

REINVIGORATING THE HUMAN RIGHT TO TECHNOLOGY

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I. INTRODUCTION

The right to technology is a forgotten human right. Dating back to 1948, the right was established by the Universal Declaration of Human Rights (“UDHR”)¹ in response to the massive destruction wrought by technologically advanced weapons in the Second World War.² The UDHR states that “[e]veryone has the right . . . to share in scientific advancement and its benefits.”³ This human right embodies one of the most profound lessons the framers of the UDHR learned from the Second World War: Technology must benefit humanity rather than harm it.⁴

For the sake of brevity, this article refers to this human right as “the right to technology.”⁵ “Technology” captures the essence of both the UDHR’s phrasing (“scientific advancement and its benefits”) and the wording of International Covenant on Economic, Social and Cultural Rights (“ICESCR”), which refers to the right to “enjoy the benefits of scientific progress and its applications.”⁶ Both expressions refer to the practical use of scientific discoveries for different purposes,⁷ rather than the academic pro-

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1. G.A. Res. 217 (III) A, Universal Declaration of Human Rights, art. 26 (Dec. 10, 1948) [hereinafter “UDHR”].

2. See *infra* Part I.B.

3. UDHR, *supra* note 1, art. 27.

4. See *infra* Part I.B.

5. Some scholars term this human right “the right to enjoy the benefits of scientific progress and its application.” In my opinion, this name is too long. See, e.g., Audrey R. Chapman, *Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and Its Applications*, 8 J. HUM. RTS. 1, 4 (2009); William A. Schabas, *Study of the Right to Enjoy the Benefits of Scientific and Technological Progress and Its Applications*, in HUMAN RIGHTS IN EDUCATION, SCIENCE AND CULTURE: LEGAL DEVELOPMENTS AND CHALLENGES 273, 274 (Yvonne Donders & Vladimir Volodin eds., 2007).

6. International Covenant on Economic, Social and Cultural Rights [hereinafter ICESCR] art. 15.1(b), Dec. 16, 1966, S. Treaty Doc. No. 95-19, 993 U.N.T.S. 3, 6 I.L.M. 360 (1967).

7. See JOHANNES MORSINK, *THE UNIVERSAL DECLARATION OF HUMAN RIGHTS: ORIGINS, DRAFTING AND INTENT* 219 (1999) (reporting that delegates to the UDHR drafting

cess of scientific research that explores new knowledge. In other words, they manifest the utilitarian functions of technology, transforming the knowledge outputs of scientific research into products that solve problems and improve human life.⁸ From this perspective, phrasing the human right in question as “the right to science”⁹ is not appropriate because the word “science” itself only refers to academic research processes, not the practical application of their knowledge outputs.¹⁰

It has been more than seventy years since the adoption of the UDHR, and technology has become more important and integrated into our daily lives than ever before. In an age of technology, what human right could be more important than the right to technology? Yet this right remains obscure, dormant, and ineffective,¹¹ leading some to lament that it is a “sleeping beauty.”¹² No other human right has received such scant attention. Lacking institutional guardians or advocates, as this article will reveal, the right to technology has become an “orphan” in the international human rights system.¹³

Structurally, the right to technology does not fit well within the individual rights approach commonly applied to human rights law. This approach protects human rights on the basis of personal interests, without providing

meetings “stressed that the task of science was to work for the advancement of peaceful aims and to make human life better”).

8. ERIC SCHATZBERG, *TECHNOLOGY: CRITICAL HISTORY OF A CONCEPT 1* (2018) (“In many ways, technology has displaced science as the main concept for making sense of modern material culture, as seen in phrases such as ‘information, bio-, and nanotechnology.’”).

9. According to some scholars, article 27 of the UDHR recognizes the right to science. See, e.g., Lea Shaver, *The Right to Science and Culture*, 10 WIS. L. REV. 121, 124 (2010); Jessica M. Wyndham & Margaret Weigers Vitullo, *Define the Human Right to Science*, 362 SCIENCE 975 (2018).

10. See THOMAS KUHN, *THE STRUCTURE OF SCIENTIFIC REVOLUTIONS 37* (1970) (discussing why science is essentially non-utilitarian).

11. See, e.g., UNESCO, *THE RIGHT TO ENJOY THE BENEFITS OF SCIENTIFIC PROGRESS AND ITS APPLICATIONS 8* (2009), <https://unesdoc.unesco.org/ark:/48223/pf0000185558> (concluding that “there is still a lack of clarity in regard to the normative content of [the right to technology] and the relevant State obligations”); Jessica M. Wyndham & Margaret Weigers Vitullo, *Why the Right to Science Matters for Everyone*, OPENDEMOCRACY (Apr. 20, 2017), <https://www.opendemocracy.net/jessica-m-wyndham-margaret-weigers-vitullo/why-right-to-science-matters-for-everyone> (“Although nearly 70 years have passed since this right to science was first [*sic*], the implications of the right and its meaning for individuals and governments have never been fully articulated.”).

12. See, e.g., Eibe Riedel, *Sleeping Beauty or Let Sleeping Dogs Lie? The Right of Everyone to Enjoy the Benefits of Scientific Progress and Its Applications (REBSPA)*, in 1 COEXISTENCE, COOPERATION AND SOLIDARITY 503 (Holger P. Hestermeyer et al. eds., 2012). Regarding the “sleeping beauty” analogy, Riedel explains that “[t]ucked away at the end of the [ICESCR], [the right to technology] has rarely received the full attention it deserves; [state parties to the ICESCR] simply have not referred to it, and Committee members have not dwelt on it . . .” *Id.* at 504.

13. See *infra* Part II.A.

broader distributive justice for the collective interests of all humankind.¹⁴ Unable to disentangle itself from this conventional system, the right to technology has suffered from obscurity and lack of definition, the ineffective human rights enforcement system, and the international community's over-emphasis on intellectual property ("IP") protection.¹⁵

Against this backdrop, this article argues that a new understanding of the right to technology as a collective right is needed to address the issues that have caused it to languish under the existing human rights regime. To this end, the article considers how and why the right to technology should be redefined as a collective right that entitles people to enjoy the benefits of technological progress and minimizes the harms that such progress may cause. The collective right to technology would embrace distributive justice agendas by protecting the larger societal interests in public freedom and dignity, while guarding specific groups against the prejudicial use of technologies.¹⁶ Furthermore, this article applies these distributive justice agendas to IP protection, which regulates distribution of technological benefits more than any other area of law.¹⁷ From this perspective, effective recognition of the collective right to technology in IP law carries profound implications for the realization of other relevant human rights, including those pertaining to health, food, education, and free speech.¹⁸

The collective rights approach, as this article will demonstrate, makes two original contributions to the existing academic literature and to contemporary policy discourse on human rights, technology, and the public interest. First, it reinvigorates the right to technology. The very small number of scholars and policymakers that have discussed the status of this human right

14. See *infra* Part II.C.

15. See *infra* Part II.B.

16. See *infra* Part III.B–C.

17. See *infra* Part III.D. For a discussion about the relationship between IP and human rights protection, see, e.g., LAURENCE R. HELFER & GRAEME W. AUSTIN, HUMAN RIGHTS AND INTELLECTUAL PROPERTY: MAPPING THE GLOBAL INTERFACE 31–61 (2011); MADHAVI SUNDER, FROM GOODS TO A GOOD LIFE: INTELLECTUAL PROPERTY AND GLOBAL JUSTICE 16 (2012) (arguing that "IP laws affect . . . distributive justice, and global social relations"); Kal Raustiala, *Density and Conflict in International Intellectual Property Law*, 40 U.C. DAVIS L. REV. 1021, 1038 (2007) ("Given the pernicious effects of overly robust IP protection on many individuals and societies around the world, the combination of IP and human rights may produce many beneficial effects."); Peter K. Yu, *Reconceptualizing Intellectual Property Interests in a Human Rights Framework*, 40 U.C. DAVIS L. REV. 1039, 1149 (2007) ("With the continuous expansion of intellectual property rights, there is a growing need to develop a human rights framework for intellectual property.")

18. See Farida Shaheed (Special Rapporteur), *Report of the Special Rapporteur in the Field of Cultural Rights: The Right to Enjoy the Benefits of Scientific Progress and Its Applications* [hereinafter *Report of the Special Rapporteur*], at 16–23, U.N. Doc. A/HRC/20/26 (May 14, 2012) (discussing the relationship between the right to technology and the realization of other relevant human rights); Molly Land, *Toward an International Law of the Internet*, 54 HARV. INT'L L.J. 393, 420 (2013) (arguing that article 19 of the ICESCR guarantees a right to the technologies of connection in order to promote freedom of expression).

lament its ineffectiveness.¹⁹ Some have relied on a top-down approach to revival of this human right, asserting that the UN and relevant international organizations should take proactive measures to protect it, mainly by elucidating its nature and scope as well as clarifying and enforcing states' obligations to safeguard it.²⁰

While recognizing the importance of buy-in from international organizations, this article suggests a bottom-up approach to reinvigorate the right to technology through domestic courts. By redefining the right to technology as a collective right, this article aims not only to raise awareness of the public's collective interest in technology but also to mobilize individual members of the public to take legal action to assert their interests through civil rights litigation before domestic courts.²¹ Increased adjudication of such disputes will shed light on the nature and scope of the right to technology, gradually alleviating its ambiguities.

Second, this article argues that protecting the right to technology as a collective right would serve as a powerful catalyst for new distributive justice agendas concerning the distribution of technological benefits in the global human rights system. Distributive justice is considered a cornerstone of human rights protection.²² Indeed, Professor Samuel Moyn has conducted groundbreaking historical research on how the lack of a full-fledged distributive justice principle in international treatymaking has led to severely inad-

19. See *supra* notes 11–12.

20. See, e.g., Chapman, *supra* note 5, at 30–31 (“[F]ull human rights status involves more than inclusion in international human rights instruments—although that is an important starting point. I suggest there are two other preconditions: the ability to set forth the scope of obligations to states and other actors and the capacity of states at all levels of development to take steps, individually and through international assistance and cooperation, to progressively achieve the full realization of the right.”); Samantha Besson, *Science Without Borders and the Boundaries of Human Rights: Who Owes the Human Right to Science?*, 4 EUR. J. HUMAN RTS. 462, 478 (2015) (arguing that “unlike most other human rights duties, the duties arising out of the right to science are collective duties, i.e. duties States and international institutions of jurisdiction bear together and not only concurrently, albeit for every State or institution only to the respective right-holders situated under their jurisdiction”); Lea Shaver, *The Right to Science and Culture*, WIS. L. REV. 121, 128 (2010) (exploring “what [the] reconstructed conception of the right to science and culture might mean in terms of concrete duties upon States parties to the human rights treaties”); *Report of the Special Rapporteur*, *supra* note 18, at 19–22 (recommending state obligations to protect the right to technology, mechanisms to “enhance the conceptual clarity of” this right, and guidelines on the protection of this right, mainly through the “United Nations human rights” apparatus).

21. For the success of applying the bottom-up approach to mobilize the public to defend access to knowledge, see Amy Kapczynski, *The Access to Knowledge Mobilization and the New Politics of Intellectual Property*, 117 YALE L. J. 804 (2008).

22. See, e.g., THOMAS W. POGGE, WORLD POVERTY AND HUMAN RIGHTS 50 (2002) (“A complex and internationally acceptable core criterion of basic justice might best be formulated . . . in the language of human rights. . . .”); Samuel Freeman, *The Law of Peoples, Social Cooperation, Human Rights, and Distributive Justice*, 23 SOC. PHIL. & POL’Y 29, 33 (2006).

equate protection of human rights.²³ The global human rights system badly needs theoretically sound principles of distributive justice and practical, constructive paths toward their substantive attainment.²⁴

This article seeks to elevate the aim of distributive justice, demonstrating—through the lens of the enjoyment of technological benefits—that it can and should be part of a core agenda for reshaping the international human rights regime.²⁵ By structurally transforming the right to technology into a collective right, this article intends to reshape this right into an essential vehicle for facilitating distributive justice through the promotion of technological benefits and the mitigation of injustices caused by technological development.

Uneven technological development is a pressing issue confronting every country,²⁶ as rapid advances in technology have widened the wealth gap.²⁷ Recent studies show that even in the United States, a technologically advanced country, access to technology has become a determining factor in the knowledge divide between rich and poor youths.²⁸ It is time to decide

23. SAMUEL MOYN, *NOT ENOUGH: HUMAN RIGHTS IN AN UNEQUAL WORLD 2* (2018) (“The age of human rights has not been kind to full-fledged distributive justice, because it is also an age of the victory of the rich.”).

24. At the end of his book, Professor Moyn laments that “[t]o date, a global welfare structure has only been imagined but never institutionalized. Our job is, therefore, not an easy one. Indeed, it is daunting in the extreme.” *Id.* at 220.

25. Professor Ruth Okediji has urged a more robust agenda for reforming the current human rights system based on the notion of distributive justice. Ruth L. Okediji, *Does Intellectual Property Need Human Rights?*, 51 N.Y.U. J. INT’L L. & POL. 1, 10 (2018) (arguing that “the current narrow construction of the IP/human rights interface provides reprieve from the grander, more contested, distributive justice-oriented vision of human progress and flourishing embodied in the economic, social, and cultural rights”).

26. See Sonia K. Katyal, *Technoheritage*, 105 CAL. L. REV. 1111, 1114 (2017) (arguing that information technologies such as 3-D printing pose “distributive and social justice questions”); Molly K. Land & Jay D. Aronson, *The Promise and Peril of Human Rights Technology*, in *NEW TECHNOLOGIES FOR HUMAN RIGHTS LAW AND PRACTICE 6–7* (Molly K. Land & Jay D. Aronson eds., 2018) (suggesting consideration of “the relationship between technology and power, and the effect of this relationship on the achievement of social justice and human rights”); Haochen Sun, *Can Louis Vuitton Dance with Hiphone? Rethinking the Idea of Social Justice in Intellectual Property Law*, 15 U. PA. J.L. & SOC. CHANGE 389, 409 (2012) (“Despite a series of breakthroughs in areas such as information technology and biological research, the past few decades have witnessed a deeply uneven distribution of the benefits from such development. The protection of the right to share in the benefits from technological developments has achieved little progress.”).

27. See, e.g., VIRGINIA EUBANKS, *AUTOMATING INEQUALITY: HOW HIGH-TECH TOOLS PROFILE, POLICE, AND PUNISH THE POOR* 38 (2018); CATHY O’NEIL, *WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY* 105–22 (2016); Cynthia L. Estlund, *What Should We Do After Work? Automation and Employment Law*, 128 YALE L.J. 254, 262 (2018).

28. Meghan Murphy, *Technology as a Basic Need: The Impact of the Access Gap in Poverty*, 1776 (Apr. 2, 2015), <https://www.1776.vc/insights/technology-as-a-basic-need-the-impact-of-the-access-gap-in-poverty>.

whether the general public or a small group of elites has the final say over how the benefits of technological progress are distributed. Moreover, it is urgent that we deal with the new forms of racial and gender discrimination facilitated by new technologies across the globe.²⁹

This article proceeds as follows: Part I surveys the historical background to, and creation of, the right to technology. Part II examines how and why this right has become an orphan in the global human rights system. Part III presents the collective rights approach to reinvigorate the right to technology. By promoting distributive justice in the enjoyment of technological benefits, this approach would facilitate the adoption of the right to technology as a civil liberty within domestic legal systems and allow domestic courts to apply IP law in the public interest.

II. CHARTING THE ORIGINS OF THE RIGHT TO TECHNOLOGY

In this part, I review the process through which international treaties have recognized the right to technology. I show that this recognition embodies one of the most profound lessons of the Second World War: Technology must be utilized for the benefit of humankind.

A. *Technology's Egregious Effects on the Second World War*

The Second Industrial Revolution, spanning the later part of the nineteenth century into the early twentieth, represented a massive technological and social shift that boosted the efficiency of both industry and ordinary households to a tremendous degree.³⁰ More efficient production facilities resulted in mass production,³¹ while improved availability and affordability of common household goods enhanced the quality of life and productivity of the average citizen.³² Improved steel production led to massively expanded railway networks and increased mobility,³³ electricity and associated technologies (such as light bulbs and telephones) enhanced communications

29. Sharkey, *supra* note 26 (“It is people with darker shades of skin and women who suffer most prejudice from a technology that is not fit for purpose.”).

