* at 3 (July 7, 2018), https://www.ohchr.org/documents/hrbodies/hrcouncil/wgtranscorp/session3/draftlbi.pdf [https://perma.cc/J9C4-LPUM] (emphasis added).

174. *Id*. at 5, art. 9(1) ("State Parties shall ensure in their domestic legislation that all persons with business activities of transnational character within such State Parties' territory or otherwise under their jurisdiction or control shall undertake due diligence obligations throughout such business activities, taking into consideration the potential impact on human rights resulting from the size, nature, context of and risk associated with the business activities.").

175. *Id*. at 3.

courts.[176] This ensures that victims of human rights abuses caused by transnational corporations have a greater opportunity to have their remedies enforced.

The jurisdictional and judgment enforcement provisions described are particularly important when contemplating whether the Zero Draft, or a similar treaty, could regulate abuses caused by the transnational corporate use of artificial intelligence. Given that transnational corporations could deploy the technology from one country while the end-user sits in another, it is important to constrain jurisdiction to forums that the victims of artificial intelligence-caused human rights violations can reasonably litigate in.

Language in the Preamble of the Zero Draft provides a further foundation for what could become a treaty governing the use of artificial intelligence: "*[u]nderlining* that all business enterprises, regardless of their size, sector, operational context, ownership and structure shall respect all human rights, including by avoiding causing or contributing to adverse human rights impacts through their own activities and addressing such impacts when they occur."[177] Furthermore, language in Article 2 of the Zero Draft, in the statement of purpose, could also apply to regulation of artificial intelligence: "[t]o strengthen the respect, promotion, protection and fulfilment of human rights in the *context of business activities* of transnational character; [and] [t]o ensure an effective access to justice and remedy to *victims of human rights violations in the context of business activities* of transnational character, and to prevent the occurrence of such violations."[178] Article 9, which discusses measures to prevent human rights abuses caused by business activities, requires corporations to monitor the impact of their activities on human rights, identify the harms to human rights that their business activities may cause, prevent human rights violations, and periodically report on the environmental and human rights impacts of their business. All of these due diligence-based goals could be read to include activities related to the use of artificial intelligence in a corporation's goods, services, or oth-

176. *Id*. at 8, art. 11(9) ("Any judgement of a court having jurisdiction in accordance with this Convention which is enforceable in the State of origin of the judgement and is no longer subject to ordinary forms of review shall be recognized and enforced in any Party as soon as the formalities required in that Party have been completed, whereby formalities should not be more onerous and fees and charges should not be higher than those required for the enforcement of domestic judgments and shall not permit the re-opening of the merits of the case.").

177. *Id*. at 2.

178. *Id.* (emphasis added).

er business activities.

Importantly, language in Article 9 ensures that transnational corporations cannot conceal business activities through complicated corporate structures. Article 9(2)(c) states that a corporation must "[p]revent human rights violations within the context of its business activities, including the activities of its subsidiaries and that of entities under its direct or indirect control or directly linked to its operations, products or services, including through financial contribution where needed."[179] This language is particularly important in the context of activities related to artificial intelligence, because it might not always be the transnational corporation that initially developed the technology it is ultimately using as a good or service; it could have acquired or merged with a smaller startup that developed the product, or contracted a third party to create the technology.

2. The Global Network Initiative Guiding Principles

Separately, the Global Network Initiative (GNI), a U.S. registered non-profit comprised of academics, information communication technology (ICT) companies, investors and civil society organizations, has created a set of guiding principles on freedom of expression and privacy.[180] These are two internationally recognized human rights that could be subject to abuse by the use of artificial intelligence. Unlike the U.N.'s Zero Draft, the guiding principles would not be legally binding or enforceable; rather, they would serve as references for best practices in the industry.

The Preamble notes that these principles were created by a group of civil society organizations, academics, investors and companies, with the goal of protecting freedom of expression and privacy in the Information and Communications Technology global sector.[181] The Preamble further discusses the human rights framework and outlines the requirement that ICT companies respect "internationally

179. *Id*. at 5.

180. *About GNI*, GLOBAL NETWORK INITIATIVE, https://globalnetworkinitiative.org/about-gni/ [https://perma.cc/7V7L-3QMM] (last visited Jan. 15, 2019); *GNI Governance Charter*, GLOBAL NETWORK INITIATIVE, at 2, https://globalnetworkinitiative.org/governance-charter/ [https://perma.cc/9SWL-5NGZ] (last visited Jan. 15, 2019).

