MARC M. ANDERSON
ORCID: 0009-0009-8626-2434
Loria, Université de Lorraine

Rare Opportunity or History Revisited? The Pitfalls and Prospects of Ethical AI in Light of Public Ethical Responses to the Telegraph

Abstract: This article undertakes a comparative ethical analysis of the types of public expectations and concerns related to the development of two technologies: the telegraph and artificial intelligence. For each technology I provide a historical survey of public ethical expectations and concerns followed by a survey of the outcome or results of those expectations. Expectations and concerns of the telegraph era public are drawn together from popular and public literature and regulation of the period, whereas the expectations and concerns of our contemporary public AI engagement are drawn both from popular literature and public surveys, and supported by a manual search and ranking of a number of ethics related terms found in the raw feedback of the Stakeholder Consultation on the EU Commission High Level Expert Group Guidelines for Trustworthy AI. I then go on to compare those results, highlighting the similarities and differences between the two technologies, in particular the positive economic and socially responsible use expectations outcomes and the negative concerns regarding monopoly, regulation, and control. Finally, I argue that, taking the telegraph outcome as a guide, an ethical focus on accentuating positive expectations toward AI is more likely to produce definite results than concentrating upon prohibitory and negative approaches.

Keywords: artificial intelligence, ethics, comparative ethics, public, telegraph

1. Introduction

Records of ethics as a human endeavor are 2500 years old at least and perhaps older. Typically, the pursuit of ethics has been a matter of philosophers advancing a considered view of how humans in community should act. But alongside this, ethical results have been sought by the general public indirectly, as currently with artificial intelligence. In this article I undertake a comparative ethical analysis of public ethical expectations and concerns regarding AI against public expectations and concerns which arose regarding an earlier technology, the telegraph. I have chosen the latter in particular because it ignited considerable public debate in its day, just as AI now does.

First, I consider the rise of the telegraph during the period from about 1850 to 1900, in European and North American society. Public ethical reaction to this new technology is explored from a number of angles. How extensive was the public reaction to the telegraph and what form did it take? What were some of the major ethical concerns regarding the technology? What were the eventual results of this public ethical engagement? From there I move to the current situation regarding AI ethics as a demand of the public. After briefly surveying the history of AI ethics, I ask similar questions. How big is the public demand for AI ethics? What are its major concerns? Again, what have been the results so far of this public engagement?

I then compare the differences and similarities in the public engagement of the telegraph and AI and go on to make some suggestions regarding AI ethical effort, in light of the development of the telegraph. The goal is to soberly assess the potential for AI ethics as a public demand, i.e. to help peel away mere hype from a practical ethical engagement and spark ethical discussion through the comparison. Understanding the public reception of the telegraph can offer a fresh point of view to help us better reflect upon AI development, while offering a potential corrective to the hype surrounding AI, since as I will show 'we've been there before' with the telegraph. Finally, it can serve as an exercise in comparative ethics.

One may object that a precise and quantitative assessment of public ethical engagement is difficult to impossible for either technology, since on the one hand AI is too young a technology — its use on a public scale is still too brief — and conversely the telegraph is too old a technology, for us to have precise assessments. And in that case, such a comparative effort might be either premature or vague. Yet, taking a pragmatic view of ethics, in which ethics is not less than an accretion of consistent and successive actions and assessments in which the moral individual and society build one another up by turns, then there is an advantage to be gained in understanding the social developments of morality and comparing such developments. A work of this length can at least lay some groundwork for the comparison in question and thus offer some preliminary indications of what we can — or cannot — expect, as an outcome of the public ethical engagement of AI.

2. Telegraph Ethics

In exploring the public engagement of the telegraph as a new technology, I ask two concessions of the reader. The first regards the distinction between ethics and

morality. The central issue I am concerned with here is: the interest of the general public in the issues surrounding the development, use, effects, and regulation of a technology in relation to its effects upon the general public. Thus, I will take morality as understood in the historic period under discussion and ethics as now popularly understood, to be synonymous, practically speaking. My main interest is the popular sense that 'something has to be done' about the technology because of the new issues, positive and negative, opened up by its development, use, etc. The positive sense of 'what good can we do or achieve with this technology,' and the negative sense of 'what problems are this technology causing and what ought we not do with it?' join public morality and ethics.

The second concession involves the differences in type of technology. The electric telegraph became largely a technology for communication between humans. But it did not begin that way, being originally developed for train signaling.[1] AI is more than a communication technology. But AI can also be regarded as communication technology on a much more complex level, e.g. algorithms can help in other communication technologies, can help extract and communicate complex information in tandem with other technologies, and are popularly envisioned as standing as surrogates — e.g. the various ChatGPTs — for human communicators. The differences in purposes of the technologies should not alter the usefulness of the comparison, since the main interest is in exploring public engagements in new technologies as a potential for ethical progress, and in applying whatever insights might be found toward a practical progress in AI ethics.

2.1. Scale of Public Reaction to the Telegraph

The first practical and commercial electrical telegraphs were invented in the 1830s and came into widespread commercial use in the 1840s. We have no exact way of measuring the scale of public moral reaction to the telegraph, but we can get a sense of it by considering the commentary which arose at the time in various social groups.

An opening comment upon on the completion of the Atlantic telegraph cable, helps capture some of the public perception of the technology.

> The completion of the Atlantic Telegraph, the unapproachable triumph which has just been achieved in the extension of the submarine electrical Cable between Europe and America, has been the cause of the most exultant burst of popular enthusiasm that any event in modern times has ever elicited. So universal and joyful an expression of public sympathy betokens a profound emotion that will not immediately pass away. The laying of the Telegraph Cable is regarded, and most justly, as the greatest event in the present century.[2]

---

[1] B. Winston, *Media Technology and Society, a History: From the Telegraph to the Internet*, London: Routledge 1998, p. 23.

[2] C.F. Briggs, A. Maverick, *The story of the telegraph and a history of the great Atlantic cable: a complete record of the inception, progress and final success of that undertaking, a general history of land and oceanic telegraphs, descriptions of telegraphic apparatus, and biographical sketches of the principal persons connected with the great work*, New York: Rudd & Carleton 1858, p. 11.

The first such cables soon failed, but by 1866 they had been made permanent and the public interest seems to have been undiminished by the failure. The later effort of 1866 was spoken of thus: "The importance of this, the latest and greatest success of the art of telegraphy, can scarcely by overrated, and it will, ... rank among the greatest, because the most practically important, of the achievements of the age."[3]

These are strong words. What was unique about the telegraph, however, compared to the many other technological inventions of the time, was that it was viewed as enhancing other technologies, as a sort of overlay upon them. This effect was viewed in a positive sense as a moral effect. Briggs and Maverick quote Lord Carlisle speaking of the 'moral links' between Europe and North America which are to be strengthened immeasurably by the 'material link' of the telegraph.[4] Gordon, speaks of the sense of moral obligation of Peter Cooper, a Unitarian, businessman, and one of the prominent architects of the Atlantic telegraph.[5] Alfred Vail, an inventor and confederate of Morse, envisions the telegraph as destined to produce "a greater amount of moral influence upon the community, if under proper guidance, than any discovery in this or any other past age of the world," but added that in the wrong hands the influence would result in an enormous amount of evil.[6] The expectation, couched in glowing and optimistic terms by many, was that the telegraph would weave its way over the whole globe, helping thought overcome time and space and human differences, and ultimately creating a global city of humanity with shared interests.