30. See generally Joel Mokyr, *The Second Industrial Revolution, 1870–1914*, in *STORIA DELL'ECONOMIA MONDIALE* (Valerio Castronovo ed., 1998).

31. Eric Niiler, *How the Second Industrial Revolution Changed Americans' Lives*, HISTORY.COM (Jan. 25, 2019), <https://www.history.com/news/second-industrial-revolution-advances>.

32. See Skylar Harris, *Domestic System*, in *ENCYCLOPEDIA OF THE INDUSTRIAL REVOLUTION IN WORLD HISTORY* 268, 269 (Kenneth E. Hendrickson III ed., 2014).

33. See Justin Corfield, *Musket, Robert Forester (1811–1891)*, in *ENCYCLOPEDIA OF THE INDUSTRIAL REVOLUTION IN WORLD HISTORY*, *supra* note 32 at 654.

and expanded working hours,³⁴ and internal combustion engines revolutionized transportation.³⁵

At the same time, these advancements contributed to the most calamitous damage to people and property that the world had ever seen. Combatants in the Second World War deployed devastating new weapons that resulted in sixty million deaths and unprecedented property damage.³⁶ Chemical agents used by the Japanese army³⁷ and the atomic bomb dropped by the United States³⁸ resulted in massive suffering, loss of life, and the leveling of two cities. Both Nazi German and Japanese armies wielded new technologies to perpetrate massacres on a scale hitherto unseen; the Holocaust and the Nanjing massacre are among the most atrocious crimes committed against humanity in modern history.³⁹ Nazi scientists and Japanese Unit 731 conducted experiments on live human subjects to test new inventions.⁴⁰

B. *The Birth of the Right to Technology*

The trauma of the Second World War prompted the United Nations to tackle the double-edged sword of technological advancement. The UN Commission on Human Rights decided that advanced technologies were better deployed in the service of human rights,⁴¹ and in 1948, when the UN General Assembly adopted the Universal Declaration of Human Rights, it recognized a right to technology as a denunciation of the “barbarous acts which have outraged the conscience of mankind.”⁴² As a result, the first part

34. See Kenneth E. Hendrickson Jr., *Electricity*, in *ENCYCLOPEDIA OF THE INDUSTRIAL REVOLUTION IN WORLD HISTORY*, *supra* note 32, at 293.

35. See Justin Corfield, *Internal Combustion Engine*, in *ENCYCLOPEDIA OF THE INDUSTRIAL REVOLUTION IN WORLD HISTORY*, *supra* note 32, at 473.

36. Iris Kesternich et al., *The Effects of World War II on Economic and Health Outcomes Across Europe*, 96 *REV. ECON. STAT.* 103, 103–18 (2014); ANTONY BEEVOR, *THE SECOND WORLD WAR I* (2012); Antony Beevor, *World War II*, *HISTORY.COM* (OCT. 29, 2009), <https://www.history.com/topics/world-war-ii/world-war-ii-history>; NATIONAL WWII MUSEUM, *Research Starters: Worldwide Deaths in World War II*, <https://www.nationalww2museum.org/students-teachers/student-resources/research-starters/research-starters-worldwide-deaths-world-war> (last visited Apr. 26, 2020); UNITED STATES HISTORY, *World War II*, <https://www.u-s-history.com/pages/h1661.html> (last visited Dec. 1, 2019).

37. JON AGAR, *SCIENCE IN THE 20TH CENTURY AND BEYOND* 281 (2013).

38. *HISTORY.COM*, *Bombing of Hiroshima and Nagasaki* (Nov. 18, 2009), <https://www.history.com/topics/world-war-ii/bombing-of-hiroshima-and-nagasaki>.

39. RICHARD CLAUDE, *SCIENCE IN THE SERVICE OF HUMAN RIGHTS* 16–17 (2002).

40. Gerhard Baader et al., *Pathways to Human Experimentation, 1933–1945: Germany, Japan, and the United States*, 20 *OSIRIS* 205, 223 (2005).

41. MORSINK, *supra* note 7, at 217.

42. UDHR, *supra* note 1, pmbl.

of article 27 of the UDHR states that “[e]veryone has the right . . . to share in scientific advancement and its benefits.”⁴³

The framers of the UDHR promoted the egalitarian ethos that technologies should be used for the common good of humanity, and embraced the right to technology as a means of promoting universal access to the benefits accruing from technological progress.⁴⁴ Eleanor Roosevelt, who served as Chairperson of the UN Commission on Human Rights from 1946 to 1951, explained at the meeting on the first draft of the UDHR that by recognizing the right to technology the Commission intended to “stress the universality” of the benefits of scientific advancement.⁴⁵ Similarly, Alexei Pavlov, the Commission’s Soviet delegate, stated that “the benefits of science were not the property of a chosen few, but the heritage of mankind.”⁴⁶

At a later stage of the meetings, the draft wording of the UDHR was altered slightly, with the phrase “and its benefits” dropped. Hence, in that draft, instead of a right “to share in scientific advancement and its benefits,” all that was promised was a right to “share in scientific advancement.”⁴⁷ However, when the draft UDHR proceeded to the UN General Assembly for discussion, delegates made efforts to restore access to “benefits” on the grounds that “not everyone was sufficiently gifted to play a part in scientific advancement.”⁴⁸ René Cassin, who won the 1968 Nobel Peace Prize for his contribution to the Declaration of Human Rights,⁴⁹ firmly supported the restoration of “benefits.” In his opinion, although it was impossible to achieve equal participation in technological progress, everyone should still receive the benefits of such progress.⁵⁰

43. *Id.* art. 27; see MORSINK, *supra* note 7, at 217 (pointing out that the UDHR “had almost no clear constitutional precedents” for the right to technology). The right to technology took root beyond the UDHR, too. Article 13(1) of the American Declaration of the Rights and Duties of Man, adopted in May 1948, states: “Every person has the right to take part in the cultural life of the community, to enjoy the arts, and to participate in the benefits that result from intellectual progress, especially scientific discoveries.” Organization of American States, American Declaration of the Rights and Duties of Man, May 2, 1948, O.A.S. Res. 30, O.A.S. Doc. OENSer.UV/I.4, rev. (1965).

44. *Report of the Special Rapporteur*, *supra* note 18 (“The preparatory work on the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights reflected the intention of the drafters to include a provision promoting universal access to science and culture.”).

45. Comm. on Human Rights, Working Group on the Declaration of Human Rights, 2nd Sess., *Summary Record of the Ninth Meeting*, at 3, U.N. Doc. E/CN.4/AC.2/SR.9 (Dec. 10, 1947).

46. MORSINK, *supra* note 7, at 219.

47. *Id.*

48. *Id.*

49. NOBEL PRIZE, *René Cassin—Facts*, <https://www.nobelprize.org/prizes/peace/1968/cassin/facts> (last visited Feb. 15, 2019).

50. MORSINK, *supra* note 7, at 219 (quoting Cassin, who said “even if all persons could not play an equal part in scientific progress, they should indisputably be able to participate in the benefits derived from it”).

In 1966, the UN General Assembly adopted the International Covenant on Economic, Social and Cultural Rights. Article 15 of the ICESCR also recognizes the right to technology, entitling everyone to “enjoy the benefits of scientific progress and its applications.”⁵¹ The ICESCR further stipulates three obligations that accompany that right: (1) to promote the conservation, development, and diffusion of science and culture; (2) to respect the freedom that is indispensable for scientific research and creative activity; and (3) to recognize the benefits that can be derived from the encouragement and development of international contacts and cooperation in the scientific and cultural fields.⁵²

The addition of a right to technology in the ICESCR promoted the ethos of the UDHR in two major ways. First, it gave a more positive connotation to the right to technology. Notice that where the UDHR refers to a right to “share” in the benefits of technological progress, the ICESCR refers to a right to “enjoy” such benefits, implying that everyone has a right to partake of the benefits of technology.⁵³

Second, the ICESCR further elevated the egalitarian ethos of the right to technology, as expressed by the delegates involved in the UDHR’s formation, within the UN and its agencies. During the ICESCR’s drafting process, the UN Educational, Scientific and Cultural Organization (“UNESCO”) proposed a definition of the right to technology, envisioning it as “the determining factor for the exercise by mankind as a whole of many other rights.”⁵⁴ After the ICESCR was drafted, but before its adoption, the UN passed a resolution setting out the principles and agenda for achieving global social progress and development consistent with the ICESCR, emphasizing the role that technology can play in “meeting the needs common to all humanity.”⁵⁵

III. THE ORPHANING OF THE RIGHT TO TECHNOLOGY

Despite the profound lessons learned from the Second World War and the international community’s corresponding attempts to enshrine those lessons in the UDHR and ICESCR, the right to technology has ultimately been orphaned by the contemporary human rights regime. As I will show in this part, three major factors have led to this conundrum: the inherent obscurity of the right to technology, the ineffective human rights enforcement system,

51. ICESCR, *supra* note 6, art. 15.1(b).

52. *Id.* art. 15.

53. See BEN SAUL ET AL., THE INTERNATIONAL COVENANT ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS: COMMENTARY, CASES, AND MATERIALS 1218 (2014).

54. Maria Green, *Drafting History of the Article 15(1)(c) of the International Covenant on Economic, Social and Cultural Rights*, at 7, UN Doc. E/C.12/2000/15 (Oct. 9, 2000).

55. G.A. Res. 2542, Declaration on Social Progress and Development, pmbl. (Dec. 11, 1969).

and the international community's overemphasis on intellectual property rights.

A. *How the Right Was Orphaned*

Though the UDHR and ICESCR wholeheartedly support the right to technology on paper, neither provides for any specific organization that could pursue effective strategies to enforce the right in action.⁵⁶ Such institutional support is necessary to provide the concrete guidance and constructive standards for protecting this right domestically and internationally.

Additionally, many of the international organizations that could have assumed a guardianship role have simply overlooked this right. For example, UNESCO, founded in 1946, has among its key missions both promoting human rights and encouraging scientific collaboration.⁵⁷ However, after submitting its proposal for the definition of a right to technology to the ICESCR's drafting committee in 1951, UNESCO did not set up any schemes dedicated exclusively to protecting the right to technology until 2009,⁵⁸ when its Expert Committee adopted the Venice Statement on the Right to Enjoy the Benefits of Scientific Progress and Its Applications (the "Venice Statement").⁵⁹

The UN Human Rights Council ("UNHCR") initiated no protection for the right to technology until 2012, when it appointed a Special Rapporteur in the Field of Cultural Rights.⁶⁰ The Special Rapporteur later submitted one report on the nature of the right to technology⁶¹ and two reports on the right's relationship with copyright and patents, respectively.⁶² Since then,

56. See UNESCO, THE RIGHT TO ENJOY THE BENEFITS OF SCIENTIFIC PROGRESS AND ITS APPLICATIONS, *supra* note 11, at 7 (pointing out that the right to technology is ineffective "due to the bland wording of Article 15(1)(b) ICESCR and to the lack of Committee practice in dealing with this right"); Peter K. Yu, *Intellectual Property and Human Rights 2.0*, 53 U. RICH. L. REV. 1375, 1392 (2019) (pointing out that "the only portion of Article 15(1) that the [ICESCR] has not yet interpreted is the one concerning 'the right . . . [t]o enjoy the benefits of scientific progress and its applications'").

57. UNESCO CONST. art 1.1 ("The purpose of the Organization is to contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the *human rights* and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations.") (emphasis added).

58. CLAUDE, *supra* note 39, at 50.

59. UNESCO, *The Right to Enjoy the Benefits of Scientific Progress and Its Applications* [hereinafter Venice Statement], U.N. Doc. SHS/RSP/HRS-GED/2009/PI/H/1 (July 17, 2009).

60. Human Rights Council Res. 19/6, U.N. Doc. A/HRC/19/L.18 (Apr. 3, 2012).

61. *Report of the Special Rapporteur*, *supra* note 18, at 6.

62. See Farida Shaheed (Special Rapporteur), *Report of the Special Rapporteur in the Field of Cultural Rights: Copyright Policy and the Right to Science and Culture*, U.N. Doc. A/HRC/28/57 (Dec. 24, 2014); Farida Shaheed (Special Rapporteur), *Report of the Special*

the UNHCR has adopted no further resolutions responding to the reports or considering other issues that go beyond copyright and patents. The UNHCR still holds the view that the right to technology is a “largely neglected” human right.⁶³

In addition to the Venice Statement, other statements and reports such as the American Association for the Advancement of Science’s Statement on the Human Right to the Benefits of Scientific Progress have been issued.⁶⁴ However, statements and reports of this kind have only a very limited effect in practice. They are neither legally binding on any parties nor do they exert any effective influence on the policymaking process at the international and national levels.⁶⁵

Worse still, even in the face of humanitarian crises, the right to technology has not been directly invoked to protect those affected. When HIV epidemics and famines have occurred in Africa in the past, the international community has called for concerted efforts to protect the rights of those affected to health and food.⁶⁶ Yet few human rights scholars, activists, or organizations have ever considered the role that the right to technology could have played in providing advanced HIV medicine or food technologies.⁶⁷ As

Rapporteur in the Field of Cultural Rights: Patent Policy and the Right to Science and Culture, U.N. Doc. A/70/279 (Aug. 4, 2015).

63. United Nations High Commissioner for Human Rights, *Report on the Seminar on the Right to Enjoy the Benefits of Scientific Progress and its Applications* 13, A/HRC/26/19 (2014) (“The right to enjoy the benefits of scientific progress is a largely neglected right despite its importance for the enjoyment of other human rights and fundamental freedoms in the modern world.”).

64. AAAS, *Statement of the Board of Directors of the American Association for the Advancement of Science on the Human Rights to the Benefits of Scientific Progress* (Apr. 16, 2010), https://www.aaas.org/sites/default/files/Article15_AAASBoardStatement.pdf.

65. See Shaver, *supra* note 9, at 168 (pointing out that “the Venice Statement stop[s] short of offering specific advice on whether—and how—intellectual property should be reformed to respect the right to science and culture”); HELFER & AUSTIN, *supra* note 17, at 238 (arguing that “the Venice Statement offers no concrete guidance as to how the tensions are to be negotiated in the contemporary realpolitik of international and domestic legal regimes”).

66. World Trade Organization, Declaration on the TRIPS Agreement and Public Health of 14 November 2001, ¶ 4, WTO Doc. WT/MIN(01)/DEC/2, 41 I.L.M. 755; UN HUMAN RIGHTS OFFICE OF THE HIGH COMMISSIONER, *States Must Act Now to Fulfil Famine Victims’ Right to Food—UN Expert* (Oct. 23, 2017), <https://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=22278&LangID=E>.

67. It was not until recently that a few expert reports and research papers began to briefly examine the relationship between the right to technology and the treatment of HIV. See African Commission on Human and Peoples’ Rights, *HIV, the Law and Human Rights in the African Human Rights System: Key Challenges and Opportunities for Rights-Based Responses to HIV* 49 (2019) (“The right to enjoy the benefits of scientific progress in relation to medicine and health is closely related to the right to health and the right to quality healthcare treatment. In the context of HIV, this right and its applications are important because of advances regarding testing and treatment.”); Jamie Enoch & Peter Piot, *Human Rights in the Fourth Decade of the HIV/AIDS Response: An Inspiring Legacy and Urgent Imperative*, 19 HEALTH & HUM. RTS. J. 117, 120 (2017) (“Russia has a legal ban on opioid substitution ther-

a result, no criticism has been levelled against the neglect of the right to technology, which entitles all people—not just a privileged few—to share in the technological benefits of new medicine and methods of food production. While there is a 2016 UN report acknowledging the dual importance of the right to technology for public access to health technologies alongside the right to health, the report barely mentions the existence of the right to technology and does not consider how to protect this right.⁶⁸ Instead, it only evaluates problems in the context of the right to health, and suggests solutions tailor-made for the protection of this right.⁶⁹

International organizations have also been ineffective stewards of the right to technology in other areas. Given that the right to technology is supposed to entitle everyone to the benefits of technological advancement, it seems to follow that everyone is entitled to the benefits of advances in digital technology, including access to and the use of digital libraries. However, no legal expert or human rights organization has yet asserted that the right to technology has any role to play in resolving the legal dilemma surrounding the digital library initiative.