181. GLOBAL NETWORK INITIATIVE, GNI PRINCIPLES ON FREEDOM OF EXPRESSION AND PRIVACY 1 (2018), *available at* https://globalnetworkinitiative.org/wp-content/uploads/2018/04/GNI-Principles-on-Freedom-of-Expression-and-Privacy.pdf [https://perma.cc/49U2-DXGG].

recognized human rights, wherever they operate."[182] Importantly, the Principles are governed by the GNI Board's multi-stakeholder structure[183] to ensure accountability and transparency with respect to compliance with the Principles.[184] The GNI Board, in consultation with GNI staff and participating organizations, will determine GNI participants' compliance with the guiding principles through independent assessments of the implementation of the Principles.[185] If a consensus cannot be reached, compliance will be determined based on a vote of two thirds of the Board, and fifty percent of each of the four constituent groups: companies, NGOs, investors and academics.[186] The Governance Structure creates the Board, consisting of GNI participant companies, NGOs, investors and academics, who will meet at least three times per year.[187] The Board reserves the right to terminate a company's participation in the GNI for failure to comply with the Principles or to meet the reporting and evaluation requirements.[188] The assessment is done in two phases: "1. Self-reporting from the companies to GNI after one year of membership" and "2. An independent assessment of each company member held every two years covering both a process review and including the review of specific cases."[189] Transparency is maintained by requiring the companies to report the outcome of their independent assessments to the public every two years.[190] The Governance Charter fur-

182. *Id.* at 2; As previously noted, the rights implicated by artificial intelligence, including the right to freedom of expression and the right to privacy, are internationally recognized by the UNDHR and enforceable by the ICCPR and the ICESCR Optional Protocols.

183. *GNI Governance Charter*, *supra* note 180 ("Board Composition: There will be four constituency groups, one each for companies, NGOs, investors, and academics. Pursuant to the terms of the Voting Agreement of the GNI (the 'Voting Agreement'), the Board will be composed of up to ten representatives from participating companies, up to five representatives from participating non-governmental organizations (NGO), up to three representatives from participating investors (two of whom shall serve for the entire term of the Board and one of whom shall serve only for the first eighteen months of the term of the Board), up to three representatives from participating academic institutions (two of whom shall serve for the entire term of the Board and one of whom shall serve only for the second eighteen months of the term of the Board), and an independent Chair.").

184. GLOBAL NETWORK INITIATIVE, *supra* note 181, at 2.

185. *GNI Governance Charter*, *supra* note 180, at 8.

186. *Id*. at 5.

187. *Id*. at 4.

188. *Id*. at 8.

189. *Id*.

190. GLOBAL NETWORK INITIATIVE, IMPLEMENTATION GUIDELINES FOR THE PRINCIPLES

ther outlines the methods for selecting independent assessors, who carry out the assessments.[191] Finally, a third document outlines guidelines for companies to follow when implementing the GNI Principles.[192]

A treaty or a set of guiding principles for the use of artificial intelligence in products or services would need to be more comprehensive than the GNI Principles, in part due to the range of human rights that could be impacted by such use. It should incorporate the highlighted language and methods from both the GNI Principles and the Zero Draft.

Although the language in the Zero Draft is broad enough to regulate business activities using artificial intelligence, it might still be beneficial to create a separate and specific treaty for such use. The complexity of the technology suggests that specific guidelines might need to be articulated in a way that the Zero Draft could not capture. Rather, creating such guidelines would likely require the help of technical experts. The document could serve as an addendum to the Zero Draft and specify mechanisms for monitoring the use of artificial intelligence.

One of the limitations of creating a new treaty is that it would only be binding on states that ratified it and would not necessarily be binding on actual corporations. To circumvent this limitation, a new treaty could mandate that member states implement legislation that regulates transnational corporations' behavior with respect to the use of artificial intelligence. The Zero Draft has already incorporated such a mandate in Article 10: "State Parties shall ensure through their domestic law that natural and *legal persons* may be held criminally, civil[ly] or administratively liable for violations of human rights undertaken in the context of business activities of transnational character."[193]

ON FREEDOM OF EXPRESSION AND PRIVACY 14 (2018), *available at* https://globalnetworkinitiative.org/wp-content/uploads/2018/08/Implementation-Guidelines-for-the-GNI-Principles.pdf [https://perma.cc/NXE9-JEJ4].

191. *GNI Governance Charter*, *supra* note 180, at 9.

192. *GNI Implementation Guidelines*, GLOBAL NETWORK INITIATIVE, https://globalnetworkinitiative.org/implementation-guidelines/ [https://perma.cc/669D-NQP6] (last visited Jan. 15, 2019).

193. Open-Ended Intergovernmental Working Group On Transnational Corporations And Other Business Enterprises, *supra* note 173, at 6 (emphasis added).