Thus, the telegraph was perceived as a moral project on a grand scale. But who was caught up in this public interest in it? Most prominently, journalists and newspapers were excited by the telegraph and were caught up in and expanded the hype.[7] Businessmen, and business in general also embraced the new technology, particularly in the stock markets, quickly recognizing that advantages in the speed of information could be extremely profitable.[8] Politicians, likewise, embraced the telegraph, and social reformers such as Osborne Ward pressed for its installation at rates and places which would be a help to the working classes.[9]

Much of the interest was on the side of the wealthy, but not all. The perspective of the poor is harder to gauge, but we have some sense of the interests and views

---

[3] Public Opinion, *A Comprehensive Survey of the Press Throughout the World on all Important Current Topics*, vol. 1: *July-December*, London 1866, p. 118.

[4] C.F. Briggs, A. Maverick, *The story of the telegraph and a history of the great Atlantic cable*, p. 95.

[5] J.S. Gordon, *A Thread across the Ocean: The Heroic Story of the Transatlantic Cable*, New York: Walker & Co. 2002.

[6] F.G. Carpenter, *The North American Review*, 154 [424] (1892), p. 381.

[7] Y. Bektaş, "Futurism, Universalism, and the Moral Agency of the Electric Telegraph", *Zeitschrift für Globalgeschichte und vergleichende Gesellschaftsforschung* 21 [6] (2011), p. 26, https://doi.org/10.26014/j.comp.2011.06.02.

[8] P. Putnis, "New Technology, the 'control crisis,' and government intervention: Lessons from Telegraphy in the 1870s", [in:] *Record of the Communications Policy & Research Forum*, Metwork Insight Institute 2008, p. 103.

[9] O. Ward, *A Labor Catechism of Political Economy: A Study for the People Comprising the Principal Arguments for and Against the Prominent Declarations of the Industrial Party, requiring that the State Assume Control of Industries*, Washington: Self-Published 1877–1892, 1878, p. 34.

of those who began to work within the technology. Telegraph employees were not highly paid. Horatio Alger's fictional Telegraph Boy, Frank Kavanagh, is shown as both poor and scorned socially by the higher social classes he encounters. On the other hand, the need for telegraph operators provided a new, if poorly paid, potential role for many women, giving them a chance to break out of existing stereotypes about female work roles.[10] In general, the telegraph was widely welcomed in sparsely populated and underdeveloped areas,[11] an outlook which persisted as late as the 1940s., as the author can attest to, based on talks with his own grandparents.

Other social classes viewed the telegraph with a spiritual and utopian outlook, including inventors, and futurists. Many religious people were caught up in the idea of the spiritual type of action exhibited by the electricity of the telegraph. Henry Rogers, an English congregationalist minister envisioned the eventual success of the Atlantic telegraph as a 'great campaign' destined to be won, which would benefit the public in the gaining of the h i g h e r m o r a l v i r t u e s o f p a t i e n c e a n d p e r s e v e r a n c e which would be necessary to overcome the difficulties of the disseminating the technology.[12] Supp-Montgomerie documents a rise in the Spiritualist movement which accompanied the spread of telegraphy, and which may have numbered as many as 11 million adherents in the US alone.[13] The beliefs of the movement closely tracked the possibilities evoked by telegraphy, sometimes literally, and blurred the boundaries between science, religion, and magic.[14]

2.2. Public Ethical Engagement of the Telegraph

Clearly telegraphy and the telegraph, its possibilities and its immediate effects, caught the public attention on a grand scale. There was, as we have seen, an overarching sense, expressed in many variations, that: 'the telegraph will change the human condition immeasurably.' This despite the early failures of the telegraph. And, whether misplaced or not, at the highest level it was a moral and ethical sense, an urge to break out into a higher value of the human condition.

It had a less vague ethical component as well, which the public debated vigorously. This is found in the literature of the time in questions about the technology, proscriptions for it, and reactions to the way it developed. I will categorize the issues under ethically positive and ethically negative. My interest is not in analyzing the technology ethically from a contemporary perspective, but in outlining the ethical/moral issues which seemed important enough to warrant discussion by the public of the time.

---

[10] T.C. Jepsen, *My Sisters Telegraphic: Women in the Telegraph Office*, 1846–1950, Athens Ohio: Ohio UP 2000, p. 64, 77.

[11] B. Winston, *Media Technology and Society, a History*, p. 28.

[12] H. Rogers, "Thoughts Suggested by the Failure of the Atlantic Telegraph", *Good Words* 6 (Nov., London 1865), p. 835.

[13] J. Supp-Montgomerie, *When the Medium Was the Mission: The Atlantic Telegraph and the Religious Origins of Network Culture*, New York: New York University Press 2021, pp. 108–109.

[14] Ibidem, p. 113.

2.2.1. Positive Expectations

On the positive side we have seen that many, including its inventors and developers such as Vail, envisioned the telegraph as a positive moral influence upon the community in general which would lead to something U t o p i a n o r s p i r i t - u a l betterment. The actual working out of this positive influence in practice was somewhat vague, but the dream was there.

George Wilson, professor of technology at Edinburgh, outlining the history of telegraph development up to 1858, evokes the similarity with communication in nature, as well as the large-scale cooperation that humanity is capable of in an effort such as telegraphy. "The best interests of the world are bound up in its progress, and its mission is emphatically one of peace ... it offers men a common speech in which all mankind can converse together"[15]. In the beginning at least, there was a hope that enhanced ability to communicate, in terms of speed and distance, and the universalization of communication, would help bring about p e a c e by resolving disputes at international scales, before they turned into larger conflicts.

From another angle the telegraph was viewed as a herald of technology acting as medium for human moral and social betterment. In this an e c o n o m i c component was married to a particular vision of s o c i a l r e s p o n s i b i l i t y. The telegraph became a symbol for, as Carey notes, a justifying ideology for a new class of what might be called 'technologists,' i.e. professional engineers and researchers with deliberate plans to integrate technology with economic and industrial development in order to enhance humanity's future.[16] In time these people would become a major part of what C.P. Snow would later distinguish as one of the 'two cultures.' That culture was intent on bettering the world through technology, because as Snow argued: "... technology is rather easy ... technology is the branch of human experience that people can learn with predictable results."[17]

2.2.2. Negative Concerns

The question of how much the telegraph should cost, and whether it should be allowed as a m o n o p o l y, became major points of discussion. Du Boff argues that in the beginning the telegraph was viewed by many as a defense against monopoly. This did not last. Within a few decades one telegraph company, Western Union, had come to monopolize all telegraphy in the US, engendering a push to nationalize telegraphy.[18] In England the *Journal of the Society of Arts* called for nationalization, noting that the benefits of telegraphy had been 'neutralized' by the heavy prices imposed by telegraph companies.