In particular, while digital libraries have immense technological potential, the international community has kept silent on people's right to enjoy the benefits of technology through digital libraries. Ostensibly, the creation of such libraries should benefit everyone by providing more convenient and affordable means of disseminating and accessing information and knowledge. However, the international community has largely grounded discussions of digital libraries in terms of access-limiting intellectual property,⁷⁰ without any consideration of the access-expanding role the right to technology should have.

apy, despite its well-evidenced effectiveness for managing dependency and preventing HIV. Thus, the ban arguably contravenes article 12 (on the right to enjoy the highest standard of health) and article 15 (on the right to enjoy the benefits of scientific progress) of the International Covenant on Economic, Social and Cultural Rights, despite Russia being a party to the convention.”).

68. *Report of the United Nations Secretary-General's High-Level Panel on Access to Medicines: Promoting Innovation and Access to Health Technologies* 12 & 20 (2016) (mentioning the right to technology two times by stating that “Sustainable Development Goal (SDG) 3 . . . is an important vehicle for realizing the right to health and the right to share in the benefits of scientific advancements” and “[t]he right to health and the right to benefit from scientific progress were articulated in the Universal Declaration of Human Rights”).

69. *See, e.g., id.* at 7 (“Policies and agreements related to human rights, trade, intellectual property rights and public health were developed with different objectives at different times. State obligations include duties not only to respect, but to protect and fulfil the right to health.”).

70. U.S. courts upheld the legality of the Google Books library, allowing users to make full-text searches of the copyrighted books that Google has scanned and to subsequently enjoy snippet views of those books. However, Chinese courts ruled that Google Books violated Chinese copyright law, and a French court held Google liable for violating French copyright law. *See Haochen Sun, Copyright Law as an Engine of Public Interest Protection*, 16 NW. J. TECH. & INTELL. PROP. 123, 186 (2019).

The Manifesto for Digital Libraries epitomizes the global silence on the relevance of the right to technology. Drafted by the International Federation of Library Associations and Institutions (“IFLA”), the Manifesto presents the digital library initiative as an important step toward realizing the UN’s Millennium Development Goals.⁷¹ However, though the Manifesto is expressly based on a human rights approach, it makes no reference to the right to technology. Although that omission can be taken as inadvertent given that IFLA is merely a professional association, it seems less excusable that the Manifesto was later endorsed by UNESCO, an organization that protects the right to technology as part of its “direct competence.”⁷² Nonetheless, UNESCO merely recognized the potential role of digital libraries in disseminating information and knowledge and narrowing the digital divide, and it did not invoke the right to technology.⁷³ No governments, organizations, or activists to date have advocated for digital libraries in the service of the right to technology. Academics and policymakers have only considered how digital libraries can promote education⁷⁴ and freedom of expression,⁷⁵ both of which are human rights in themselves. This global silence again demonstrates the urgency of addressing global inaction if the right to technology is to be effective.

B. *Why the Right Was Orphaned*

Why has the right to technology proved so ineffective? One answer is that international organizations, national governments, and technology cor-

71. INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS, *IFLA/UNESCO Manifesto for Digital Libraries* (July 13, 2018), <https://www.ifla.org/publications/iflaunesco-manifesto-for-digital-libraries> (“Bridging the digital divide is a key factor in achieving the Millennium Development Goals of the United Nations. Access to information resources and the means of communication supports health and education as much as cultural and economic development.”).

72. UNESCO, *UNESCO and the Universal Declaration on Human Rights*, <https://en.unesco.org/udhr> (last visited Dec. 1, 2019).

73. UNESCO General Conference, Digital Library Manifesto of the International Federation of Library Associations and Institutions [IFLA], ¶ 7.3, U.N. Doc. 36 C/20 (Oct. 6, 2011) (recognizing “that information is critical to the attainment of agreed international development goals and convinced of the pivotal contribution that libraries provide for bridging the existing information and digital divides”).

74. See SUSAN PERRY & CLAUDIA RODA, HUMAN RIGHTS AND DIGITAL TECHNOLOGY: DIGITAL TIGHTROPE 163 (2017).

75. See Matthew Rimmer, *The Foxfire of Fair Use: The Google Books Litigation and the Future of Copyright Laws*, in OXFORD RESEARCH ENCYCLOPEDIA OF COMMUNICATION (2017), <https://ssrn.com/abstract=2807745> (“The ruling of Leval J [in the Google Library case] emphasizes [that] the defence of fair use in the United States plays a critical role in promoting transformative creativity, freedom of speech, and innovation.”); Eric Goldman, *Why Google’s Fair Use Victory In Google Books Suit Is A Big Deal—And Why It Isn’t*, FORBES (Nov. 14, 2013), <https://www.forbes.com/sites/ericgoldman/2013/11/14/why-googles-fair-use-victory-in-google-books-suit-is-a-big-deal-and-why-it-isnt> (“Google Books is great. . . . Our lives are better when we can easily search and find the full range of human expression.”).

porations do not take the right seriously, nor does its designated beneficiary, the global public. I argue in this section that the right to technology has failed to take effect because of its obscurity, the innate weakness of the human rights system, and the international community's overemphasis on IP protection.

1. Obscurity of the Right to Technology

The right to technology is arguably the most obscure of all human rights,⁷⁶ with the result that it is severely underapplied in practice. One hindrance to the right's full application appears to be how to properly define such abstract terms as "scientific progress" and "the benefits" of that progress. Given that these terms are exceedingly difficult for science and technology experts to define,⁷⁷ it is no wonder that human rights experts and activists have found the task virtually impossible.⁷⁸

More puzzling still is how the benefits of scientific progress can be "shared," as the UDHR mandates. Are there any principles or standards for determining what must be shared and how? Have any human rights treaties prescribed them, or is this a job best left to national governments? Unfortunately, neither human rights treaties nor national governments have ever attempted to tackle these issues.

The rapid development of technology itself also complicates any attempts to define these concepts in a meaningful way. Scientists and policymakers are often left baffled as to how technologies can be developed ethically and how we can differentiate between the positive and negative functions of a particular technology.⁷⁹

By contrast, the contours of other major human rights have been delineated relatively clearly, rendering them easier to understand and apply in practice. Take the rights to free speech⁸⁰ and property⁸¹ as examples. In gen-

76. See Audrey R. Chapman, *Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and Its Applications*, 8 J. HUM. RTS. 1, 1 (2009) ("[T]his right is so obscure and its interpretation so neglected that the overwhelming majority of human rights advocates, governments, and international human rights bodies appear to be oblivious to its existence.").

77. SCHATZBERG, *supra* note 8, at 1 (observing that "definition of *technology* is a mess") (emphasis in original).

78. See Riedel, *supra* note 12, at 503 ("All commentators seems to agree that the wording of Article 15(1) b ICESCR is bland, abstract, and does not reveal clearly [its] scope, purpose and functions. . . .").

79. See generally SCHATZBERG, *supra* note 8, at 221–26 (discussing the rise of the critical discourse on technology's social role).

80. Article 19 of UDHR enshrines the right to free speech as follows: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers." UDHR, *supra* note 1, art. 19.

eral, these rights are largely treated as negative liberties⁸² that prevent governments from unduly interfering with the exercise of freedom of expression and private control of property, respectively. The First Amendment to the U.S. Constitution, for instance, states that “Congress shall make no law . . . abridging the freedom of speech.”⁸³ Similarly, the Fifth Amendment mandates that “private property [shall not] be taken for public use, without just compensation.”⁸⁴ Subsequent to these two amendments, numerous judicial hearings, policy debates, and academic texts have wrestled with the proper protection of free speech and property rights. Such developments have shed light on the nature and scope of these rights, thereby making the public aware of the rights concerned and, in turn, encouraging the public to take legal action to defend them.

Owing to its obscurity, the right to technology has seen very little substantive practical application and theoretical exploration of its nature and scope,⁸⁵ a situation that has further marginalized it from the mainstream of human rights practice and policy consideration. The result is a vicious circle: The less the right to technology is invoked and protected, the more obscure it becomes in the minds of human rights experts and laypersons alike.

2. Ineffective Human Rights Enforcement System

The human rights system itself lacks effectiveness in practice⁸⁶ and has rendered the right to technology particularly feeble. Most of the regional

81. Article 17 of UDHR enshrines the right to property as follows: “(1) Everyone has the right to own property alone as well as in association with others. (2) No one shall be arbitrarily deprived of his property.” *Id.* art. 17.

82. See Isaiah Berlin, *Two Concepts of Liberty*, in *LIBERTY* 166, 169 (Henry Hardy ed., 2d ed. 2002) (“The defence of liberty consists in the ‘negative’ goal of warding off interference.”).

83. U.S. CONST. amend. I.

84. U.S. CONST. amend. V.

85. See Shaver, *supra* note 9, at 152 (“For the right to science and culture, however, the challenge is rather different, and therefore much more complex. The passage of six decades has produced very little in the way of scholarly interpretation and even less in terms of national jurisprudence.”).

86. See generally JACK L. GOLDSMITH & ERIC A. POSNER, *THE LIMITS OF INTERNATIONAL LAW* 119–26 (2005) (demonstrating why human rights treaties are too weak to improve the world in any significant way); ERIC POSNER, *THE TWILIGHT OF HUMAN RIGHTS LAW* 7 (2014) (concluding that “there is little evidence that human rights treaties, on the whole, have improved the well-being of people, or even resulted in respect for the rights in those treaties”); Andrew T. Guzman & Katerina Linos, *Human Rights Backsliding*, 102 CALIF. L. REV. 603, 605 (2014) (examining the “process in which governments react to international standards by providing fewer or weaker human rights protections”); Emilie M. Hafner-Burton & Kiyoteru Tsutsui, *Human Rights in a Globalizing World: The Paradox of Empty Promises*, 110 AM. J. SOC. 1373, 1374–78 (2005); Oona A. Hathaway, *Do Human Rights Treaties Make a Difference?*, 111 YALE L.J. 1935, 2004 (2002) (explaining why

human rights treaties adopted in the past few decades have turned a blind eye to the right's protection. Nowhere in the European Convention on Human Rights,⁸⁷ for example, is there any provision recognizing the right to technology,⁸⁸ and nothing in the African Charter on Human and Peoples' Rights⁸⁹ protects that right for Africans, who arguably need the benefits of technological progress more than their counterparts on other continents.⁹⁰ There are several reasons for these omissions.

First, the legal status of major international human rights treaties at the national level remains unclear.⁹¹ Although it has been argued that the UDHR has become binding on national governments as part of customary international law, given that countries have regularly invoked it for more than fifty years,⁹² a number of countries continue to deny that it has automatic, binding force with respect to their own governments. In *Sosa v. Alvarez-Machain*,⁹³ for example, the U.S. Supreme Court ruled that the UDHR "does not of its own force impose obligations as a matter of international law."⁹⁴ The courts of several other countries have followed suit, deciding that the UDHR is not in and of itself part of their domestic laws and cannot be enforced except through recourse to domestic implementing legislation.⁹⁵ With respect to the ICESCR, the United States has signed but not yet ratified it,⁹⁶ which has served to relatively weaken the protection of human rights in the United States.

Second, the major human rights treaties lack the teeth to effectively protect rights in countries that fail to fulfil their obligations. The Security Council is the only UN body with the authority to issue resolutions that are binding on member states. Where "threats to the peace, breaches of the peace, or acts of aggression" occur, the Security Council can impose eco-

"countries with worse human rights practices sometimes appear to ratify treaties at higher rates than those with better practices").

87. European Convention on Human Rights, Nov. 4, 1950, 213 U.N.T.S. 221.

88. Schabas, *supra* note 5, at 289.

89. African Charter on Human and Peoples' Rights, June 27, 1981, OAU Doc. CAB/LEG/67/3/Rev.5, 21 ILM 59 (1982).

90. Schabas, *supra* note 5, at 289.

91. See, e.g., ANDREW VINCENT, *THE POLITICS OF HUMAN RIGHTS 2* (2010) (arguing that the UDHR is "primarily a political document, not a legal or moral one").

92. Hurst Hannum, *The Status of the Universal Declaration of Human Rights in National and International Law*, 25 GA. J. INT'L & COMP. L. 287, 323-24 (1995).

93. 542 U.S. 692 (2004).

94. *Id.* at 734.

95. See, e.g., Hannum, *supra* note 92, at 312.

96. U.N. TREATY COLLECTION, *Status of International Covenant on Economic, Social and Cultural Rights*, https://treaties.un.org/pages/ViewDetails.aspx?src=IND&mtmsg_no=IV-3&chapter=4&lang=en (last visited Feb. 18, 2019); Ann M. Piccard, *The United States' Failure to Ratify the International Covenant on Economic, Social and Cultural Rights: Must the Poor Be Always with Us?*, 13 THE SCHOLAR: ST. MARY'S L. REV. ON MINORITY ISSUES 231, 232 (2011).

nomic sanctions or even use force to intervene.⁹⁷ However, it does not hand down binding resolutions on general violations of human rights obligations, nor is there any other human rights body in the UN vested with this authority. The UNHRC operates a complaint procedure that allows consistent patterns of gross and reliably attested violations of human rights to be reported.⁹⁸ However, that procedure is merely a confidential petition system that imposes no binding sanctions upon countries that are found to have committed violations.⁹⁹

Third, in any case, major human rights treaties are not legally applicable to corporations. In today's globalized world, an increasing number of corporations are both violating human rights and facilitating the protection of those rights. Without holding corporations—particularly those that wield more economic power than many nation states—accountable, it will be virtually impossible to strengthen the global human rights system in any meaningful way.¹⁰⁰

The confluence of these factors has made it much more difficult to trigger strong protection of the right to technology. Given the legal inadequacies of both the UDHR and ICESCR, countries are not bound to recognize the right to technology or to enforce it through their national constitutions or other relevant laws. These major human rights treaties also fail to lay out the minimum standards that countries must adopt in order to protect this human right domestically. Nor is there an international dispute resolution system capable of correcting a national government's failure to protect the right to technology. Worse still, corporations are playing an increasingly important role in developing new technologies and determining who shares the benefits of technological progress,¹⁰¹ and the inability of the present global human rights system to legally engage corporations is a major barrier to protecting the right to technology worldwide.

97. U.N. Charter arts. 41–42.

98. A CONSCIENTIOUS OBJECTOR'S GUIDE TO THE INTERNATIONAL HUMAN RIGHTS SYSTEM, *Human Rights Council Complaint Procedure*, <http://www.coguide.org/mechanism/human-rights-council-complaint-procedure> (last visited Feb. 18, 2019).

99. ADAM MCBETH ET AL., *THE INTERNATIONAL LAW OF HUMAN RIGHTS* 230–31 (2011). The complaints procedure has been said to be too lenient due to its confidential manner. *Id.* at 231.

100. See Pierre Thielbörger & Tobias Ackermann, *A Treaty on Enforcing Human Rights against Business: Closing the Loophole or Getting Stuck in a Loop?*, 24 *IND. J. GLOBAL LEGAL STUD.* 43, 46–51 (2017).

101. See U.N. Dev. Programme, *Human Development Report 1999*, at 6 (1999), http://hdr.undp.org/sites/default/files/reports/260/hdr_1999_en_nostats.pdf (“Liberalization, privatization and tighter intellectual property rights are shaping the path for the new technologies, determining how they are used. But the privatization and concentration of technology are going too far. Corporations define research agendas and tightly control their findings with patents, racing to lay claim to intellectual property under the rules set out in the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).”).

3. Overemphasis on Intellectual Property Rights

Efforts to harmonize IP protection standards across the globe have eclipsed the invocation of the right to technology. Largely steered by developed countries, the international community has dedicated significant effort to applying IP protection mechanisms to distribute technological benefits through voluntary market transactions. Improvements in international relations after the Cold War era enabled more robust global trading and investment and cultural exchange. Hence, globalization has significantly increased cross-border flow of IP-intensive products and services, leading to calls for *harmonized* international IP protection standards.¹⁰² Meanwhile, breakthroughs in technology have given rise to demands for global protection of inventions and creations through *stronger* IP standards.¹⁰³

Frustrated by the major problems with the IP treaties administered by the World Intellectual Property Organization (“WIPO”), the United States and the European Union leveraged their political and economic power to mainstream harmonization of IP laws through trade negotiations.¹⁰⁴ The Uruguay Round of multilateral trade negotiations, which took place between 1986 and 1993, culminated in the Agreement on Trade-Related Aspects of Intellectual Property Rights (the “TRIPS Agreement”)¹⁰⁵ administered by the then newly-created World Trade Organization (“WTO”).¹⁰⁶ The TRIPS Agreement significantly increases international IP protection in three ways. First, it sets up higher substantive standards for IP rights protection than those contained in WIPO-administered treaties.¹⁰⁷ For example, it requires that member countries make patents available for “all fields of technology,”¹⁰⁸ which is a minimum standard absent from the Paris Convention for the Protection of Industrial Property.¹⁰⁹ Second, it ushers in a host of proce-

102. See Rochelle Dreyfuss & Susy Frankel, *From Incentive to Commodity to Asset: How International Law Is Reconceptualizing Intellectual Property*, 36 MICH. J. INT’L L. 557, 562 (2015).