3. Rejecting Robot Ethics and Rights

Several papers offer ideas for how to hold artificially intelligent machines and robots responsible for their actions; some even go so far as to suggest that robots should be deemed "alive."[194] One sub-branch of machine ethics posits that artificially intelligent machines should be granted rights in addition to responsibilities.[195] Researchers Liu and Zawieska, for example, argue for a human rights-based approach that places blame on the artificial intelligence, rather than on the human designers or the corporations.[196]

The primary reason for rejecting the direct imposition of responsibility onto the machines—a position with which this Note agrees—is that it provides impunity to the human developers, creators, and distributors of the technology.[197] Roman Yampolskiy rejects the concept of "robot rights," stating that because robots do not have the capacity to feel pain or suffering, they should not be deemed equal to humans with respect to the rights granted to these systems.[198] He makes the argument that imposing humanlike, ethical requirements on artificial intelligence would be harmful because humans make both moral and immoral decisions, which is not a quality that artificially intelligent machines should carry.[199]

Furthermore, in 2018, over 150 European political leaders, artificial intelligence researchers, industry leaders, mental health spe-

194. Hin-Yan Liu & Karolina Zawieska, *From Responsible Robotics Towards a Human Rights Regime Oriented to the Challenges of Robotics and Artificial Intelligence*, ETHICS & INFO. TECH., Nov. 2017, at 1, 2 (2017).

195. Roman V. Yampolskiy, *Artificial Intelligence Safety Engineering: Why Machine Ethics Is a Wrong Approach*, *in* PHILOSOPHY AND THEORY OF ARTIFICIAL INTELLIGENCE 389, 393 (Vincent C. Muller ed., 2013).

196. Liu & Zawieska, *supra* note 194, at 5 ("We propose instead to bolster the effort by devising a convergent human rights regime that is directed specifically against technological power, manifested in this case by robotics and AI, that can be asserted where situations fall into the responsibility gap. Building a complementary human rights regime holds forth the benefit of balancing responsibilities and calibrating capacities: unilateral thrusts of human responsibility behind robotic systems risk scapegoating human beings, or similarly exposes human beings as moral crumple zones where the human in a robotic system bears the brunt of responsibility for the failure of a broader system.") (internal citations omitted).

197. *Id*. at 3.

198. Yampolskiy, *supra* note 195, at 393.

199. *Id*. at 390 ("[H]uman-like performance means some immoral actions, which should not be acceptable from the machines we design. In other words, we don't need machines which are Full Ethical Agents debating about what is right and wrong, we need our machines to be inherently safe and law abiding.") (internal citations omitted).

cialists, and law and ethics experts signed a letter to the European Union to raise concerns about, and reject the idea of, providing legal status to robots.[200] The group believes that the justification for assigning such legal status is based on the "incorrect affirmation that damage liability would be impossible to prove" otherwise.[201] The authors of the letter bolster their argument by referencing Article 201 of UNESCO's Report of Comest on Robot Ethics, wherein it states: "[I]t is highly counterintuitive to call them 'persons' as long as they do not possess some additional qualities typically associated with human persons, such as freedom of will, intentionality, self-consciousness, moral agency or a sense of personal identity."[202] Given the general consensus among the communities involved in artificial intelligence development that robots should not be treated as persons under the eyes of the law, this Note rejects that approach for holding transnational corporations accountable for harmful uses of artificial intelligence.

4. An Artificial Intelligence Research Review Board and Due Diligence

Alternatively, Yampolskiy proposes a shift away from the philosophical discussion of "robot ethics" and a move towards what he calls "[Artificial Intelligence] Safety Engineering."[203] This model proposes scientifically designing and testing artificial intelligence systems that can safely self-improve many years after creation without the continued need for human interference to correct the path of the system.[204] The benefit of this approach, for the purpose of protecting human rights, is that the technology would not be continuously subject to human biases.

His suggestion would impose great responsibilities on transnational corporations. If corporations create their own technology, then his suggestion would require them to ensure that adequate system design and testing is done in-house; if not, then it would require

200. *Open Letter to the European Commission Artificial Intelligence And Robots*, (Apr. 5, 2018), at 2–3, https://g8fip1kplyr33r3krz5b97d1-wpengine.netdna-ssl.com/wp-content/uploads/2018/04/RoboticsOpenLetter.pdf [https://perma.cc/3VX5-W3HK].

201. *Id*. at 1.

202. *Id.* at 2; UNESCO, World Comm. on the Ethics of Scientific Knowledge and Technology (COMEST), Rep. of Comest on Robotics Ethics, U.N. Doc. SHS/COMEST-10/17/2 REV., at 46 (Sept. 14, 2017).