---

[15] G. Wilson, *The Progress of the Telegraph. Being the Introductory Lecture on Technology for 1858–9*, London: Macmillan 1859, p. 59.

[16] J.W. Carey, *Technology and Ideology: The Case of the Telegraph*, Cambridge: Cambridge UP 1983, pp. 309–310.

[17] C.P. Snow, *The Two Cultures*, intro S. Collini, Cambridge: Cambridge UP 1993 [1959], p. 44.

[18] R. Du Boff, "The Telegraph in Nineteenth-Century America: Technology and Monopoly", *Society for Comparative Study of Society and History* 26 [4] (1984), p. 572.

Hand in hand with the cost question was the question of whether the technology should be government r e g u l a t e d and government owned. This worry was present from the first demonstrations of the new technology, as Vail noted.[19] Another related worry paralleled that of the monopolization of telegraph use: the monopolization and control of information. US politician Henry Clay, saw this immediately.[20] This might be a temporal monopolization of information, since some types of messages got priority over other messages. It could also be a deliberate withholding of information in time or in scope, by those, e.g. Australian newsrooms, who received the information first at the receiving end of telegrams.[21]

The telegraph also changed the nature and scale of information. It c o m m o d i - f i e d and objectified information, and resulted in leaner information stripped of local color as well as an overload of that information.[22] Information took on an ethical character in that its manipulation became subject to the many ethical issues common to all objects created by and exchanged among humans, including the issue of control noted above, but also hoarding, falsifying, theft, and overcharging.

We have already observed that the workers employed by the telegraph industry were not especially well paid and, in many cases, deprecated. The telegraph services were inoperable apart from an army of l a b o u r comprised predominantly of young boys. According to Downey, Western Union, with its American monopoly upon the telegraph, employed "the nation's single largest child-labor army."[23] This was well known and decried by social reformers of the period.

Beyond this however, and with the introduction of women into the operator workforce, telegraphy was viewed as gendered and male along with technology in general, which caused s o c i a l r e s e n t m e n t against women operators, while "in the techie magazines of the times ... many authors alluded to a possible loss of a world they idealized, a world threatened by new modes of electrical communication."[24]

The potential for publicly dangerous, i l l e g a l, or unethical messages, bothered others. The use of the telegraph for illicit romance was a major concern, and marriage by telegraph, which became exceedingly popular, caused anxiety and public disapprobation.[25]

Some, such as Henry David Thoreau, contrary to the utopians, questioned the p u r p o s e and s p e e d of telegraphic development. Thoreau predicted that the telegraph would both multiply the flow of useless information and make it easier to do the unethical: "we are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate

---

[19] F.G. Carpenter, *The North American Review*, p. 380.

[20] Ibidem, p. 382.

[21] P. Putnis, "New Technology", p. 103.

[22] F.G. Carpenter, *The North American Review*, p. 311.

[23] G. Downey, "Telegraph Messenger Boys: Crossing the Borders between History of Technology and Human Geography", *The Professional Geographer* 55 [2], 2003, p. 142.

[24] J. Cassell, M. Cramer, "High Tech or High Risk: Moral Panics about Girls Online", [in:] *Digital Youth, Innovation, and the Unexpected*, T. McPherson (ed.), The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning, Cambridge, MA: The MIT Press 2008, p. 59.

[25] T.C. Jepsen, *My Sisters Telegraphic*, pp. 112–114, 137–138.

... as if the main object were to talk fast and not to talk sensibly."[26] Frederick Hedge, in the same camp as Thoreau, discounted the hype also: "The electric telegraph is a cunning invention; but the art of writing, about which little noise was made at the time, was a greater advance in civilization, and a greater blessing to mankind."[27]

Finally, there were some, as Carey notes, who saw soon enough that the telegraph, rather than contributing to a universal brotherhood of mankind, would facilitate the worst aspects of colonial c o n t r o l.[28] Other people, those who were controlled, evidently saw this as well, and in the British Indian Rebellion of 1857, telegraphs and the equipment which supported them attracted some of the of most extreme destruction.[29]

2.3. Results of Public Ethical Engagement of the Telegraph

The results of the public ethical engagement of the telegraph can be linked more or less to the ethical issues laid out above. Sometimes there appear to have been few or no results, despite considerable public hand wringing and debate.

2.3.1. On the Positive Expectations

On the positive side the results are sometimes harder to disclose, since reflective closure on open ended goals is difficult. The ideal of the telegraph as a technological spark to a u t o p i a n and spiritual future seems to have remained always an ideal 'a little further on'. At least in terms of moral influence, and as other negative results shown below confirm, the telegraph arguably contributed to some social problems as much as it solved others, so that few would have been ready to characterize the beginning of the 20th century as a utopia. Utopia was the goal with the new technologies, but it was also always, as Iwan Rhys Morus puts it with regard to its many celebrations in the fairs and expositions of the late 19th century: "firmly in the future."[30]

The universalization of communication as a goad to *peace*, hoped for in the telegraph, did not produce the looked-for results. Supp-Montgomerie quotes a remarkable headline about the Atlantic telegraph cable, representative of the euphoria of the time: "The World's Holiday. no more distance! no more war! ...."[31] The numerous wars, from the American Civil war, the Franco-Prussian war, to the Boer war, which arose in the latter half of the 19th century, and then the First World war, showed how very premature these hopes were. The telegraph appears to have increased cooperation at national levels — both in the sense of empires and at small-

---

[26] H.D. Thoreau, *Walden: or, Life in the Woods*, Boston: Ticknor and Fields 1854, p. 57.
[27] F.H. Hedge, *The national weakness: a discourse delivered in the First Church, Brookline, on Fast day, Sept. 26, 1861*, Leopold Classic Library 2017, p. 8.
[28] J.W. Carey, *Technology and Ideology*, p. 309.
[29] B. Wilson, *Heyday: the 1850s and the dawn of the global age*, New York: Basic Books 1980, p. 265.
[30] I.R. Morus, "Back To The Victorian Future", *Noema*, January 25, (2022).
[31] J. Supp-Montgomerie, *When the Medium Was the Mission*, p. xi.

er scales — only to have that cooperation harnessed to facilitate conflict at international levels.[32]

The s o c i a l l y   r e s p o n s i b l e use of the telegraph for the integration of human industry and technology for social betterment achieved better results. From the beginning we find calls for it to be adopted in civic infrastructure, such as in 1850s London, as a means to quickly coordinate the efforts of fire departments.[33] It was also used to facilitate early forms of long-distance medicine, and to facilitate collection of weather data. The improvement of the efficiency and safety of the railways, which had first adopted it, was a benefit from the beginning. These uses overlapped with e c o n o m i c benefits, as railways came to undergird the economy. Information exchange made possible by the telegraph led to the integration of hitherto regional businesses into larger enterprises, to consolidation and efficiency in transportation,[34] to the movement of money for private industry,[35] and to the expansion of banking globally.[36]

2.3.2. On the Negative Concerns

The results of calls to deal with the m o n o p o l i z a t i o n ,   r e g u l a t i o n , and a v a i l a b i l i t y of the telegraph differed according to different countries. Calls for de-monopolization in Britain and many Europe countries were met by nationalization of the telegraph in those countries. In the USA public calls for nationalization had little result. There, Western Union quickly gained a national monopoly which it held for many decades, while lobbying hard against all public calls toward nationalization.[37] In Europe, on the initiative of France, a treaty was established which codified international rules for telegraph use in European states as well as reducing and standardizing the tariff based upon the French franc.[38] In Britain the calls of the public eventually resulted in nationalization and uniformity of fees as well.[39]

The public discussion over information c o m m o d i f i c a t i o n and c o n t r o l did not achieve results equal to those regarding cost and monopolization, except to the extent that they also engendered anti-monopolization regulation. Information was

---

[32] Y. Bektaş, *Futurism, Universalism*, pp. 35–39.