103. See SUSAN K. SELL, *PRIVATE POWER, PUBLIC LAW: THE GLOBALIZATION OF INTELLECTUAL PROPERTY RIGHTS* 164 (2003).

104. See DANIEL J. GERVAIS, *THE TRIPS AGREEMENT: DRAFTING HISTORY AND ANALYSIS* 12–13 (4th ed. 2012).

105. Agreement on Trade-Related Aspects of Intellectual Property Rights art. 13, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299 (1994) [hereinafter TRIPS Agreement].

106. WORLD TRADE ORGANIZATION [WTO], *Understanding the WTO: Basics—The Uruguay Round*, https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact5_e.htm (last visited Nov. 21, 2019).

107. See J.H. Reichman, *Universal Minimum Standards of Intellectual Property Protection Under the TRIPS Component of the WTO Agreement*, 29 INT’L LAW. 345, 347 (1995) (observing that “the TRIPS Agreement significantly elevates the level of protection beyond that found in existing conventions”).

108. TRIPS Agreement, *supra* note 105, art. 27.1.

109. Paris Convention for the Protection of Industrial Property, July 14, 1967, 828 U.N.T.S. 305.

dural standards for enforcing IP rights that are largely absent in WIPO-administered treaties.¹¹⁰ Third, it allows for the WTO's Dispute Settlement Body to adjudicate a member state's alleged failure to comply with its standards.¹¹¹

However, the TRIPS Agreement does not deal with the legal challenges to IP protection posed by digital technology and particularly by the rise of the Internet. WIPO took the initiative to create new treaties to fill this legal vacuum¹¹² and concluded both the WIPO Copyright Treaty¹¹³ and the Performances and Phonograms Treaty¹¹⁴ in 1996, each introducing new standards for copyright and related protections in the digital environment.

IP protection at national and regional levels was subsequently strengthened. Member states revised their national laws to bring them into compliance with TRIPS and the new WIPO treaties.¹¹⁵ Concurrently, in response to continuing technological progress, developed countries strengthened domestic IP protection standards. Some also sought to export these new standards via bilateral trade agreements.¹¹⁶ The United States and European Union, for example, exported a host of new IP standards, including an extension of the duration of copyright protection by an additional twenty years,¹¹⁷ that were adopted largely as a result of extensive lobbying by IP-intensive industries.¹¹⁸

As the international community focused on revamping the global IP system, the major IP treaties were largely impervious to human rights concerns in general and to implementation of the right to technology in particular.¹¹⁹ Without considering the equality issues that are central to the right to

110. See TRIPS Agreement, *supra* note 105, arts. 41–63.

111. *Id.* art. 64; Graeme B. Dinwoodie, *The International Intellectual Property System: Treaties, Norms, National Courts, and Private Ordering*, in *INTELLECTUAL PROPERTY, TRADE AND DEVELOPMENT: STRATEGIES TO OPTIMIZE ECONOMIC DEVELOPMENT IN A TRIPS PLUS ERA* 61, 77 (Daniel J. Gervais ed., 2007) (“International intellectual property law now has real teeth.”).

112. See Ruth L. Okediji, *The Regulation of Creativity Under the WIPO Internet Treaties*, 77 *FORDHAM L. REV.* 2379, 2379 (2009) (considering WIPO to be “officially ushering global copyright law into the information age”).

113. WIPO Copyright Treaty, Dec. 20, 1996, 2186 U.N.T.S. 121.

114. WIPO Performances and Phonograms Treaty, Dec. 20, 1996, 2186 U.N.T.S. 203.

115. WTO, *TRIPS: Review of the Implementing Legislation*, https://www.wto.org/english/tratop_e/trips_e/intel8_e.htm (last visited Aug. 14, 2019)

116. See Beatrice Lindstrom, *Scaling Back TRIPS-Plus: An Analysis of Intellectual Property Provisions in Trade Agreements and Implications for Asia and the Pacific*, 42 *N.Y.U. J. INT'L L. & POL.* 917, 919 (2010);

117. See James Thuo Gathii, *The Neo-Liberal Turn in Regional Trade Agreements*, 86 *WASH. L. REV.* 421, 466–67 (2011).

118. *Id.* at 965.

119. See Ruth L. Okediji, *Does Intellectual Property Need Human Rights?*, 51 *N.Y.U. J. INT'L L. & POL.* 1, 10 (2018) (“Historically, there was very little formal interaction between

technology, the rapid expansion of IP protection has legally enabled technology developers, as IP owners, to distribute technological benefits as they wish through voluntary market transactions. They have the exclusive rights to permit others to use their IP-protected technologies contingent on royalties.¹²⁰ Hence, the extent to which the public can use a technological benefit often hinges upon how much they can pay the IP owner concerned.

For example, the copyright expansion achieved by the Digital Millennium Copyright Act (“DMCA”) dictates a strictly market-oriented approach to the dissemination of copyrighted works. The DMCA confers upon copyright holders a de facto right to restrict access to their works, making it difficult or even impossible for the public to make fair use of those works. Fair use presupposes that members of the public at large have free access to a work, which enables them to decide whether they should make fair use of the work.¹²¹ However, free access is not necessarily available. Technological measures deployed by copyright holders prevent users from accessing or using their works, and the DMCA furnishes penalties against circumvention of these digital fences. Unless members of the public pay royalties to copyright holders, they cannot access or use the latter’s works.

IP rights holders often have the final say on the price that non-owners have to pay to enjoy the benefits of technological progress in the marketplace.¹²² While certain European jurisdictions provide regulatory oversight on excessive pricing,¹²³ in other countries such as the United States there is no bar on monopoly pricing or even excessive pricing in private transactions.¹²⁴ This leaves companies free to price however they wish, even when they hold monopoly power. Drug patent holders, for example, are able to charge wildly discriminatory prices. This is evidenced by the huge variance between the prices for identical, patented

IP and human rights law, though this has changed dramatically as both fields expanded in scope.”).

120. See, e.g., ROBERT P. MERGES, *JUSTIFYING INTELLECTUAL PROPERTY*, at xi (2011) (arguing that IP rights let inventors “leverage their creative work, turning their effort into saleable assets. This not only enhances their income, it buys freedom”); HELFER & AUSTIN, *supra* note 17, at 34 (“[T]he longstanding isolation of human rights and intellectual property can be attributed to the fact that each legal regime was preoccupied with its own distinct concerns and neither saw the other as either aiding or threatening its sphere of influence or opportunities for expansion.”).

121. See Jerome H. Reichman & Ruth L. Okediji, *When Copyright Law and Science Collide: Empowering Digitally Integrated Research Methods on a Global Scale*, 96 MINN. L. REV. 1362, 1362–1480 (2012).

122. See Okediji, *Does Intellectual Property Need Human Rights?*, *supra* note 119, at 59 (“Public health technologies remain subject to the economic forces of market demand.”).

123. Organization for Economic Co-operation and Development [OECD], *Excessive Pricing in Pharmaceutical Markets—Note by the Netherlands*, ¶¶ 3–4 (Nov. 15, 2018), [https://one.oecd.org/document/DAF/COMP/WD\(2018\)108/en/pdf](https://one.oecd.org/document/DAF/COMP/WD(2018)108/en/pdf).

124. OECD, *Excessive Prices in Pharmaceutical Markets—Background Note by the Secretariat*, ¶ 11 (Oct. 3, 2018), [https://one.oecd.org/document/DAF/COMP\(2018\)12/en/pdf](https://one.oecd.org/document/DAF/COMP(2018)12/en/pdf).

drugs in different countries.¹²⁵ Drugs with generic equivalents do not show such extreme discrepancies in price,¹²⁶ and they can be much cheaper.¹²⁷ Moreover, pharmaceutical companies often limit or even refuse to introduce drugs into particular countries because the low-price drugs demanded in those markets may, on subsequent unauthorized transit to markets where the drugs command a higher price, hurt their profits.¹²⁸ Although the U.S. government can rely on Section 1498 of the United States Code to use any patent holder's patents absent licensing or authorization,¹²⁹ average consumers and the general public are not able to resort to this option should the U.S. government not choose to intervene on their behalf.

C. Fundamental Problems with the Individual Rights Approach

Underlying the three factors above are deep-seated problems with the individual rights approach within the human rights regime. By focusing on the interests of individuals and corporate entities, this approach has resulted in a larger structural malfunction that prevents full actualization of the right to technology. It has seriously weakened the ability of human rights enforcement mechanisms to protect the right to technology while significantly strengthening the power of the IP rights regime to overshadow that right.

Internationally recognized human rights are prevailingly regarded as individual rights.¹³⁰ Individual rights are, by nature, "bestowed upon persons primarily for the purpose of promoting their dignity and self-worth as indi-

125. K. Bala and Kiran Sagoo, *Patents and Prices*, HAI NEWS, at 1–12 (April/May 2000).

126. *Id.*

127. Hannah Brennan et al., *A Prescription for Excessive Drug Pricing: Leveraging Government Patent Use for Health*, 18 YALE J. L. & TECH. 275, 285 (2016).

128. Jean O. Lanjouw, *Patents, Price Controls and Access to New Drugs: How Policy Affects Global Market Entry* 3 (Ctr. for Glob. Dev., Working Paper No. 61, 2005), https://www.cgdev.org/sites/default/files/2679_file_WP61.pdf.

129. Section 1498 gives the federal government of the United States the "right to use patented inventions without permission, while paying the patent holder 'reasonable and entire compensation' which is usually 'set at ten percent of sales or less'." See Amy Kapczynski, *The Cost of Price: Why and How to Get Beyond Intellectual Property Internalism*, 59 UCLA L. REV. 970 (2012).

130. See Australian Human Rights Commission, *What Are Human Rights?* (2010), https://www.humanrights.gov.au/sites/default/files/content/education/understanding_human_rights/Individual%20files%20and%20downloads/1_RS_what_are_human_rights.pdf ("The basic notion of human rights lies in people's recognition of the need to protect and affirm every other person's individual dignity."); cf. Peter K. Yu, *Reconceptualizing Intellectual Property Interests in a Human Rights Framework*, 40 U.C. DAVIS L. REV. 1039, 1145 (2007) (arguing that "human rights instruments contain considerable language . . . to explore collective rights").

vidual human beings.”¹³¹ Personal property¹³² and privacy rights¹³³ are typically individual rights. The law protects the individual’s ability to choose what to do in accordance with his or her own will, thereby preventing other individuals and governmental agencies from encroaching upon such individual rights.¹³⁴ Responding to the barbarous treatment of individuals during the Second World War, the drafting of the UDHR was overwhelmingly shaped by the idea of individual rights,¹³⁵ thereby cultivating the human rights “language of individual empowerment.”¹³⁶ The Vienna Declaration and Program of Action adopted at the 1993 World Conference on Human Rights reaffirms the UDHR’s individual rights approach to human rights protection by stating, “all human rights derive from the dignity and worth inherent in the human person, and . . . the human person is the central subject of human rights and fundamental freedoms”¹³⁷

The individual rights approach is embedded in a culture of individualism that Western civilization has celebrated since the Enlightenment. Leading legal historian Professor Lawrence Friedman elaborates on the historical background to this approach as follows:

131. Haochen Sun, *Fair Use as a Collective User Right*, 90 N.C. L. REV. 125, 142 (2011); see also JEREMY WALDRON, ‘NONSENSE UPON STILTS’: BENTHAM, BURKE, AND MARX ON THE RIGHTS OF MAN 185 (1987) (“By its very nature, a theory of rights is an individualistic theory. Rights purport to secure goods for individuals: that is an elementary consequence of their logical form. A right is always somebody’s right, and we never attempt to secure things as a matter of right unless there is some individual or individuals whose rights are in question.”).

132. See Harry N. Scheiber, *Public Rights and the Rule of Law in American Legal History*, 72 CALIF. L. REV. 217, 218 (1984) (“Along with individual (personal) rights, such as those protected by the Bill of Rights, [there were also] vested property rights . . . [which] defined a zone of private action and uses of property . . .”).

133. See *Stanley v. Georgia*, 394 U.S. 557, 565 (1969) (“If the First Amendment means anything, it means that a State has no business telling a man, sitting alone in his own house, what books he may read or what films he may watch.”).

134. See RONALD DWORKIN, *TAKING RIGHTS SERIOUSLY* xi (1977) (“Individual rights are political trumps held by individuals. Individuals have rights when, for some reason, a collective goal is not a sufficient justification for denying them what they wish, as individuals, to have or to do, or not a sufficient justification for imposing some loss or injury upon them.”).

135. See MICHAEL IGNATIEFF, *HUMAN RIGHTS AS POLITICS AND IDOLATRY* 66 (2001) (concluding that “the framing experience” when drafting the UDHR was “a studied attempt to reinvent the European natural law tradition in order to safeguard individual agency against the totalitarian state,” and therefore “moral individualism” is central to the UDHR).

136. *Id.* at 57.

137. World Conference on Human Rights, *Vienna Declaration and Programme of Action*, ¶ 2, U.N. Doc. A/CONF.157/23 (June 25, 1993); see also Felice D. Gaer, *introduction to YUVAL SHANY, THE UNIVERSALITY OF HUMAN RIGHTS: PRAGMATISM MEETS IDEALISM v* (2018), <https://www.jbi-humanrights.org/BlausteinLecture2.Online.24July18.pdf> (“The Vienna Declaration thus reiterates what the 1948 Universal Declaration of Human Rights proclaimed: that human rights are universal and belong to each individual.”).

[T]he human rights movement depends on a culture that is strongly individualistic. Law and society emphasize *individual* rights; and this corresponds with the way people feel about themselves—as unique individuals, with unique lives, destinies, strengths and weaknesses, desires and habits. Any account of modern culture, moreover—of the culture in which the human rights movement, and individualism, flourish—must pay attention to certain leading aspects of modern history. These include the industrial revolution, the rise of capitalism, and that other revolution, the scientific and technological revolution.¹³⁸

This observation succinctly charts the economic and social background to the rise of human rights and the cultivation of individualism. The individualistic notion of human rights has been nurtured partly by a structural economic transformation brought about by capitalism, which celebrates individual interests in wealth accumulation through voluntary market transactions.¹³⁹ Individualized human rights also cater to the formation of consumer societies in which individual choices for personal welfare are regarded as the sovereignty of consumers.¹⁴⁰

The right to technology, to the extent it has been recognized, has been treated as an individual right. According to Professor Samantha Besson, as currently conceived, “[t]he interest protected by the right to [technology] is individual, even if it pertains to a public or collective good.”¹⁴¹ Professor Besson therefore rejects the idea that under the status quo the right to technology “is held collectively as a group (*e.g.*, by the ‘international community’) or has to be exercised collectively, whether at the domestic or at the global level.”¹⁴²

The individual rights approach, however, has produced two negative consequences for the effectiveness of the human rights regime in general and the right to technology in particular. First, the individual rights approach weakens both due to its inability to introduce any meaningful distributive justice agendas.¹⁴³ Though the Preamble to the UDHR refers to “recognition of the inherent dignity and of the equal and inalienable rights

138. LAWRENCE M. FRIEDMAN, *THE HUMAN RIGHTS CULTURE: A STUDY IN HISTORY AND CONTEXT* 15 (2011).

139. See generally JOHN LOVE, WEBER, SCHUMPETER AND MODERN CAPITALISM: TOWARDS A GENERAL THEORY 21 (2017) (“Just as under capitalism, individual interest would underlie the motivation of the majority.”).

140. Cf. WILLIAM H. HUTT, *ECONOMISTS AND THE PUBLIC: A STUDY OF COMPETITION AND OPINION* 257 (1936) (“The consumer is sovereign when, in his role of citizen, he has not delegated to political institutions for authoritarian use the power which he can exercise socially through his power to demand (or refrain from demanding).”).