203. Yampolskiy, *supra* note 195, at 390–92.

204. *Id.* at 391.

these corporations to conduct thorough due diligence and to properly vet outside companies hired to develop its product. Due diligence should be a mandatory component for all transnational corporations prior to deploying artificially intelligent technology to prevent harms that it could cause to the end-users.

Further, Yampolskiy believes that certain types of artificial intelligence testing should be categorized as "unethical," particularly testing for what the industry calls "artificial general intelligence."[205] Artificial general intelligence occurs when machines are able to solve universal problems with recurrent self-improvement, as opposed to being limited to a specific range of tasks that classic artificial intelligence research is typically able to perform.[206] To hold companies accountable for the types of research conducted in this field, he suggests the creation of "[artificial intelligence] research review boards" composed of a team of experts to determine the nature of the proposed research and limit funding to projects that will remain within the classical, limited scope of artificial intelligence tasks.[207]

While this concept appears promising from the perspective of holding corporations accountable for the types of artificially intelligent systems they choose to develop, it becomes problematic when considering how to implement such a review board on the transnational scale. Yampolskiy envisioned the review board functioning similarly to the Institutional Review Board ("IRB"), an administrative body tasked with ensuring the protection of human test subjects for medical research.[208] However, IRBs are national in scope and only deal with medical research conducted within that specific country and are subject to funding from institutions based within that nation. The U.S. Department of Health & Human Services has published the "International Compilation of Human Research Standards,"[209] but there is no *international* review board tasked with monitoring compliance with the international standards outlined in that document.

Thus, in order for Yampolskiy's review board idea to function for the purposes of preventing "unethical" artificial intelligence research, an international team of experts would have to meet and re-

205. *Id.* at 392–93.

206. *Id.* at 392.

207. *Id.*

208. *Id.*

209. OFFICE FOR HUM. RES. PROTECTIONS, U.S. DEP'T OF HEALTH & HUMAN SERVS., INTERNATIONAL COMPILATION OF HUMAN RESEARCH STANDARDS (2019), *available at* https://www.hhs.gov/ohrp/international/compilation-human-research-standards/index.html [https://perma.cc/48NL-8EL5].

view research proposals based on the aforementioned standards. Alternatively, given that such a suggestion could become cumbersome to innovation and development, as well as difficult to enforce, national artificial intelligence review boards could be developed with a set of consistent standards to be used globally, to ensure that transnational corporations are subject to the same standards regardless of within which country they decide to conduct research and design. These international standards could be drafted by a multi-stakeholder group of companies, NGOs and civil society organizations, similar to the GNI Board and its participants, ensuring that a variety of perspectives contribute to the resulting best practices.

This proposal is in line with one devised by the Berkman Klein Center for Internet & Society at Harvard University, which suggests a due diligence-based approach to encouraging the developers and operators of artificial intelligence to "make available the training data and the outputs of their systems to external reviewers."[210] The Berkman Klein Center notes that many larger companies are starting to develop risk management systems for ensuring that proper due diligence is conducted throughout the lifecycle of artificial intelligence development and deployment.[211] However, the researchers identify three challenges to this approach: (1) the lower awareness emerging startups have of the corporate responsibility to conduct artificial intelligence due diligence; (2) the difficulty in determining the future real-world implications from the use of such technology; and (3) the difficulty in ascertaining what an effective remedy would be to a human rights violation caused by artificial intelligence use.[212] For a due diligence approach to work, awareness would need to be raised, particularly towards newer and smaller startups, on how to devise an effective risk management system.

CONCLUSION

Technology is advancing at a rate beyond what many of us can comprehend. While the potential of such advancements is exhilarating, it also comes with serious pitfalls regarding potential human rights abuses. The potential for abuse must be mitigated by rules and regulations. This Note suggests that there are multiple ways that the use of artificial intelligence by transnational corporations can be reg-

210. Raso et al., *supra* note 121, at 53.

211. *Id.*

212. *Id.* at 54–55.

ulated on a global scale, through existing U.N. policies, existing legislation and existing arbitration practices. It also posits that an international treaty can and should be adopted to regulate this technology through international law.

Two critical limitations exist with respect to determining the accountability of transnational corporations' use of artificial intelligence in a harmful way. First, that the scope of the real-world impact of the technology is not always known prior to the release of the technology, making it difficult to know exactly what to regulate. Second, effective remedies for possible harms caused by such technologies are difficult to measure. Future research on this topic should begin by addressing these two limitations to strengthen the international legal framework this Note proposes.

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