[33] S.S. Waterlow, *Fire and Police Telegraph*, "Journal of the Society of Arts," 6 (266) (London 1857), p. 85.

[34] B. Lew, B. Cater, "The telegraph, co-ordination of tramp shipping, and growth in world trade, 1870–1910", *European Review of Economic History* 10 [2] (2006), https://doi.org/10.1017/S1361491606001663.

[35] B. Wache, "Information Frictions, Global Capital Markets, and the Telegraph", *Beiträge zur Jahrestagung des Vereins für Socialpolitik 2021: Climate Economics*, Kiel, Hamburg: ZBW – Leibniz Information Centre for Economics, 2021.

[36] C. Lin et al., "The telegraph and modern banking development, 1881–1936", *Journal of Financial Economics* 141 [2] (2021), https://doi.org/10.1016/j.jfineco.2021.04.011.

[37] Western Union Telegraph Company. *Statement: The proposed union of the telegraph and postal systems*, Statement of the Western Union Telegraph Company, Welch, Bigelow, Cambridge MA 1869.

[38] G. Sauer, *The Telegraph in Europe: A Complete Statement of the Rise and Progress of Telegraphy in Europe, showing the cost of construction and working expenses of telegraphic communications in the principal countries, etc. etc.*, Paris 1869, pp. 13–14, 24.

[39] Ibidem, p. 17.

increasingly controlled, sometimes in subtle and sometimes in direct ways. Telegraph lines could be cut, as they were in the British Indian Rebellion of 1857 and at the outbreak of the American Civil War, but this was the exception. More subtly, newspapers in Australia, resorted to copyrighting telegraphed news information, selective publishing of telegraphed news, and controlling its distribution.[40]

Reformer pushbacks against l a b o u r conditions of telegraph workers, including unionization, strikes, and calls for regulation for child telegraph messengers, resulted in unions and laws. But, as results, they were not distinctly separate from public efforts in other domains. Moreover, according to Downey, they were only fully successful in urban areas such as New York city, and were combined with largely illusory schemes on the part of Western Union to pretend to care about the career development of telegraph messenger boys.[41] With regard to s o c i a l r e s e n t m e n t o f c h a n g e and women operators, the latter sometimes joined in strikes, such as the large strikes of Western Union employees, demanding among other things equal pay for women. But these strikes mostly failed to achieve their objectives.[42]

The concerns about dangerous i l l e g a l or i m m o r a l messages resulted in the administrative controls within the European treaty on telegraphy,[43] although their practical effect is hard to gauge. In the US operators were segregated by gender in attempts to keep female operators from the 'corrupting influence' of male operators.[44] The concerns over morally illicit romances had little practical result, beyond giving rise to a class of romance novels which wove the female telegrapher experience into the morals of the day.[45]

The more philosophically oriented public concerns on s p e e d and p u r p o s e, such as Thoreau's, who viewed the telegraph as merely speeding up and increasing the unethical aspects of human action, do not seem to have issued in any definite results. The telegraph propagated widely and the information exchanged increased. There does not appear to have been any significant pause for reflection upon the intelligence and quality of the messages, or the opportunity and need for underlying ethical improvement that could make the best use of the telegraph.

3. Artificial Intelligence Ethics

In passing to the public ethical engagement of artificial intelligence, again, I ask two concessions here. The first is to recognize that in terms of public perception of AI, the overlapping subfields which fall under the umbrella of AI are generally not the subject of public ethical interest. So, e.g. the lay public is not likely to respond widely to more technical terms such as M a c h i n e L e a r n i n g, d e e p l e a r n i n g, or a l g o r i t h m. The public do not well distinguish AI from general comput-

---

[40] P. Putnis, "New Technology", pp. 102–103.
[41] G. Downey, "Telegraph Messenger Boys", pp. 140–142.
[42] J. Supp-Montgomerie, *When the Medium Was the Mission*, pp. 158–161.
[43] G. Sauer, *The Telegraph in Europe*, p. 14.
[44] T.C. Jepsen, *My Sisters Telegraphic*, p. 26.
[45] Ibidem, pp. 118–140.

er technology, but have tended to think of AI and computers together in terms of an artificial but human like mind. This is amply demonstrated in older discussions from the latter half of the 20th century. In the US Congress House Committee on Appropriations of 1951, for example, on a government rented tax computer supplied by IBM, we find this exchange:

> Mr. Canfield. I think there has been some publicity about them. Is reference being made to them as a sort of 'seeing eye'? Is that true?
>
> Mr. Williams. They call it 'a brain.'
>
> ...
>
> Mr. Williams. I think what makes the machine so interesting, and why it is called a brain or thinking machine, is that it has the ability to transfer from this counter to another unit, called a storage component, or memory, a partial answer, such as taxable net income.[46]

The second concession, is that AI ethics is not practically separable from digital ethics and issues such as compliance and data use. The problematic proliferation of domains within engineering and technology ethics has been well discussed by Skaug Sætra and Danaher,[47] who locate AI ethics, data ethics, and digital ethics as domains under computers ethics. Nonetheless, I will take AI ethics to be separate from digital and data ethics because I am interested here in public ethical perception of AI in terms of those aspects of AI which capture the lay public's ethical attention.

3.1. Scale of Public Reaction to AI

The general idea of artificial intelligence had been brought before the western public mind before the 1950s. Work on artificial intelligence as we understand it began in the 1940s. Norbert Wiener elegantly summarized some of the ethical concerns in 1947: "the first industrial revolution ... was the devaluation of the human arm by the competition of machinery ... [the second] is similarly bound to devalue the human brain ...."[48] The term artificial intelligence was coined by McCarthy in 1956, but there are references to the concept as early as 1838, under the term 'artificial brain.' In the earlier development of artificial intelligence, the meaning of the concept in the public imagination is clearly not separable from that of computers in general as 'thinking machines,' in the manner discussed in the US Congress Committee cited above. A newspaper article from 1966 speaks of thinking machines, quoting a computer scientist thus: "the basic problem lies in the layman's attempt to think of the computer in human terms," noting also that this tendency has resulted in a public fear of computers.[49] Thus, there were many popular terms for the

---

[46] House of Representatives, *Hearings before the Subcommittees of the Committee on Appropriations: Second Supplemental Appropriation Bill for 1951*, Washington: US Government Printing Office 1950, pp. 192–193.

[47] H.S. Sætra, J. Danaher, "To Each Technology Its Own Ethics: The Problem of Ethical Proliferation", *Philos. Technol* 35 [93] (2022), https://doi.org/10.1007/s13347-022-00591-7.