141. Besson, *supra* note 20, at 478 (2015).

142. *Id.*

143. See MOYN, *supra* note 23, at 2 (“The age of human rights has not been kind to full-fledged distributive justice, because it is also an age of the victory of the rich.”).

of all members of the human family,”¹⁴⁴ the UDHR and the major human rights treaties only bestow upon people *symbolic*, not *substantive* equality in the enjoyment of human rights.¹⁴⁵

Take the right to health as an example. Symbolically, the UDHR grants everyone equal status to enjoy this human right,¹⁴⁶ as does the ICESCR.¹⁴⁷ Substantively, not everyone enjoys this status. The HIV epidemic epitomizes this dilemma.¹⁴⁸ Wealthy people can directly purchase expensive HIV-related drugs that are protected by patents, and others can afford them with the aid of health insurance. But vast numbers of people cannot afford these life-saving drugs though they still possess the human right to health. Patent protection of such medicines has rendered them too expensive for low-income HIV sufferers to afford.¹⁴⁹ The World Health Organization reported that, in 2018 alone, an estimated 470,000 people in Africa died of HIV/AIDS.¹⁵⁰ A lack of access to HIV medicines owing to their prohibitive cost was a major factor in this appalling number of deaths. In the battle of life or death, symbolic equality is literally meaningless.

It is exceedingly difficult to build *any* effective human rights enforcement mechanisms if the relevant international treaties celebrate only symbolic equality and contain no substantive distributive justice mandates. In normal circumstances, substantive equality deals with the interests of a group of people or all members of a society. For example, the “difference principle” proposed by philosopher John Rawls as one of the mandates for achieving social justice requires that resources should be redistributed to “the least advantaged members of society.”¹⁵¹ A focus on the singular, personal interest supported by an individual right cannot generate the robust

144. UDHR, *supra* note 1.

145. MOYN, *supra* note 23, at 213 (“Human rights guarantee status equality but not distributive equality.”).

146. UDHR, *supra* note 1, art. 25(1) (“Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family . . .”).

147. ICESCR, *supra* note 6, art. 12.

148. WHO Director-General, *Human Rights—A Central Concern for the Global HIV Response*, WORLD HEALTH ORGANIZATION (Nov. 30, 2010), https://www.who.int/mediacentre/news/statements/2010/AIDS_Day_20101130/en (“The right to health is central to the HIV response.”).

149. See William W. Fisher & Talha Syed, *Global Justice in Healthcare: Developing Drugs for the Developing World*, 40 U.C. DAVIS L. REV. 581, 646 (2006).

150. WORLD HEALTH ORGANIZATION, *Number of Deaths Due to HIV/AIDS*, https://www.who.int/gho/hiv/epidemic_status/deaths_text/en (last visited Nov. 28, 2019).

151. This principle requires that “the higher expectations of those better situated are just if and only if they work as part of a scheme which improves the expectations of the least advantaged members of society.” JOHN RAWLS, *A THEORY OF JUSTICE* 65 (1999). Rawls also explained that “the intuitive idea is that the social order is not to establish and secure the more attractive prospects of those better off unless doing so is to the advantage of these less fortunate.” *Id.*

collective action necessary for substantive equality serving the interests of larger groups of people or society as a whole.¹⁵²

In fact, the individual rights approach has lent firm support to demands for stronger IP protection. These demands have outweighed the collective interests in equal access to technological benefits that facilitate dynamic social innovation and political democracy. Given its emphasis on the right to property in particular, the individual rights approach gives the free market unwarranted weight in distributing technological benefits. This is because, treated as an individual right, the right to technology cannot necessarily override other individual rights that support IP protection. From this perspective, the individual right to technology does not provide the legal or ethical grounds for a distributive justice agenda capable of reforming the IP system to grant equal access to technological benefits.¹⁵³

However, the success of the open access model calls into question the viability of the individualistic notion of the right to technology that supports the IP-based and market-oriented distribution of technological benefits. For example, the free software movement and Creative Commons initiative demonstrate the dynamism of knowledge production and technological progress not reliant upon IP rights protection. The rise of the sharing economy, propelled by social media such as Wikipedia, YouTube, and Facebook, has promoted free access to knowledge and tremendous technological benefits.

These open access models reveal the importance of distributing technological benefits through channels not solely reliant upon IP rights. People need better access to technological benefits so as to boost their engagement in cultural and political activities.¹⁵⁴ Indeed, many scholars have noted these

152. See, e.g., Richard McIntyre, *Globalism, Human Rights and the Problem of Individualism*, 3:1 HUMAN RIGHTS & HUMAN WELFARE (2003) (reviewing GEORGE F. DEMARTINO, *GLOBAL ECONOMY, GLOBAL JUSTICE: THEORETICAL OBJECTIONS AND POLICY ALTERNATIVES TO NEOLIBERALISM* (2000)), <https://www.du.edu/korbel/hrhw/volumes/2003/mcintyre3-1.pdf> (“Nonetheless, the individualist approach that dominates contemporary human rights philosophy often limits human rights groups to ‘blaming and shaming’ corporate violations of individual rights without supporting the kind of grassroots collective action necessary to countervail corporate globalization.”).

153. Against this backdrop, the UN Special Rapporteur in the field of cultural rights has stressed the urgent need to adjust tension between IP and the public’s enjoyment of the right to technology:

[IP] laws should place no limitations upon the right to [technology], unless the State can demonstrate that the limitation pursues a legitimate aim, is compatible with the nature of this right and is strictly necessary for the promotion of general welfare in a democratic society.

Report of the Special Rapporteur, ¶ 98, *supra* note 18.

154. See Niva Elkin-Koren, *Cyberlaw and Social Change: A Democratic Approach to Copyright Law in Cyberspace*, 14 CARDOZO ARTS & ENT. L.J. 215, 236 (1996) (“Cyberspace may facilitate active, rather than passive[,] participation in the deliberative process and enhance the ability of individuals to access relevant information that may be crucial for will formation processes.”).

positive functions of digital technologies.¹⁵⁵ For example, Jack Balkin has insightfully pointed out that “[t]he digital age provides a technological infrastructure that greatly expands the possibilities for individual participation in the growth and spread of culture and thus greatly expands the possibilities for the realization of a truly democratic culture.”¹⁵⁶

IV. CREATING A COLLECTIVE RIGHT TO TECHNOLOGY

How can the right to technology be resurrected? In this part, I propose a collective rights approach to reinvigorate the right to technology. I argue that it is time to redefine the right to technology as a collective right for the common good rather than an individual right, thereby supporting a distributive justice agenda aimed at achieving substantive equality in enjoyment of technological benefits.

A. *The Idea of Collective Rights*

Individual rights, as the preceding part of the article demonstrates, protect personal interests in freedom and flourish primarily as negative liberties,¹⁵⁷ warding off undesirable government interference. Collective rights, in contrast, serve as positive liberties¹⁵⁸ intended to empower people to become better members of the society in which they live or of the social groups to which they belong. By shaping people’s sense of social membership, collective rights function to promote the dynamics of social interactions and improve social well-being by raising the quality of life for the larger whole.¹⁵⁹ As Joseph Raz observes, collective rights protect the “interests of individuals[,] as members of a group[,] in a public good and the [collective] right is a right to that public good because it serves their interest as members of the group.”¹⁶⁰

155. See, e.g., LAWRENCE LESSIG, REMIX: MAKING ART AND COMMERCE THRIVE IN THE HYBRID ECONOMY 76–77, 80, 83 (2008); William W. Fisher III, *The Implications for Law of User Innovation*, 94 MINN. L. REV. 1417, 1460 (2010); Rebecca Tushnet, *Legal Fictions: Copyright, Fan Fiction, and a New Common Law*, 17 LOY. L.A. ENT. L.J. 651 (1997).

156. Jack M. Balkin, *Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society*, 79 N.Y.U. L. REV. 1 (2004).

157. See *supra* Part III.

158. See, e.g., Berlin, *Two Concepts of Liberty*, *supra* note 82, at 178 (“The ‘positive’ sense of the word ‘liberty’ derives from the wish on the part of the individual to be his own master. I wish my life and decisions to depend on myself, not on external forces of whatever kind.”).

159. See Dwight Newman, *Collective Interests and Collective Rights*, 49 AM. J. JURIS. 127, 141 (2004) (“The collective interests of a particular collectivity . . . are not unrelated to members’ individual interests, for the collectivity’s moral existence depends on its ability to provide a collective interest that improves the lives of its individual members.”).

160. JOSEPH RAZ, *THE MORALITY OF FREEDOM* 208 (1986).

While individual rights have long been entrenched in domestic and international laws, there is only nascent recognition of and protection for collective rights.¹⁶¹ Scholars and policymakers alike have posited that because personal interests in property, privacy, and bodily integrity give rise to individual rights, the same reasoning, which is grounded in the collective-interest-based theory of rights, should be applied to support collective rights.¹⁶² In the following discussion, I identify two kinds of collective interests, namely, societal interests and group interests, that undergird the protection of collective rights, and therefore divide such rights into societal rights and group rights, respectively.¹⁶³

1. Societal Rights

Societal rights protect the collective interest in the public freedom and dignity of all members of a given society. Freedom to take part in civic life in public spaces is essential to a well-functioning society.¹⁶⁴ People have a collective interest in such public freedom because the goods and institutions that form the public sphere shape the civic environment for all members of society.¹⁶⁵ For example, clean air is vital to human health and civic engagement in public spaces. Heavily polluted air harms human health, physically preventing citizens from participating in public activities. Public security also affects active interactions with public spaces. An unsafe social environment results in instability and disorder, prompting people to remain sheltered in their own homes. A democratic election system serves as a public vehicle for citizens to have a say in the decision-making process governing

161. See MIODRAG A. JOVANOVI, *COLLECTIVE RIGHTS: A LEGAL THEORY* 1 (2012) (explaining that “collective rights talk has recently gained currency both in the scholarly literature and in international and domestic legal instruments”).

162. Joseph Raz argues that a collective right is justified if three conditions are met: “First, it exists because an aspect of the interest of human beings justifies holding some persons(s) to be subject to a duty. Second, the interests in question are the interests of individuals as members of a group in a public good and the right is a right to that public good because it serves their interest as members of the group. Thirdly, the interest of no single member of that group in that public good is sufficient by itself to justify holding another person to be subject to a duty.” See RAZ, *supra* note 160, at 208; see also DWIGHT NEWMAN, *COMMUNITY AND COLLECTIVE RIGHTS: A THEORETICAL FRAMEWORK FOR RIGHTS HELD BY GROUPS* 57 (2011) (concluding that “some collective interests ground . . . the existence of collective rights”); Leslie Green, *Two Views of Collective Rights*, 4 *CANADIAN J.L. & JURIS.* 315, 320–21 (1991) (explaining why collective rights should be viewed as rights to collective interests).

163. See Sun, *Fair Use as a Collective User Right*, *supra* note 131, at 177–83 (suggesting that in the context of fair use, collective rights fall into two categories: identity-based group rights and society-based rights).

164. *Id.* at 165 (“A well-functioning society has participatory goods because each individual’s enjoyment of his environment depends upon how other individuals participate in various aspects of social life.”).

165. See, e.g., DANA VILLA, *PUBLIC FREEDOM* 26 (2008) (“Beyond the realization of our political liberty, the purpose of public freedom is to make concrete—to actualize—the ‘active and constant surveillance over . . . [the people’s]’ representatives.”).

society as a whole. An independent judiciary functions as a public institution to maintain justice by settling disputes. Rather than catering to individuals separately, these public goods and institutions protect societal members' interests in their freedoms collectively.¹⁶⁶

Public goods and institutions also play a crucial role in maintaining the public dignity of all members of society. The protection of individual dignity for persons is fundamental to the value of human lives and to the value of a society.¹⁶⁷ It determines whether the society affords public goods and institutions that collectively protect the citizenry's sense of social membership and self-worth. A clean, safe, and ethical society makes people feel like respected members of that society, whereas a dirty, dangerous, and corrupt society degrades people's sense of membership. Heavily polluted air and poor public security impair the social environment that is supposed to sustain collective self-worth. Malfunctioning electoral and judicial systems may give way to economic and political manipulation that renders citizens vulnerable to inhumane coercion and suppression. The end result is distortion of the collective interest in upholding the society's public dignity.

2. Group Rights

Unlike societal rights, group rights do not serve the collective interest of all members of a given society, but instead protect collective interests arising from membership in a given social group. They protect the group freedom that allows people to form social groups collectively.¹⁶⁸ For example, freedom of religion protects the group interests of believers.¹⁶⁹ The development of any religious teaching/thought itself is the outgrowth of the collective efforts of all of those who believe in the religion rather than the exercise of religious freedom by individual believers. Countless religious masters, scholars, and believers have contributed to the teachings of the world's major religions.¹⁷⁰ Therefore, a collective interest exists in the de-

166. *Id.*

167. The UDHR begins by recognizing that "the inherent dignity" of "all members of the human family is the foundation of freedom, justice and peace in the world." UDHR, *supra* note 1, pmbl.

168. See Peter Jones, *Group Rights and Group Oppression*, 7 J. POL. PHIL. 353, 354 (arguing that "group rights are often articulated as demands for group freedom"); Frank Hindriks, *Group Freedom: A Social Mechanism Account*, 47 PHIL. SOC. SCI 410, 411 (discussing "how group rights can be seen as legitimate demands for group freedom").

169. See, e.g., U.K. Human Rights Act 1998, ch. 42, § 13 (recognizing the collective aspect of religious freedom: "If a court's determination of any question arising under this Act might affect the exercise by a religious organisation (itself or its members collectively) of the Convention right to freedom of thought, conscience and religion, it must have particular regard to the importance of that right.").

170. See, e.g., JONATHAN Z. SMITH, *IMAGINING RELIGION: FROM BABYLON TO JONESTOWN* xi (1982) ("Religion is solely the creation of the scholar's study. It is created for the scholar's analytic purposes by his imaginative acts of comparison and generalization.") (emphasis omitted); Frederick Mark Gedicks, *Toward a Constitutional Jurisprudence of Reli-*

velopment of a given religion. There is a collective dimension to the exercise of religious freedom:¹⁷¹ Rather than worshiping alone, it is common for believers to join together in activities that manifest their religious beliefs in churches, temples, or mosques or through media outlets.¹⁷² Therefore, religious freedom entails believers' collective interest in associating freely with their fellow believers to form and enrich their religious communities or organizations.¹⁷³ There is also a collective interest in the development of a religion. The development of any religious teaching/thought itself is the outgrowth of the collective efforts of all of those who believe in the religion, rather than the exercise of religious freedom by individual believers.¹⁷⁴

Group rights also promote collective interests in group dignity, largely through the preservation of group identity. Social groups can be formed based on race, gender, age, national origin, sexual orientation, language, disability, and political or religious belief. Members of a social group hold a collective interest in warding off actions that prejudice the dignity of their group through discriminatory or unfair practices. Traditional knowledge exemplifies the critical importance of protecting collective interests in preservation of group identity.¹⁷⁵ Indigenous peoples around the world have

religious Group Rights, 1989 WIS. L. REV. 99, 105–06 (1989) (concluding that “constitutional recognition of a strong right of religious group autonomy in making membership decisions is necessary to preserve religious pluralism and the individual autonomy that is at the heart of liberalism.”); Nicholas Aroney, *Freedom of Religion as an Associational Right*, 33 U. QUEENSLAND L.J. 153 (2014).

171. W. COLE DURHAM, JR., *The Right to Autonomy in Religious Affairs: A Comparative View*, in CHURCH AUTONOMY: A COMPARATIVE SURVEY 1 (Gerhard Robbers ed., 2001) (“We often think of religious freedom as an individual right rooted in individual conscience, but in fact religion virtually always has a communal dimension, and religious freedom can be negated as effectively by coercing or interfering with a religious group as by coercing one of its individual members.”).

172. See CHARLES TAYLOR, *VARIETIES OF RELIGION TODAY: WILLIAM JAMES REVISITED* (2002) (discussing the inherently collective aspects of many religious practices).

173. See *Wisconsin v. Yoder*, 406 U.S. 205, 216 (1972) (“The traditional way of life of the Amish is not merely a matter of personal preference, but one of deep religious conviction, shared by an organized group, and intimately related to daily living”); Ronald R. Garet, *Communitarity and Existence: The Rights of Groups*, 56 S. CAL. L. REV. 1001, 1009 (1983) (“Courts have and can further extend a jurisprudence that promotes ‘communitarity’ or ‘groupness’ as among the key social goods.”).