[48] N. Wiener, *Cybernetics: or Control and Communication of the Animal and the Machine*, Cambridge MA: MIT Press 1961 [1948], p. 27.

[49] The Gateway, *Thinking machine myth hit by computer expert*, University of Alberta, March 2, 1966, p. 3.

concept of 'non-human mechanical intelligence,' and it was these which sparked the public imagination from the 1940s onward.

If we ask who was and is discussing artificial intelligence, we find a great variety. Researchers, including philosophers, scientists, and technology developers were discussing artificial intelligence in a professional capacity since at least the 1940s. This engagement has increased with time and according to the successes in advancing artificial intelligence. A search for the terms "artificial intelligence" in the popular Semantic Scholar search engine rises from a few research articles in the late 1950s to nearly 34,000 articles in 2021 alone. The term AI has overtaken all others recently, but older terms such as "thinking machine" are still extant; one can find that term in 73 articles published in 2020. If talk of AI among STEM fields seems obvious, interest from within the humanities and arts seems less so, but is in fact very high, with political science, the arts, history, and other non-STEM fields, making up a significant portion of research articles on AI.

AI is widely discussed by NGOs as well. This can be seen on the AI Initiatives page of the Council of Europe,[50] where from a beginning of 1 in 2010, the number of frameworks or declarations on AI had risen to more than 500 as of 2021. A considerable number of businesses in developed countries have embraced AI, with McKinsey reporting from a 2020 survey of about 2400 participants, that 50% indicated their companies had adopted AI in some form.[51]

In general, the broader public engagement with the idea of AI appears to have increased. Fast and Horvitz have shown that it has increased sharply since 2009.[52] We should be cautious here however, because automated searches for definite terms may not take into account more dated popular terms for artificial intelligence which are now forgotten. On the other hand, public engagement with the idea of AI has increased more relative to anticipated future benefits of AI than to existing benefits in existing technologies.[53] In other words, there is a strong futuristic leaning component in public engagement of AI.

3.2. Public Ethical Engagement of AI

Ethical issues are seemingly numerous. A number of surveys of AI ethics point out many different issues. Hagendorff, for example, notes 22 different ethical issues which are being engaged in AI ethics guidelines[54]. But ethical concerns in the academic and research context may be far removed from public concerns for several reasons. The current structure of the academic publishing system and the profes-

---

[50] Council of Europe, *AI Initiatives*, (2023), https://www.coe.int/en/web/artificial-intelligence/national-initiatives.

[51] McKinsey Global Survey on artificial intelligence, *The state of AI in 2020*, November 17, 2020.

[52] E. Fast, E. Horvitz, "Long-Term Trends in the Public Perception of Artificial Intelligence", *Proceedings of the AAAI Conference on Artificial Intelligence* 31 [1] (2017).

[53] M.L. Littman et al., *Gathering Strength, Gathering Storms: The One Hundred Year Study on Artificial Intelligence, (AI100) 2021 Study Panel Report*, Stanford, CA: Stanford University, September 2021, p. 34.

[54] T. Hagendorff, "The ethics of AI ethics: An evaluation of guidelines", *Minds and Machines* 30 [1] (2020).

sional need to publish which it creates may present a skewed impression of the public importance of certain issues and the system is in danger of falling prey to hype as well. The consulting firm Gartner has recently stated that digital ethics, driven by AI, is at the peak of what it calls the Hype Cycle.[55]

Thus, my focus here is not upon AI ethics issues brought up in academic research, but upon those which appear most prominently as part of public concerns and expectations. My effort amalgamates insights from recent surveys which have attempted rankings of public concerns, e.g. Fast and Horvitz[56] and Schiff et al.[57], surveys on public opinion, Lockey et al.[58], Pew[59], and my own attempts to find historic references in popular literature dating back to and before the mid-20th century beginnings of AI. Along with these I will refer to data gleaned from the raw feedback of the Stakeholder Consultation on the EU Commission High Level Expert Group Guidelines for Trustworthy AI.[60] The latter, some 562 pages, is available online and gives an interesting overview of the concerns and expectations of lay people regarding AI. A manual search of the feedback was carried out for each of the single words indicated, with the results shown in *Figure I* and *Figure II*. Each word was also verified according to its context relative to being a negative ethical concern or a positive ethical expectation and only one instance of a given word was counted for a single comment. In case of concerns which might be located through multiple overlapping words I often tried a number of related words and indicate here the word which gave the highest number of results. Thus, e.g. the words s p e e d, p a c e, and f a s t, resulted in 5, 3, and 12 instances respectively, so I include the 12 instances of f a s t in the results below.

There is a good case to be made for taking an approach which attempts to avoid predominantly academic treatments of AI ethics issues as much as possible, at least in an effort of comparative ethics.[61] Borenstein et al. in their 2021 summary of the history of AI ethics, note that while Google Scholar citations for AI ethics have jumped sharply only very recently, nonetheless in fiction, in film, and in television "… popular culture was far more engaged in issues related to what we now call AI, … [so that] scholarly interest is merely catching up to popular culture in its focus

---

[55] Gartner, *Gartner Says Digital Ethics is at the Peak of Inflated Expectations in the 2021 Gartner Hype Cycle for Privacy* (2021).

[56] E. Fast, E. Horvitz, "Long-Term Trends in the Public Perception of Artificial Intelligence".

[57] D. Schiff et al., "AI Ethics in the Public, Private, and NGO Sectors: A Review of a Global Document Collection", *IEEE Transactions on Technology and Society* 2 [1] (2021).

[58] S. Lockey, N. Gillespie, C. Curtis, *Trust in Artificial Intelligence: Australian Insights*, The University of Queensland and KPMG Australia, 2020.

[59] Pew Research Center, *Experts Doubt Ethical AI Design Will Be Broadly Adopted as the Norm in the Next Decade*, June 16, 2021.

[60] European Commission High Level Expert Group on Trustworthy AI, "Stakeholder Consultation on Guidelines' first draft: Complete Stakeholder Feedback", 2019, https://ec.europa.eu/futurium/en/ethics-guidelines-trustworthy-ai/stakeholder-consultation-guidelines-first-draft.html#Top (accessed: 20.10.2023).