174. See, e.g., JONATHAN Z. SMITH, *IMAGINING RELIGION: FROM BABYLON TO JONESTOWN* xi (1982) (“Religion is solely the creation of the scholar’s study. It is created for the scholar’s analytic purposes by his imaginative acts of comparison and generalization.”) (emphasis omitted); Frederick Mark Gedicks, *Toward a Constitutional Jurisprudence of Religious Group Rights*, 1989 WIS. L. REV. 99, 105–06 (1989) (concluding that “constitutional recognition of a strong right of religious group autonomy in making membership decisions is necessary to preserve religious pluralism and the individual autonomy that is at the heart of liberalism.”); Nicholas Aroney, *Freedom of Religion as an Associational Right*, 33 U. QUEENSLAND L.J. 153 (2014).

175. See William Fisher, *The Puzzle of Traditional Knowledge*, 67 DUKE L.J. 1511, 1511 (2018) (“In some settings, . . . group identity formation would be promoted by according

throughout history developed technical and cultural creations, such as traditional medicine and folklore, for the subsistence and enrichment of their own communities.¹⁷⁶ In the contemporary world, a major function of traditional knowledge is to preserve the unique identity of indigenous peoples to allow them to maintain their dignity as groups of indigenous people. Wandjina spirit images, for example, are regarded as traditional knowledge collectively created by Australia's aboriginal Worrorra people in honor of Wandjina, their spiritual creators.¹⁷⁷ There has been criticism, however, that graffiti portraits and sculptural representations of Wandjina distort them, causing the Worrorra to feel "offended and distressed"¹⁷⁸ about threats to their "traditions and beliefs."¹⁷⁹ Hence, Professor William Fisher cautions that "[c]ontroversies like [those surrounding] Wandjina Spirit Images make clear that traditional knowledge is sometimes central to the identities of indigenous groups and that unauthorized use of that knowledge by outsiders corrodes those identities"¹⁸⁰

Indeed, there is growing recognition that the collective rights approach offers the unique advantage of setting a new distributive justice agenda for

indigenous groups more power to control or to benefit from uses of knowledge developed and sustained by their members"); Ruth L. Okediji, *A Tiered Approach to Rights in Traditional Knowledge*, 58 WASHBURN L.J. 271, 271 (2019) ("[Indigenous] groups have created institutions and systems distinctly associated with their lifestyles, producing an array of creative goods, processes, and systems of knowledge that serve to anchor group identity in established governance frameworks."); Kristen A. Carpenter et al., *In Defense of Property*, 118 YALE L.J. 1022, 1028 (2009) ("Peoplehood . . . dictates that certain lands, resources, and expressions are entitled to legal protection as cultural property because they are integral to the group identity and cultural survival of indigenous peoples."); Madhavi Sunder, *The Invention of Traditional Knowledge*, 70 LAW & CONTEMP. PROBS. 97, 109 (2007) (pointing out that "traditional knowledge is often communally held").

176. See Fisher, *supra* note 175, at 1513 ("[T]raditional knowledge is defined as understanding or skill developed and preserved by the members of an indigenous group concerning either actual or potential socially beneficial uses of natural resources (such as plants, animals, or components thereof) or cultural practices (such as rituals, narratives, poems, images, designs, clothing, fabrics, music, or dances)."); Okediji, *A Tiered Approach to Rights in Traditional Knowledge*, *supra* note 175, at 271 ("Many indigenous groups and local communities possess economically valuable knowledge—so-called 'traditional knowledge'—developed over generations about the medicinal or therapeutic applications of plant genetic resources on their land."); Stephen R. Munzer & Kal Raustiala, *The Uneasy Case for Intellectual Property Rights in Traditional Knowledge*, 27 CARDOZO ARTS & ENT. L.J. 37, 38 (2009) ("[Traditional knowledge] is the understanding or skill possessed by indigenous peoples pertaining to their culture and folklore, their technologies, and their use of native plants for medicinal purposes.").

177. See Fisher, *supra* note 175, at 1526 (citing ARTS LAW CENTRE OF AUSTRALIA, *Protecting the Sacred Wandjina: The Land and Environment Court Goes to the Blue Mountains* (June 22, 2011), <https://www.artslaw.com.au/article/protecting-the-sacred-wandjina-the-land-and-environment-court-goes-to-the-b>).

178. *Id.* at 1553.

179. *Id.*

180. *Id.*

enhancing human rights protection. For example, by adopting the Declaration on the Rights of Indigenous Peoples in September 2007,¹⁸¹ the UN was attempting to capitalize on collective rights to deal with the many injustices that indigenous people have suffered. To that end, the Declaration first states that it is “[r]ecognizing and reaffirming that indigenous individuals are entitled without discrimination to all human rights recognized in international law, and that indigenous peoples possess collective rights which are indispensable for their existence, well-being and integral development as peoples.”¹⁸² It then suggests a bundle of collective rights that should be conferred upon indigenous peoples, namely, the rights to protect their culture through practices, languages, education, media, and religion.¹⁸³ The Declaration further emphasizes that indigenous peoples enjoy a collective right to live in freedom, peace, and security as distinct peoples and that they are not to be subjected to any act of genocide or any other act of violence, including the forcible removal of the children of one group for transfer to another group.¹⁸⁴

B. *The Collective Right to Technology*

Drawing upon the theory of collective rights, in this section I examine how and why the right to technology should be recognized and protected as a collective right. Technological benefits by nature serve the collective interest in societal or group freedom and dignity. First, the collective right to technology entitles people to enjoy the benefits of technological progress as members of a society or of a group within that society. Second, that right also entitles them to prevent technological progress from seriously jeopardizing their societal and group interests as members of a society or group. To realize legal entitlements in practice, the collective right to technology must be protected as two distinct rights: a societal right and a group right.

1. The Societal Right to Technology

The societal right to technology promotes the collective interest in public freedom derived from the enjoyment of technological progress. It pro-

181. G.A. Res. 61/295, annex, Declaration on the Rights of Indigenous Peoples (Sept. 13, 2007).

182. *Id.* at 7.

183. *Id.*

184. United Nations Declaration on the Rights of Indigenous Peoples, Discussion Guide: Acknowledging Truths, Winter 2018 PPH Reading, <https://www.unric.org/en/indigenous-people/27309-individual-vs-collective-rights> (last visited Dec. 28, 2019) (“[M]ost human rights treaties reflect an individualistic concept of rights and rights-holders. But for many indigenous peoples their identity as an individual is inseparably connected to the community to which that individual belongs. Therefore the problem is that while human rights treaties and instruments guarantee individual rights, indigenous peoples ask for protection of their collective rights as a group.”).

pects society members' fair share of the technological benefits that are crucial to the provision of the goods and institutions necessary for them to take part in civic life in public spaces.

Internet-related technologies are the epitome of the collective interests in public freedom derived from technological progress.¹⁸⁵ In *Reno v. American Civil Liberties Union*,¹⁸⁶ the U.S. Supreme Court noted that the internet as a whole serves as a "vast democratic forum[]." ¹⁸⁷ The Court further explained how users can enjoy the freedom facilitated by the internet as a public forum to take part in civic life through communicative actions.¹⁸⁸ In *Packingham v. North Carolina*,¹⁸⁹ the Supreme Court continued to consider the role of the internet in guarding public freedom. First, the Court suggested that the internet is as important a venue for free speech as public streets and parks, the traditional public forums that merit the full spectrum of free speech protection.¹⁹⁰ Second, the Court demonstrated that social media, as a pervasive part of the internet, has become a vehicle for socially beneficial communicative activities:

Social media offers 'relatively unlimited, low-cost capacity for communication of all kinds.' On Facebook, for example, users can debate religion and politics with their friends and neighbors or share vacation photos. On LinkedIn, users can look for work, advertise for employees, or review tips on entrepreneurship. And on Twitter, users can petition their elected representatives and otherwise engage with them in a direct manner. Indeed, Governors in all 50 States and almost every Member of Congress have set up accounts for this purpose. In short, social media users employ these

185. See Okediji, *Does Intellectual Property Need Human Rights?*, *supra* note 119, at 36 (arguing that there is a human rights "obligation to facilitate access to technologies that are indispensable to civic and economic engagement, such as the internet").

186. *Reno v. American Civil Liberties Union*, 521 U.S. 844 (1997).

187. *Id.* at 868.

188. Regarding this point, the Court explained as follows:

[T]he Internet . . . provides relatively unlimited, low-cost capacity for communication of all kinds. Th[e] dynamic, multifaceted category of communication includes not only traditional print and news services, but also audio, video, and still images, as well as interactive, real-time dialogue. Through the use of chat rooms, any person with a phone line can become a town crier with a voice that resonates farther than it could from any soapbox. Through the use of Web pages, mail exploders, and newsgroups, the same individual can become a pamphleteer.

Id. at 870.

189. 137 S. Ct. 1730 (2017).

190. See *id.* at 1735 ("While in the past there may have been difficulty in identifying the most important places (in a spatial sense) for the exchange of views, today the answer is clear. It is cyberspace—the 'vast democratic forums of the Internet' in general, and social media in particular.") (quoting *Reno v. American Civil Liberties Union*, 521 U.S. 844, 868 (1997)).

websites to engage in a wide array of protected First Amendment activity on topics ‘as diverse as human thought.’¹⁹¹

This opinion by the U.S. Supreme Court highlights the significant role that social media technologies are playing in promoting citizens’ public freedom of communicative action.¹⁹² They have enabled many more people to express their views and exchange information. They have also opened up new avenues for the dissemination of views and the attainment of information, thereby increasing the diversity of communicative action in the public sphere.

At the same time, the societal right to technology also confers a right to prevent technologies from being used to harm the collective interest in public dignity. Take human genome editing as an example. The technology of heritable human genome editing has matured to the extent that it has clinical application in human reproduction. However, worldwide public concern was sparked when a Chinese scientist announced the birth of genome-edited twin girls in November 2018.¹⁹³ Human genome editing for eugenic purposes may degrade the dignity of society by causing disrespect for differences among individuals and by worsening inequality, widening the gap between those with access to human genome editing and those without.¹⁹⁴ According to the International Bioethics Committee, “interventions on the human genome should be admitted only for preventive, diagnostic or therapeutic reasons and without enacting modifications for descendants” as “[t]he alternative would be to jeopardize the inherent and therefore equal dignity of all human beings and renew eugenics, disguised as the fulfilment of the wish for a better, *improved* life.”¹⁹⁵

2. The Group Right to Technology

The group right to technology protects the collective interest in group freedom by allowing group members to take advantage of technological

191. *Id.* at 1735–36 (quoting *Reno v. American Civil Liberties Union*, 521 U.S. 844, 870 (1997)).

192. Lawrence Byard Solum, *Freedom of Communicative Action: A Theory of the First Amendment Freedom of Speech*, 83 NW. U.L. REV. 54, 106 (1989) (“Any society that wants to enable rational agreement through public discourse must provide for a right to free speech which allows all citizens the right to participate in communication on equal terms without the fear of compulsion.”).

193. David Cyranoski & Heidi Ledford, *Genome-Edited Baby Claim Provokes International Outcry*, NATURE (Nov. 26, 2018), <https://www.nature.com/articles/d41586-018-07545-0>.

194. Seppe Segers & Heidi Mertes, *Does Human Genome Editing Reinforce or Violate Human Dignity?*, 34 BIOETHICS 1, 5–6 (2019).

195. U.N. Int’l Bioethics Committee, *Report of the IBC on Updating Its Reflection on the Human Genome and Human Rights*, at 26, U.N. DOC. SHS/YES/IBC-22/15/2 REV.2 (2015), <https://unesdoc.unesco.org/ark:/48223/pf0000233258>.

benefits.¹⁹⁶ Take access to HIV medicines as an example. Patent protection of such medicines has rendered them too expensive for low-income HIV sufferers to afford.¹⁹⁷ The World Health Organization reported that, in 2018 alone, an estimated 470,000 people in Africa died of HIV/AIDS.¹⁹⁸ A lack of access to HIV medicines, owing to their prohibitive cost, was a major factor in this appalling number of deaths. It is thus imperative that low-income people infected with HIV be viewed as a group who have a collective interest in HIV-related pharmaceutical technologies. A lack of access to effective HIV medication harms leads to a deterioration in group members' health degrades their ability to take part in civic life and ultimately deprives them of their freedom to live life altogether. Rather than counting up individual deaths from an isolated perspective, the group rights approach, which recognizes a collective interest in HIV medicines and related pharmaceutical technologies, lends stronger moral support to an institutional resolution to the HIV-related public health crisis.

Furthermore, the group right to technology also entitles group members to prevent prejudice to the dignity of the groups to which they belong. Many new technological developments pose serious threats of prejudice that ultimately risk degrading the dignity of all members of the group in question. For example, the use of algorithms in facial recognition technology has been found to introduce systematic bias in classifying race-based information.¹⁹⁹ Current facial recognition systems misidentify dark-skinned people at a much higher rate than light-skinned people because the systems are often trained on predominantly white faces, leading to many false positives.²⁰⁰ For

196. See GEORGE W. RAINBOLT, *THE CONCEPT OF RIGHTS* 206 (Franciso Laporta et al. eds., 2006) (“Many group rights seem to be rights to participatory goods.”); Denise Réaume, *Individuals, Groups, and Rights to Public Goods*, 38 U. TORONTO L.J. 1, 1 (1988) (arguing that “any rights to participatory goods must be held by groups rather than individuals”).

197. See William W. Fisher & Talha Syed, *Global Justice in Healthcare: Developing Drugs for the Developing World*, 40 U.C. DAVIS L. REV. 581, 646 (2006).

198. WORLD HEALTH ORGANIZATION, *Number of Deaths Due to HIV/AIDS*, https://www.who.int/gho/hiv/epidemic_status/deaths_text/en (last visited Nov. 28, 2019).

199. Ali Breland, *How White Engineers Built Racist Code—And Why It’s Dangerous for Black People*, *GUARDIAN* (Dec. 4, 2017), <https://www.theguardian.com/technology/2017/dec/04/racist-facial-recognition-white-coders-black-people-police> (“Experts such as Joy Buolamwini, a researcher at the MIT Media Lab, think that facial recognition software has problems recognizing black faces because its algorithms are usually written by white engineers who dominate the technology sector. These engineers build on pre-existing code libraries, typically written by other white engineers.”); Fabio Bacchini & Ludovica Lorusso, *Race, Again: How Face Recognition Technology Reinforces Racial Discrimination*, 17 J. INFO., COMM. & ETHICS IN SOC’Y. 321 (2019).

200. Tom Simonite, *The Best Algorithms Struggle to Recognize Black Faces Equally*, *WIRED* (July 22, 2019), <https://www.wired.com/story/best-algorithms-struggle-recognize-black-faces-equally>; see also ANDREW GUTHRIE FERGUSON, *THE RISE OF BIG DATA POLICING: SURVEILLANCE, RACE, AND THE FUTURE OF LAW ENFORCEMENT* 92–95 (2017).

instance, Google Photos has misclassified black people as gorillas,²⁰¹ and Amazon's Rekognition falsely identified many Congressmen of color as crime suspects.²⁰² A black driver was barred from operating as an Uber driver because the facial recognition software on the Uber app did not recognize him.²⁰³ If such deleterious effects are not kept at bay, facial recognition technology may profoundly harm group-based interests in racial equality.

C. *The Convergence of the Collective Right to Technology with Domestic Law*

Treating the right to technology as a collective right makes it more theoretically and practically possible to transform this human right into a civil liberty protectable by the judiciary.²⁰⁴ The societal and group interests in technological benefits, identified in the preceding section, parallel (and support) those of civil rights afforded domestic protection, ranging from freedom of information to racial equality.²⁰⁵ If the collective right to technology were protected as a civil liberty, then the public would be afforded recourse to domestic courts to protect the collective interest in enjoying the benefits of technological progress.

201. Maggie Zhang, *Google Photos Tags Two African-Americans As Gorillas Through Facial Recognition Software*, FORBES (July 1, 2015), <https://www.forbes.com/sites/mzhang/2015/07/01/google-photos-tags-two-african-americans-as-gorillas-through-facial-recognition-software>; Tom Simonite, *When It Comes to Gorillas, Google Photos Remains Blind*, WIRED (Jan. 11, 2018), <https://www.wired.com/story/when-it-comes-to-gorillas-google-photos-remains-blind>.