[61] Comparative in the sense of comparing public ethical interest between quite distinct time periods and technologies, as well as between cultures in the sense that a culture can change over time.

on ethical issues and AI.[62]" If we can get some sense of what has fired the public imagination with regard to the ethics of AI over the longer term, this can be a basis for comparison with the telegraph.[63]
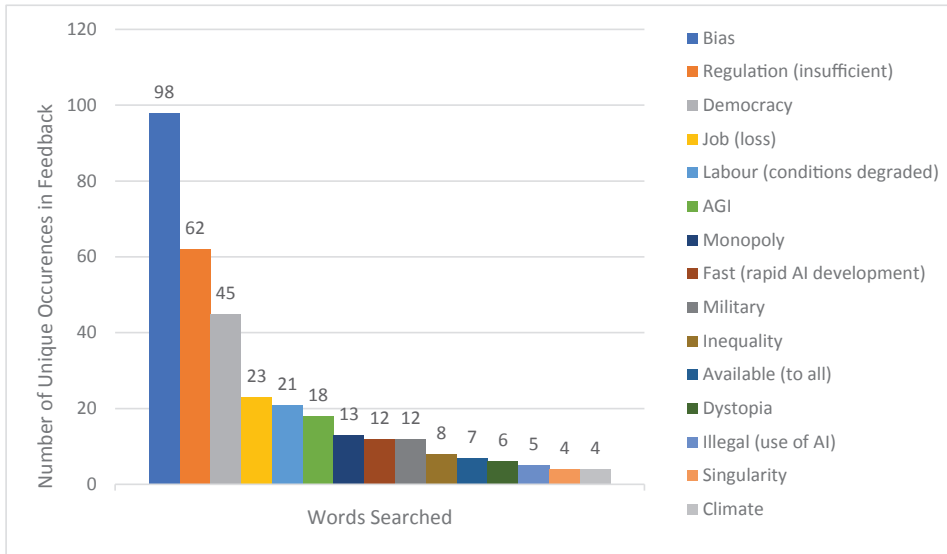

Figure I. Negative Ethical Concern Prevalence in HLEG Guidelines for Trustworthy AI, first draft public feedback[64]

---

[62] J. Borenstein et al., "AI Ethics: A Long History and a Recent Burst of Attention", *Computer* 54 [1] (2021).

[63] My approach has been to treat as valid only those instances of words within comments which were offered w i t h o u t explicit reference to academic affiliation as an indication of public concerns. Non-academic HLEG consultation feedback was from private individuals, law associations, financial associations, professional associations, churches, NGOs, unions, and businesses. I take all of these to be members of the general public, insofar as having a secondary and lay interest in ethical issues surrounding AI which differs from the focused and primary professional interest in ethics of academic AI ethics researchers. The HLEG draft guidelines requiring the consultation feedback do 'prime' the potential terms to some extent. I do not correct for this, but note that what was said in the first draft guidelines served at the same time as a base from which the interested public could indicate — and they often did strongly — which ethical issues were m i s s i n g f r o m o r o n l y w e a k l y p r e s e n t in the draft. I view this as balancing potential bias toward the particular concerns of the guideline draft writers.

[64] Note that when a term had several possible variants for the same meaning in context, the search was carried out for the most general part of the term when the uniqueness of the term permitted, e.g. *democra* for democracy, democratic and *monopo* for monopoly, monopolize.
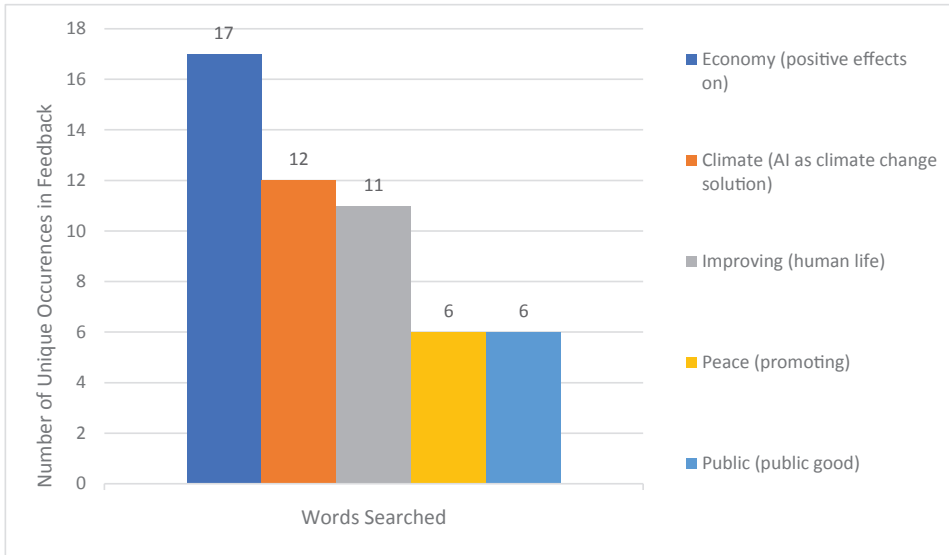
Figure II. Positive Ethical Expectation Prevalence in HLEG Guidelines for Trustworthy AI, first draft public feedback

3.2.1. Positive Expectations

Social Responsibility, taken as a use of AI for public benefit, is one of the highest-ranking contemporary ethical concerns across various categories of the public according to Schiff et al.[65] The notion of social responsibility is very broad and arguably contains a number of perceived potential benefits of AI within its generalization. Moreover, as seen in Figure II, all of the searches for positive ethical expectations yielded at least some results and the issues of economy, climate, and peace could be viewed as also falling under the umbrella of social responsibility, even though each can also be viewed separately. Direct mentions of public good can broadly be taken to be synonymous with social responsibility, and again there are some, although I retain the term used by Schiff et al.

Within the umbrella of social responsibility, the highest-ranking word of those considered in examining the HLEG guidelines feedback for positive ethical expectations was economy. Indeed, there were very few indications that anyone considered AI as potentially bad for the general economy, although its effect on particular groups in the economy or on their ways of contributing to the latter was regularly raised as a potential problem, under the term inequality.

This expected positive economic effect of AI has a history. The Glasgow Herald of May 1st 1986 for example, speaks of Britain's first artificial intelligence computer company bringing new jobs, observing that the company "will offer computer users systems which will allow one computer to 'talk' to another," and that though the

---

[65] D. Schiff et al., "AI Ethics in the Public, Private, and NGO Sectors".

number of jobs is small "their value in terms of better services for the major employers is large."[66] Emphasis is on the economic betterment of the town and region, even though 'artificial intelligence' describes something closer to prognostics here. In the 1960s we find it in vaguer notions of the unlimited potential of computers.[67]

More recently the potential role of AI in preventing or mitigating global warming has been popularized,[68] even though the energy and computing infrastructure use of AI counterbalances this. My HLEG feedback search under the term `climate` finds it to rank second. Some instances suggest that AI can be developed in an environmentally friendly way without exacerbating climate change problems, i.e. AI will not make things worse at least. Some instances in the feedback are more active in tone, expecting that AI can be used to manage natural resources more sustainably than humans do, improve related human decisions, and streamline major contributors to global warming such as transportation. This mirrors other recent popular accounts of AI use for mitigating climate change related damage, e.g. that of Green.[69]

References to `peace` also appear in the HLEG feedback. There is a neutral view which hopes that AI can be developed for peaceful applications and according to peace efforts promoted in political frameworks such as those of the EU. Yet there is also a more proactive view which desires the 'learning aspect' of AI to be deliberately developed based upon peaceful models of human behaviour. This vision of AI for peace is supported by a number of popularizations, e.g. aiforpeace.org, which focuses on peaceful uses of AI, but again also more active plans to use AI to defuse potential war situations,[70] or to use algorithms to help in mediation toward peace.[71]

`Utopian` and futuristic notions of the ultimate ends of AI also occur. These have been popularized by those such as Kurzweil, who, in transhumanism, advances the idea of a technological singularity, a point at which technology — mainly AI — overtakes human capabilities and becomes self-developing and unstoppable, eventually godlike, with positive results. This 'real world' urge emerged in older science fiction such as the robot R. Daneel Olivaw in Asimov's early *Foundation* series and in newer science fiction like Iain M. Banks' *Culture* novels, where advanced artificial intelligences guide humanity, overtly and covertly, to our benefit. As a counterpoint to the public perception of technology as a driver of secularism, the spiritualization of AI is also occurring online, where technological hopes are blending with religious hopes.[72] Supporting this, in Figure II, the term `improving` (human life) figures in third place in the HLEG feedback as a general hope for AI in a sense related more to the idea of golden age or utopia than to the everyday social benefits.