202. Natasha Singer, *Amazon's Facial Recognition Wrongly Identifies 28 Lawmakers*, A.C.L.U. SAYS, N.Y. TIMES (July 26, 2018), <https://www.nytimes.com/2018/07/26/technology/amazon-aclu-facial-recognition-congress.html>; Jacob Snow, *Amazon's Face Recognition Falsely Matched 28 Members of Congress With Mugshots*, ACLU (July 26, 2018), <https://www.aclu.org/blog/privacy-technology/surveillance-technologies/amazons-face-recognition-falsely-matched-28>; Sasha Ingber, *Facial Recognition Software Wrongly Identifies 28 Lawmakers As Crime Suspects*, NPR (July 26, 2018), <https://www.npr.org/2018/07/26/632724239/facial-recognition-software-wrongly-identifies-28-lawmakers-as-crime-suspects>.

203. Olivia Rudgard, *Uber Faces Racism Claim Over Facial Recognition Software*, TELEGRAPH (Apr. 23, 2019), <https://www.telegraph.co.uk/technology/2019/04/23/uber-faces-racism-claim-facial-recognition-software>.

204. See Okediji, *Does Intellectual Property Need Human Rights?*, *supra* note 119, at 49 (“Beyond the multilateral treaty platform, national and regional courts in developed countries rely heavily on human rights ideals when addressing IP disputes.”). For discussion about how to transform human rights into civil rights domestically, see BETH A. SIMMONS, MOBILIZING FOR HUMAN RIGHTS: INTERNATIONAL LAW IN DOMESTIC POLITICS 159–201 (2009).

205. Dominique Harrison, *Civil Rights Violations in the Face of Technological Change*, ASPEN INSTITUTE (Apr. 22, 2019), <https://www.aspeninstitute.org/blog-posts/civil-rights-violations-in-the-face-of-technological-change> (“Civil rights by definition are sets of guaranteed privileges that include equal treatment, equal opportunity, and the ability to be free from discrimination.”).

The transformation of the collective right to technology into a domestic civil liberty would serve three major functions. First, it would allow the courts to rely on the social justice mandate of the collective rights approach to recognize and protect the collective right to technology. Courts could decide that awaiting a lengthy legislative process to dispense any given benefit of the right could result in injustice and irreparable harm to the citizenry's collective interests. With respect to the protection of rights that are not expressly enumerated by law, the U.S. Supreme Court has forcefully stated:

The nature of injustice is that we may not always see it in our own times. The generations that wrote and ratified the Bill of Rights and the Fourteenth Amendment did not presume to know the extent of freedom in all of its dimensions, and so they entrusted to future generations a charter protecting the right of all persons to enjoy liberty as we learn its meaning. When new insight reveals discord between the Constitution's central protections and a received legal stricture, a claim to liberty must be addressed [by courts].²⁰⁶

This statement shows the case for judicial intervention if the legislature fails to protect liberties. Justice empowers domestic courts to protect liberties when statutes provide no protection.²⁰⁷ So too does international law. As the UN Committee on Economic, Social and Cultural Rights has stated, “[a]t minimum, the national and local judiciaries of States parties must consider international human rights laws such as the [ICESCR] an interpretative aid to domestic law and ensure that domestic law is interpreted and applied in a manner consistent with the provisions of international human rights instruments ratified by the State.”²⁰⁸ Thus, to promote justice, domestic courts in states that have signed the ICESCR may draw on the relevant ICESCR provisions to interpret whether domestic laws have already provided a legal basis for protecting civil liberties such as the right to technology.²⁰⁹

206. *Obergefell v. Hodges*, 135 S. Ct. 2584, 2598 (2015).

207. *Nat'l Mut. Ins. Co. v. Tidewater Transfer Co.*, 337 U.S. 582, 646 (1949) (Frankfurter, J., dissenting) (“Great concepts like . . . ‘liberty’ . . . were purposely left to gather meaning from experience. For they relate to the whole domain of social and economic fact, and the statesmen who founded this Nation knew too well that only a stagnant society remains unchanged.”).

208. The UN Committee on Economic, Social and Cultural Rights, Fact Sheet No.16 (Rev.1), ¶ 5 <https://www.ohchr.org/Documents/Publications/FactSheet16rev.1en.pdf>.

209. *See, e.g.*, KATHARINE G. YOUNG, CONSTITUTING ECONOMIC AND SOCIAL RIGHTS 133 (2012) (“In enforcing the duty to respect, protect, or promote economic and social rights—indeed, in being a duty-holder themselves—courts may be called upon to decide on the nature of such rights, their scope, and the obligations that flow from them.”); DEPARTMENT OF JUSTICE OF THE HKSAR, APPLICATION OF THE INTERNATIONAL COVENANT ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS IN HONG KONG 10, https://www.doj.gov.hk/eng/public/basiclaw/basic17_3.pdf (“Although the ICESCR has not been directly incorporated into domestic law, the [Government of the Hong Kong Special Administrative Region] has an international obligation to respect, protect and fulfil the rights

Second, treating the collective right to technology as a civil liberty would encourage citizens to take legal action to defend their interest in enjoying the benefits of technological progress. They would not need to await legislative action enacting the right statutorily, but rather could invoke it when seeking legal protection from the courts when their interests are unduly harmed. As von Jhering aptly suggested, rights “suppose a continual readiness” by persons “to assert [them] and defend [them].”²¹⁰ The more often citizens assert their right to technology, the more often the courts deal with disputes involving that civil liberty, thus allowing them to properly delineate its contours. Therefore, treating the right to technology as a civil liberty would gradually address its obscure nature and scope²¹¹ and place people in a better position to assert the right more wisely in the future. These positive developments would gradually create a dynamic legal culture that promotes sharing and enjoying the benefits of technological progress.

Third, the collective right to technology would also encourage the government to protect the collective right to technology as a positive liberty, which would require it to take such proactive measures as providing people with the resources necessary to exercise the right.²¹² For instance, scholars from scientific and engineering disciplines hope that in fulfilling their responsibility to protect the right to technology, governments may make it a priority to “[i]ncrease funding for scientific infrastructure and research, [p]rovide adequate science education to the general public, [p]romote a positive view of science and scientists among the public, [e]nsure open access to scientific information, [and p]romote and protect academic freedom.”²¹³ With a right to technology, people could critically examine whether the government has fulfilled its proactive responsibilities in this regard, and then decide whether they should launch lawsuits or take civic actions like media campaigns and public shaming to accuse the government of its failures.

recognized in the Covenant. Our courts may use the ICESCR provisions and the General Comments issued by the CESCR as an aid in interpreting local laws and relevant provisions of the Basic Law. It is thus important that all relevant stakeholders have a proper understanding of the requirements of the Covenant.”).

210. RUDOLF VON JHERING, *THE STRUGGLE FOR LAW* 1 (1915).

211. *See supra* Part II.B.1.

212. For the discussion about the nature of negative and positive liberties, *see supra* Part IV.A.

213. *See* J.M. Wyndham et al., *Giving Meaning to the Right to Science: A Global and Multidisciplinary Approach* 16 (report prepared under the auspices of the AAAS Scientific Responsibility, Human Rights and Law Program and the AAAS Science and Human Rights Coalition, 2017).

V. APPLYING THE COLLECTIVE RIGHTS APPROACH

How can domestic courts protect the collective right to technology as a civil liberty? I suggest that the application of IP laws presents courts with an appropriate occasion for them to determine whether they should afford judicial protection to this right. When adjudicating IP lawsuits involving the distribution of technological benefits, courts can attempt to interpret the nature and scope of the relevant IP rules to determine whether they can provide the legal basis for protecting the right to technology. In this context, a court may first decide whether an IP lawsuit directly affects the equitable distribution of technological benefits and is thus inextricably linked with enjoyment of the right to technology.²¹⁴ If so, it may further redefine the limitations on IP rights, such as copyright fair use, on the basis of a collective user right to technological benefits.

In this section, I argue that judicial rulings on the Google Library actually shed light on how courts may recognize and protect the right to technology through their interpretation of existing IP laws. I also consider how courts can address potential conflicts between protection of this collective right and of individual IP rights.

A. Identifying Technological Benefits

The emergence of scanning and data-processing technologies, together with the invention of the internet, has paved the way for digital libraries that offer unprecedented access to a vast body of knowledge, undoubtedly facilitating engagement in educational and free speech activities.²¹⁵ Technically, digital libraries allow users to read, borrow, search, copy, paste, highlight, and comment in ways that traditional libraries cannot.²¹⁶ In the age of big data and artificial intelligence, digital libraries appear more desirable than ever,²¹⁷ promoting speedy information searches and knowledge-sharing for a diverse array of human activities and ambitions.

214. See *supra* Part III.B.3.

215. MAURIZIO BORGHI & STAVROULA KARAPAPA, COPYRIGHT AND MASS DIGITIZATION 10 (2013) (“This unprecedented empowering of the reading experience with the accumulation of all the world’s knowledge in electronic format, and with all possible associations that can be made by exploring the computational potential of this knowledge, is what mass digitization promises to achieve.”).

216. See KAREN CALHOUN, EXPLORING DIGITAL LIBRARIES: FOUNDATIONS, PRACTICE, PROSPECTS 18 (2014).

217. See Jian Wu et al., *CiteSeerX: AI in a Digital Library Search Engine*, in PROCEEDINGS OF THE TWENTY-SIXTH ANNUAL CONFERENCE ON INNOVATIVE APPLICATIONS OF ARTIFICIAL INTELLIGENCE (2014) (discussing the application of artificial intelligence to digital libraries); Abdelaziz Abid, *The World Digital Library and Universal Access to Knowledge*, UNESCO, at 1 (2009), http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/programme_doc_wdl.pdf (“UNESCO is particularly committed to support[ing] the World Digital Library to expand and grow worldwide.”); Catherine Nicole Coleman, *Artificial Intelligence and the Library of the Future, Revisited*, STANFORD

Amid copyright disputes on the legality of digital libraries, academics and policymakers have considered how digital libraries can promote the rights to education²¹⁸ and freedom of expression.²¹⁹ Easier access to books undoubtedly facilitates dissemination of the knowledge to individual citizens for them to engage in educational and free speech activities. However, copyright disputes over digital libraries are, to a larger extent, legal cases dealing with how to share the benefits of advances in scanning and data-mining technologies. The resulting judicial rulings, as demonstrated by those concerning the Google Library, determine to what extent the benefits of digital libraries using those technologies can be distributed in the public interest.

Hailed as “the most significant humanities project of our time,”²²⁰ the Google Library has scanned over twenty million books, accounting for approximately one-seventh of all books published since the invention of the printing press.²²¹ In 2005, the Authors Guild challenged the legality of the Google Library before the Southern District Court of New York, alleging that Google had committed copyright infringement by scanning copyrighted books and displaying them publicly without the permission of the copyright owners.²²² The subsequent rulings by the U.S. courts examine the technological benefits that the Google Library offers to the public. In *Authors Guild, Inc. v. Google, Inc.*,²²³ the District Court took pains to examine the digital technologies that Google Library applies and their potential public benefits:

LIBRARIES (Nov. 3, 2017), <https://library.stanford.edu/blogs/digital-library-blog/2017/11/artificial-intelligence-and-library-future-revisited>.

218. See SUSAN PERRY & CLAUDIA RODA, HUMAN RIGHTS AND DIGITAL TECHNOLOGY: DIGITAL TIGHTROPE 163–64 (2017).

219. See Land, *supra* note 18.

220. James Somers, *Torching the Modern-Day Library of Alexandria*, ATLANTIC (Apr. 20, 2017), <https://www.theatlantic.com/technology/archive/2017/04/the-tragedy-of-google-books/523320> (reporting that according to Richard Ovenden, the head of Oxford’s Bodleian Libraries, “[t]he universal library has been talked about for millennia”); Tim Wu, *What Ever Happened to Google Books?*, NEW YORKER (Sept. 11, 2015), <https://www.newyorker.com/business/currency/what-ever-happened-to-google-books> (“It was the most ambitious library project of our time—a plan to scan all of the world’s books and make them available to the public online.”).

221. Jon Orwant, *Ngram Viewer 2.0*, GOOGLE RESEARCH BLOG (Oct. 18, 2012), <https://research.googleblog.com/2012/10/ngram-viewer-20.html>.

222. Paul Aiken, *Authors Guild Sues Google, Citing “Massive Copyright Infringement”*, AUTHORS GUILD (Sept. 20, 2005), <https://www.authorsguild.org/industry-advocacy/authors-guild-sues-google-citing-massive-copyright-infringement> (asserting that Google’s “unauthorized scanning and copying of books through its Google Library program is a ‘plain and brazen violation of copyright law’” because “[i]t’s not up to Google or anyone other than the authors, the rightful owners of these copyrights, to decide whether and how their works will be copied”).

223. *Authors Guild, Inc. v. Google Inc.*, 954 F. Supp. 2d 282, 286 (S.D.N.Y. 2013).

In scanning books for its Library Project, including in-copyright books, Google uses optical character recognition technology to generate machine-readable text, compiling a digital copy of each book. Google analyzes each scan and creates an overall index of all scanned books. The index links each word or phrase appearing in each book with all of the locations in all of the books in which that word or phrase is found. The index allows a search for a particular word or phrase to return a result that includes the most relevant books in which the word or phrase is found. Because the full texts of books are digitized, a user can search the full text of all the books in the Google Books corpus.²²⁴

This discussion captures the three major digital technologies that Google Books employs: optical character recognition, data mining, and data searching.²²⁵ It also considers how they can benefit the public by creating new ways of disseminating information and knowledge. Building upon the above findings of the District Court, the Court of Appeals for the Second Circuit compared the Google Books Library Project with the HathiTrust Digital Library and considered the extent to which the former makes use of more advanced digital technologies. For example, the Second Court pointed out that both libraries offer search functions to users, but Google Books' search function is more technologically advanced because it displays snippet views of specific content relevant to search words.²²⁶

B. *Protecting the Right to Technology Through the Fair Use Doctrine*

Upon identifying the centrality of technological benefits to an IP case, courts may further consider how limitations on IP rights such as the copyright fair use doctrine can be invoked to protect the right to technology. Typically, a conventional "fair use" dispute is concerned with whether a particular user, namely the defendant, is legally allowed to use a particular work belonging to the plaintiff.²²⁷ For example, in *Shepard Fairey v. Associated Press*,²²⁸ the central legal issue was whether or not the creator of the 2008 "Hope" poster had made fair use of a portrait of President Obama.²²⁹

224. *Id.* at 286 (citations omitted).

225. *Id.* at 286–87.

226. *Authors Guild, Inc. v. Google, Inc.*, 804 F.3d 202, 217 (2d Cir. 2015) ("HathiTrust did not 'display to the user any text from the underlying copyrighted work,' . . . whereas Google Books provides the searcher with snippets containing the word that is the subject of the search.").

227. *See Sun, Fair Use as a Collective User Right*, *supra* note 131, at 146.

228. No. 09-01123 (S.D.N.Y. 2010).

229. *See generally* JULIE COHEN, *CONFIGURING THE NETWORKED SELF: LAW, CODE, AND THE PLAY OF EVERYDAY PRACTICE* 80–106 (2012); William W. Fisher III et al., *Reflections on the Hope Poster Case*, 25 HARV. J.L. & TECH. 243, 256–57 (2012); William Landes,

The Google Library cases differ, centering on the distribution of a work's technological benefits, rather than the legality of an unauthorized use of a copyrighted work.

Copyright disputes like the Google Library cases interrogate whether the provision of new technologies for accessing and using copyrighted works should be privileged as fair use. That is, they grapple with the question of whether the fair use doctrine should permit new digital technologies for the benefit of the public by providing them with new technological means of accessing and using copyrighted works.²³⁰ Notably, the public can still have access to the information and knowledge contained in books that are captured in the Google Library by purchasing them or visiting other libraries that house them. Google Library simply makes access easier and cross-referencing their content more convenient.

Both the District Court and the Second Circuit ruled that Google's application of digital technologies to books constitutes "fair use" under Section 107 of the U.S. Copyright Act.²³¹ Fair use is a limitation on copyright, allowing the public to use a copyrighted work without obtaining permission from, or paying royalties to, its rights holder.²³² The Google Library rulings provide two important lessons on how the fair use doctrine could be applied to protect the collective right to technology.

First, courts can invoke the fair use doctrine to determine whether a copyrighted work is "used" in the public interest. The District Court and the Second Circuit relied upon the fair use concept of "transformative" use to decide whether Google applied new technologies to scan and display works in the public interest. By adding a "new expression, meaning, or message"²³³ or function²³⁴ to the original work, transformative use communicates a new work or the original to the public with benefits that the copyright holder of the original work did not intend to offer.²³⁵ Transformative uses are permitted by U.S. copyright law because they ultimately "enrich public

Copyright, Borrowed Images, and Appropriation Art: An Economic Approach, 9 GEO. MASON L. REV. 1, 2 (2000).

230. See Edward Lee, *Technological Fair Use*, 83 S. CAL. L. REV. 797, 798 (2010) (arguing that "technological fair uses" deal with "the legality of new technologies that can have a profound impact on innovation and the growth of the U.S. economy, as well as on people's daily lives").

231. 17 U.S.C. § 107 (2019).

232. *Id.* ("[T]he fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright.")

233. *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

234. *Kelly v. Arriba Soft Corp.*, 336 F.3d 811, 819 (9th Cir. 2003).

235. *Authors' Guild, Inc. v. Google Inc.*, 804 F.3d 202 (2015) ("[T]ransformative uses tend to favor a fair use finding because a transformative use is one that communicates something new and different from the original or expands its utility, thus serving copyright's overall objective of contributing to public knowledge").

knowledge.”²³⁶ The immediate beneficiary of a transformative use is the party who uses a work for a transformative purpose, like the Google Library. By making transformative use of copyrighted books, Google received the immediate benefits from the creation of the library. Nevertheless, the ultimate beneficiaries of the transformative use are members of the public. When assessing the search function afforded by the Google Library, the Second Circuit pointed out the public benefits that accrued from Google’s transformative use:

As with HathiTrust (and iParadigms), the purpose of Google’s copying of the original copyrighted books is to make available significant information about those books, permitting a searcher to identify those that contain a word or term of interest, as well as those that do not include reference to it. In addition, through the Ngrams tool, Google allows readers to learn the frequency of usage of selected words in the aggregate corpus of published books in different historical periods. We have no doubt that the purpose of this copying is the sort of transformative purpose described in *Campbell* as strongly favoring satisfaction of the first factor.²³⁷

Thus, the purpose of Google’s reproduction of copyrighted books, according to the Second Circuit, was to add an information search function to those books; a function the books’ copyright holders had not offered. The search function ultimately benefits readers, who are members of the public, enabling them to efficiently locate particular information contained within a book, as well as information on the frequency of particular word usage.

The snippet view function of Google Books also helped the Second Circuit to find that Google had developed a transformative use for the original copyrighted material:

Google’s division of the page into tiny snippets is designed to show the searcher just enough context surrounding the searched term to help her evaluate whether the book falls within the scope of her interest. . . . Snippet view thus adds importantly to the highly transformative purpose of identifying books of interest to the searcher.²³⁸

The above passage shows that the ultimate beneficiaries of the snippet view function are members of the public in their capacity as information searchers. That function thus serves the public interest in evaluating the content surrounding searched words, providing them with a better understanding of search results extracted from a vast pool of information.

The second lesson gleaned from the Google Library rulings is that courts can redefine fair use as a collective right to technology enjoyed by

236. *Id.* at 214 (quoting *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 591 (1994)).

237. *Id.* at 217.

238. *Id.* at 218.

users of copyrighted works. Conventionally, courts have treated fair use as an affirmative defense against allegations of copyright infringement.²³⁹ Such a fixed characterization of fair use has encouraged legislators and judges to balance the individual interests of each owner and user of a copyrighted work, leading to a wide range of harms to the public interest in the free flow of information and knowledge.²⁴⁰ But as the Google Library rulings illustrate, courts can better protect the public interest by redefining fair use as a collective user right to technology.

In the Google Library cases, the courts examined users' group and societal interests in improved access to knowledge with the aid of digital technologies. Pointing out that the public interests in the Google Library "are many,"²⁴¹ the District Court specifically identified five uses of the Library that serve the public interest: providing "a new and efficient way for readers and researchers to find books;"²⁴² promoting "a type of research referred to as 'data mining' or 'text mining,'"²⁴³ expanding "access to books;"²⁴⁴ preserving old books, including out-of-print ones;²⁴⁵ and "helping readers and researchers identify books."²⁴⁶ The court also explained how these collective interests could be enjoyed by different groups of users:

[The Google Library] makes tens of millions of books searchable by words and phrases. It provides a searchable index linking each word in any book to all books in which that word appears. Google Books has become an essential research tool, as it helps librarians identify and find research sources, it makes the process of interlibrary lending more efficient, and it facilitates finding and checking citations. Indeed, Google Books has become such an important tool for researchers and librarians that it has been integrated into the educational system—it is taught as part of the information literacy curriculum to students at all levels.²⁴⁷

The courts also identified how Google's digital technologies protect societal interests, and the District Court noted, after duly applying the four-

239. See Pamela Samuelson, *Unbundling Fair Uses*, 77 *FORDHAM L. REV.* 2537, 2539 (2009) ("Fair use has been invoked as a defense to claims of copyright infringement in a wide array of cases over the past thirty years."). See generally Sun, *Fair Use as a Collective User Right*, *supra* note 131, at 134–42 (examining how fair use has been treated as an affirmative defense judicially).

240. See Sun, *Fair Use as a Collective User Right*, *supra* note 131, at 151–63.

241. *Authors Guild, Inc. v. Google, Inc.*, 954 F. Supp. 2d 282, 287 (S.D.N.Y. 2013).

242. *Id.*

243. *Id.*

244. *Id.* at 288.

245. *Id.*

246. *Id.*

247. *Id.* at 287 (citations omitted).

factor test for fair use,²⁴⁸ that protection of larger societal interests by Google's digital technologies could dictate the outcome of the fair use analysis. The court reasoned:

Google Books provides significant *public benefits*. It advances the progress of the arts and sciences, while maintaining respectful consideration for the rights of authors and other creative individuals, and without adversely impacting the rights of copyright holders. It has become an invaluable research tool that permits students, teachers, librarians, and others to more efficiently identify and locate books. It has given scholars the ability, for the first time, to conduct full-text searches of tens of millions of books. It preserves books, in particular out-of-print and old books that have been forgotten in the bowels of libraries, and it gives them new life. It facilitates access to books for print-disabled and remote or underserved populations. It generates new audiences and creates new sources of income for authors and publishers. Indeed, *all society benefits*.²⁴⁹

Similarly, the Second Circuit concluded that the case should first be decided by careful scrutiny of the four fair use factors and then by the application of public interest considerations:

[C]onsidering the four fair use factors in light of the goals of copyright, we conclude that Google's making of a complete digital copy of Plaintiffs' works for the purpose of providing *the public* with its search and snippet view functions (at least as snippet view is presently designed) is a fair use and does not infringe Plaintiffs' copyrights in their books.²⁵⁰

Both opinions aggregate the benefits provided by Google's digital technologies as societal interests.²⁵¹ In short, they found that Google's advances in digital technologies render its digital library an ideal vehicle for enhanced sharing of knowledge.²⁵²

248. 17 U.S.C. § 107 (2019) ("In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include— (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.").

249. Authors Guild, 954 F. Supp. 2d, at 293.

250. Authors Guild, 804 F.3d at 225.

251. See Douglas Lichtman, *Google Book Search in the Gridlock Economy*, 53 ARIZ. L. REV. 131, 142 (2011); Hannibal Travis, *Building Universal Digital Libraries: An Agenda for Copyright Reform*, 33 PEPP. L. REV. 761, 765–66 (2006).

252. See Pamela Samuelson, *The Google Book Settlement as Copyright Reform*, 2011 WIS. L. REV. 479, 562 (2011) (emphasizing that "the accumulated knowledge of humankind contained in millions of books from major research library collections can be made widely available to future generations through digitally networked environments.").

Other cases support the redefinition of fair use as a user right. In *CCH Canadian Ltd. v. Law Soc’y of Upper Canada*,²⁵³ for example, the Supreme Court of Canada ruled that the fair dealing doctrine under the Canadian Copyright Act should be redefined as “a user’s right.”²⁵⁴ To achieve balanced protection of the rights of both copyright holder and user, fair dealing “must not be interpreted restrictively.”²⁵⁵ Later in *Soc’y of Composers, Authors and Music Publishers of Canada v. Bell Canada*,²⁵⁶ the Canadian Supreme Court reiterated its liberal understanding of fair dealing, stating that “users’ rights are an essential part of furthering the public interest objectives of the [Canadian] Copyright Act.”²⁵⁷

In some isolated cases, the U.S. courts have redefined fair use as a right for users under U.S. copyright law. In *Suntrust Bank v. Houghton Mifflin Co.*, the U.S. Court of Appeals for the Eleventh Circuit rejected the characterization of fair use as an affirmative defense, positing that it “should be considered an affirmative right.”²⁵⁸ The U.S. Court of Appeals for the Second Circuit also made an attempt to redefine fair use as a right in *NXIVM Corp. v. Ross Institute* by relying on the Copyright Clause of the U.S. Constitution.²⁵⁹

These courts did not elaborate on the nature of the user right; nor did they elaborate on steps to invoke the user right concept in fair use or fair dealing cases. The Google Library rulings, however, show that courts can redefine fair use as a collective user right to technology in cases that involve

253. [2004] 1 S.C.R. 399, ¶ 48 (Can.).

254. *Id.*

255. *Id.*

256. [2012] S.C.R. 326, ¶ 11 (Can.).

257. *Id.* ¶ 27.

258. *SunTrust Bank v. Houghton Mifflin Co.*, 268 F.3d 1257, 1260 n.3 (11th Cir. 2001) (internal citations omitted). In this footnote, the court cited to a footnote in *Bateman v. Mne- monics, Inc.*, which proposed fair use as a right:

Although the traditional approach is to view “fair use” as an affirmative defense, this writer, speaking only for himself, is of the opinion that it is better viewed as a right granted by the Copyright Act of 1976. Originally, as a judicial doctrine without any statutory basis, fair use was an infringement that was excused—this is presumably why it was treated as a defense. As a statutory doctrine, however, fair use is not an infringement. Thus, since the passage of the 1976 Act, fair use should no longer be considered an infringement to be excused; instead, it is logical to view fair use as a right. Regardless of how fair use is viewed, it is clear that the burden of proving fair use is always on the putative infringer.

79 F.3d 1532, 1542 n.22 (11th Cir. 1996).

259. 364 F.3d 471, 485 (2d Cir. 2004) (Jacobs, J., concurring) (“Fair use is not a doctrine that exists by sufferance, or that is earned by good works and clean morals; it is a right—codified in § 107 and recognized since shortly after the Statute of Anne—that is “necessary to fulfill copyright’s very purpose, [t]o promote the Progress of science and the useful arts”) (alteration in original) (quoting *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 575 (1994)).

the use of copyrighted works to distribute technological benefits. Essentially, the Google Library allows the public to collectively enjoy the benefits of digital technologies by enhancing access to and use of copyrighted works. By relying upon this redefined nature of fair use, courts could resolve similar cases about the distribution of technological benefits associated with copyrighted works. Courts may apply this collective rights approach to further redefine other limitations on IP rights, such as the “experimental use” defense and “exhaustion of rights” doctrine.

In the Google Library rulings, the courts identified and protected public interests as group interests and societal interests. Following these analytical tactics, courts may identify whether any group of people or all members of a society have benefited from unauthorized uses of copyrighted works or patents under a related limitation on IP rights.²⁶⁰ Subsequently, courts may consider whether those collective interests merit protection by applying factor-based analysis, such as consideration of the four fair use factors.

C. *Potential Conflicts of Collective Rights and Individual Rights*

Collective rights have been accused of unduly jeopardizing individual rights. Similarly, the criticism could be made that applying the right to technology to IP disputes could easily infringe upon individual interests involved in IP rights. Were that to occur, the argument goes, IP rights holders would sacrifice too much financially and the policy balance struck by IP law would be completely upended. For example, the U.S. Supreme Court has cautioned:

Any copyright infringer may claim to benefit the public by increasing public access to the copyrighted work. But . . . we see no warrant for judicially imposing, a ‘compulsory license’ permitting unfettered access.²⁶¹

The single-minded prioritization of collective interests would render IP as an individual right meaningless. It would deprive IP rights holders of their economic interests in circulating their creations in the marketplace, ultimately deterring them from creating and disseminating new creations,²⁶² which would in turn impair collective interests. With respect to patent policy, Professor Rochelle Dreyfuss has emphasized that the right to technology “must not be interpreted in a manner that hinders the motivation or capacity to invent discoveries that society will eventually desperately need, or inter-

260. See, e.g., Haochen Sun, *Copyright Law as an Engine of Public Interest Protection*, *supra* note 70, at 171 (2019) (arguing that courts can protect the public interest proactively).

261. *Harper & Row, Publishers, Inc. v. Nation Enterprises*, 471 U.S. 539, 569 (1985).

262. See *Authors Guild, Inc. v. HathiTrust*, 755 F.3d at 95 (“A fair use must not excessively damage the market for the original by providing the public with a substitute for that original work.”).

fere with the establishment of industries that will, in the long run, promote social welfare.”²⁶³

In response to these valid concerns, I argue that application of the collective right to technology actually continues to require courts to take seriously IP rights holders’ individual interests in merchandizing their creations in the marketplace. Courts must be vigilant in applying the safeguards built into IP law that protect individual IP rights holders’ economic interests.

Although the collective right to technology situates the overall fair use analysis within the context of the public interest at large, it still requires courts to follow the traditional judicial practice of applying the fair use factors in a holistic and balanced manner.²⁶⁴ The fourth factor under the fair use doctrine mandates that courts consider “the effect of the use upon the potential market for or value of the copyrighted work.”²⁶⁵ When weighing the fair use factors, especially the first factor, which examines “the purpose and character of the use”²⁶⁶ in the public interest, courts should take full account of the fourth factor, guarding against uses that would cause substantial economic harm to the copyright holder concerned.

The collective right to technology by no means empowers the first fair use factor to override the other fair use factors. Instead, the right still upholds the fourth fair use factor to guard against substantively harmful disruption of the IP rights holders’ market by maintaining the fourth factor on an equal footing with other fair use factors. With these built-in safeguards, application of the right to technology can serve as a vehicle for courts to achieve the proper application of all four fair use factors by permitting them to serve as checks on one another.

VI. CONCLUSION

Humanity’s future depends in large part on the promotion of distributive justice in the enjoyment of technological benefits. Hence, the right to technology should become a centerpiece of the global human rights regime.

As this article has demonstrated, redefining the right to technology as a collective right would pave the way for its transformation into a civil liberty, triggering citizens’ active recourse to the adjudication of justice. The

263. Rochelle Cooper Dreyfuss, *Patents and Human Rights: The Paradox Re-Examined* 65, in *INTELLECTUAL PROPERTY AND ACCESS TO SCIENCE AND CULTURE: CONFLICT OR CONVERGENCE?* 65 (Christophe Geiger ed., 2016).

264. *Cambridge Univ. Press v. Patton*, 769 F.3d 1232, 1283 (11th Cir. 2014) (ruling that Section 107 requires “a holistic analysis which carefully balance[s] the four factors”); *Peter Letterese & Assocs., Inc. v. World Inst. of Scientology Enters.*, 533 F.3d 1287, 1308 (11th Cir. 2008) (“The fair use doctrine is an ‘equitable rule of reason’; neither the examples of possible fair uses nor the four statutory factors are to be considered exclusive.”) (quoting *Stewart v. Abend*, 495 U.S. 207, 236–37 (1990)).

265. 17 U.S.C. § 107 (2019).

266. *Id.*

continued combination of civic engagement and judicial protection of this civil liberty would inform its nature and scope consistent with rapidly developing technological conditions in society. However, the right to technology does not have to upend the IP protection system that distributes technological benefits through voluntary market transactions. Rather, it allows for a limited exception to this market-oriented system by empowering courts to protect the public's equal enjoyment of technological benefits when necessary.²⁶⁷

The collective right to technology is crucial to enhancing human rights protection in years to come because it can usher in a more socially dynamic distribution of technological benefits. This will be one of the most significant distributive justice agendas in the contemporary world, especially given the role of technology in protecting many other human rights including those to health, food, education, and free speech. With the collective right to technology in everyone's hands, we will be in a much better position to harness technology in the full service of humanity.

267. See Kal Raustiala, *Density and Conflict in International Intellectual Property Law*, 40 U.C. DAVIS L. REV. 1021, 1038 (2007) ("Given the pernicious effects of overly robust IP protection on many individuals and societies around the world, the combination of IP and human rights may produce many beneficial effects.").