---

[66] W. Russell, "Boost for Scots computer industry", *Glasgow Herald*, May 1st, 1986.

[67] The Gateway, *Thinking machine myth*.

[68] A. Ekin, "AI can help us fight climate change. But it has an energy problem, too", *Horizon: The EU Research and Innovation Magazine*, European Commission, September 12, 2019.

[69] G. Green, "Five ways AI is saving wildlife — from counting chimps to locating whales", The Age of Extinction — Artificial Intelligence, *Guardian UK*, February 21 (2022).

[70] BBC, *How AI could unlock world peace*, Future, February 19, 2019.

[71] K. Höne, "An Algorithm for Peace? AI in International Peace Mediation", Israel Public Policy Institute. Digital Transformation, Diplomacy & International Politics 2022.

[72] B. Singler, *Blessed by the algorithm: Theistic conceptions of artificial intelligence in online discourse*, "AI & Society," 1 [11] (April 30, 2020), doi:10.1007/s00146-020-00968-2.

3.2.2. Negative Concerns

Under negative concerns, one of the most consistent is the fear of AI eventually controlling humans. These concerns are closely related and predate the 1950s as Halacy noted, and were widely popularized during the 1940s in response to electronic computers, particularly among fiction writers such as HG Wells, who wrote of the 'Giant Brain.'[73] These two concerns are probably historically tied in with the public tendency to be indiscriminate with regard to viewing the computer generally as a 'thinking machine.' Hughes, in 1966, for example, writes of the public "... fear that computers are challenging human beings for supremacy ..." and quite clearly equates artificial intelligence with general computer operations.[74] The gradual increase of this public concern is suggested in the more recent study of Fast and Horvitz.[75] Contemporary negative concern regarding AI control of humans is bound up with the term *AGI* (artificial general intelligence). The latter ranked sixth in HLEG feedback, showing its relative importance and I retain it over more ambiguous terms such as 'control,' also occurring in the feedback.

The highest ranked term by far, among those considered, in the HLEG feedback under negative ethical concerns is that of b i a s. All parties were concerned about AI decisions being biased against, or for, certain groups of people. Unsurprisingly, recent high-profile cases of algorithmic bias, such as Amazon's hiring algorithm bias,[76] have kept this concern in the public consciousness.

R e g u l a t i o n, understood as the AI field not being well regulated and requiring better regulation, ranked second. This was so despite not counting instances of countervailing use of the term, as verified by context, i.e. the view that the current regulation was entirely adequate and more regulation would be a nuisance. The latter view, wherein regulation was not an ethical concern, was prominent among most corporate contributions to the feedback. This shows that the consultation feedback was indeed public in the sense of taking into account ethical concerns well beyond those of corporate special interests.

Concerns about d e m o c r a c y also rank highly, in third place. The context of instances indicated that the concerns were sometimes passive, i.e. given that the HLEG were specifically developed for the EU, AI should be deliberately developed to uphold EU member democratic backgrounds and principles which are instantiated in EU policy initiatives. Yet the contexts of other instances indicated a proactive desire to address potentials for interference in democratic processes — e.g. deepfakes and filter bubbles — either from or by means of the largest corporate players in AI, particularly social media. That this concern is increasing is confirmed by

---

[73] D.S. Halacy Jr., *Computers — The Machines We Think With*, (Revised Edition), NY: Harper 1969, pp. 121–122.

[74] A. Hughes, "A Woman's New York", *Reading Eagle*, January 8, 1966.

[75] E. Fast, E. Horvitz, "Long-Term Trends in the Public Perception of Artificial Intelligence".

[76] J. Dastin, "Amazon scraps secret AI recruiting tool that showed bias against women", *Reuters*, October 11, 2018.

popular discussion of research on the issue, see e.g. Haidt,[77] and by public opinion polls, e.g. Pew.[78]

Fast and Horvitz, indicate that a negative concern about work is rising in the public perception of AI.[79] This is supported by the instances of the term j o b in my examination of the feedback. The context of the instances indicates considerable fear of AI replacing humans in workplaces. This is backed up in the rankings of public sector ethics topics which Schiff et al. present.[80] Closely related, the worry of work degradation, with a long history in the context of the generally automated workplace — see e.g. the 'Plastac' factory scenes of Tati's 1958 film *Mon Oncle* — is also a public concern. Instances of the term l a b o u r in the consultation feedback, correlated in context with the notion of degradation of working conditions due to AI supported automation, ranked just below that of job loss.

In the mid-range ranks of instances of my search were worries about monopoly, speed of AI development, and military AI uses. Interest in each was about equal. There was a general worry that AI would contribute to the arising of m o n o p o l - i e s particularly in terms of data accumulation but also that established monopolies prevented the fair use of AI. The overlapping of this concern with those of inequality and availability, shows that unique terms do not give an exact picture, but rather a general impression of public opinion. Speed of AI development — using the term f a s t — generally correlated with worries that regulation could not keep up, or that the HLEG guidelines must be dynamic enough to address the pace of AI development. But some contributors explicitly called for slowing down development to make it ethical and to rethink the technology's social effects. One contributor lamented — echoes of Thoreau — that AI and related technologies were developing so fast that a given iteration 'has come and gone' before we can assess it or the human skills developed in relation to it. M i l i t a r y concerns were focused, variously, on ensuring that military uses incorporated explainability, that such uses should clearly and legally locate the responsibility of the initiator of the use, that such uses wrongfully abdicate life and death decisions to a machine, and that such uses should be completely prohibited.

3.3. Results of Public Ethical Engagement of AI

3.3.1. On the Positive Expectations

Many countries have embraced AI recently, creating national bodies to advance it in hopes of e c o n o m i c growth.[81] Driven by hype, like many tech domains, AI — or at least 'the idea of AI' — is a hot property. Forward-looking studies are effusive regarding AI economic benefits. One has AI raising global GDP by 14% by the year

---

[77] J. Haidt, "YES, SOCIAL MEDIA REALLY IS UNDERMINING DEMOCRACY Despite what Meta has to say", *The Atlantic*, July, 2022.

[78] Pew Research Center, *Experts Doubt Ethical AI.*

[79] E. Fast, E. Horvitz, "Long-Term Trends in the Public Perception of Artificial Intelligence".

[80] D. Schiff et al., "AI Ethics in the Public, Private, and NGO Sectors".

[81] J. Bughin et al., *McKinsey Notes from the AI Frontier: Modeling the Impact of AI on the World Economy*, Discussion Paper, 2018.

2030[82]. Others, estimating current economic effects of AI tend to support the for-ward-looking studies. Dawson et al., in 2022, studying AI related US government expenditures over five years, found more than a billion USD in expenditures, par-ticularly in the category of professional, scientific, and technical services[83]. Though a large number of contracts were with small vendors, the authors view the growth as 'healthy' because in response to specific needs, i.e. not merely hype-based. For 2020, McKinsey, reports a 22 percent increase in EBIT earnings due to AI from the year earlier.[84] Thus, AI is indeed a growing factor economically, even in emerging mar-kets, with India, China, and countries in North Africa, driving the adoption of AI.[85]

Positive AI contributions to c l i m a t e change issues which go beyond the goals and proposals noted earlier, are limited. AI is being incorporated into systems to pre-dict or help understand climate change related phenomena better. The latter tends to be about the types and scale of climate degradation occurring. Emphasis is on mitigation, e.g. Toews,[86] rather than using AI to actively reverse climate change. As King and Lichtenstein,[87] have argued, we already know what needs to be done. We even know, what AI could do to help, for example in carbon capture techniques.[88] But knowing what to do theoretically and actually doing it are different.

Meanwhile there is every indication that AI has already become a major con-tributor to climate problems. First, because it is founded upon other systems, not least physical systems.[89] whose detrimental impacts in terms of energy and materi-al use increase constantly even along with their efficiency[90]. Second, because the current dominant AI training paradigm focuses on mass computation resources and increasingly large data sets so that the carbon footprint of AI is large,[91] growing, and negating positive uses of AI upon the issue.

Separating the notion of AI uses for p e a c e f u l purposes from AI uses explicit-ly focused on bringing about peace, is useful in considering results in this category. The former seem unsuccessful, given that they fall under a category of approach to AI ethics which is itself unsuccessful practically, i.e. the debate or approach of not-

[82] A.S. Rao, G. Verweij, *Sizing the prize: What's the real value of AI for your business and how can you capitalise?*, PwC's Global Artificial Intelligence Study 2017.

[83] G.S. Dawson, K.C. Desouza, J.S. Denford, *Understanding artificial intelligence spending by the U.S. federal government*, TechTank: Brookings 2022.

[84] McKinsey Global Survey on artificial intelligence, *The state of AI in 2020*.

[85] Ibidem.

[86] R. Toews, "These Are The Startups Applying AI To Tackle Climate Change", *Forbes* [online], June 20, 2021.

[87] D. King, J. Lichtenstein, "Climate repair: three things we must do now to stabilize the planet", University of Cambridge, August 17, 2021.

[88] M. Rahimi et al., "Toward smart carbon capture with machine learning", *Cell reports physical science* 2 [4] (2021), https://doi.org/10.1016/j.xcrp.2021.100396.

[89] K. Crawford, *The atlas of AI: Power, politics, and the planetary costs of artificial intelligence*, Yale: Yale University Press 2021.

[90] A.C. Orgerie, *Consommation énergétique et impacts environnementaux des systèmes distribués*, Colloquium, LORIA, Université de Lorraine, March 2, 2023.

[91] E. Strubell, A. Ganesh, A. McCallum, *Energy and Policy Considerations for Deep Learning in NLP*, Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics, Association for Computational Linguistics, Florence, Italy 2019.

using AI in some circumstances. As Hagendorff, 2022, argues,[92] talk of non-use of AI is nearly absent from discussions of AI ethics, public and private. This, coupled with the ease of integrating AI with modern weapons such as drones, is bypassing the notion of only using AI for peaceful purposes. Recent documents like the Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy,[93] make no mention of peace, instead pushing for a regulated international 'level playing field' for military AI. Explicit efforts to operationalize AI uses for peace are also sparse however. It is unclear how recent efforts like those of the Israeli ministry of foreign affairs in using deep learning to deep fake political messages toward peace,[94] differ substantially from similar conventional efforts toward peace.

The results of the more u t o p i a n positive ethical vision for AI have to wait upon the further future of human development. There are indications that this vision has engendered a general acceptance of the integration of AI into human activity however. A 2020 Australian public survey found that even though 61% have a low understanding of AI, only 7% reject it, with the remainder tolerating, accepting, approving, or embracing it.[95] A low understanding seems to overlap with a popular understanding, the latter of which is influenced by the more utopian ethical view of AI. Recent AI advances such as ChatGPT, which outwardly presents a veneer of human-like manipulation of language, are both feared in some quarters[96] and lauded as 'transformative' in others.[97] Either way, the sudden and intense public hype about such language models is clearly uncomfortably close to past telegraphic public hype: it encapsulates the sense that 'this changes everything' for society. Combined with the fact that no pause is actually taken for a societal rethink of the development of the technology, this leads more toward a utopian than a dystopian reading. Little overt opposition in public sentiment toward the rapid integration of AI in social life now occurring, arguably indicates an acceptance that the 'exciting transformations' which technologies such as ChatGPT herald, are more utopian looking than not, although the utopia is yet to come.

The result of a public focus on s o c i a l r e s p o n s i b i l i t y depends upon the aspect of social responsibility countenanced. Benefit to the public is hard to qualify or quantify without the benefit of hindsight. In a sense all the other concerns and expectations discussed here — excepting perhaps utopian hopes — feed into the notion of AI for public good. Based on the more specific positive expectations discussed above, economic, climate related, and peace tending, the actual results of the ideal of using AI in a socially responsible way are there, but mixed. Efforts such as

---

[92] T. Hagendorff, "Blind spots in AI ethics", *AI and Ethics* 2 [4] (2022), pp. 99–120, https://doi.org/10.1007/s11023-020-09517-8.

[93] US Department of State, *Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy*, 2023.

[94] "Artificial Intelligence Is Helping Make Peace With Israel", *Israel Today*, February 10, 2023.

[95] S. Lockey, N. Gillespie, C. Curtis, *Trust in Artificial Intelligence*.

[96] J. Weissman, "ChatGPT Is a Plague Upon Education", *Inside Higher Ed.com*, February 9, 2023 (accessed: 8.03.2023).

[97] I. Sample, "ChatGPT: what can the extraordinary artificial intelligence chatbot do?", *Guardian UK*, January 13, 2023 (accessed: 9.03.2023).

Belgium's CitizenLab, for example, using AI to analyze citizen priorities proactively and encourage participative democratic practices, are direct candidates for a socially responsible use of AI. Yet, though encouraging, these results depend very heavily on strong user participation and quality of input, as Berryhill et al. admit.[98] With those caveats, definite positive results are harder to estimate, considering that secondary efforts are being promoted in parallel to the use of the technology. But that very integration of AI and social engagement may be promising, as I will discuss later.

3.3.2. On the Negative Concerns

Concerns regarding b i a s have triggered various responses. There have been very public commitments to combat bias, e.g. UNESCO panel discussions and the Roman Catholic Church's Rome Call for AI Ethics. Multiple frameworks, such as the OECD AI Principles, have been developed, which lay out generic principles to follow in avoiding bias. Best practices guides have been advanced, e.g. Turner Lee et al.,[99] attempting to get developers to think about who is impacted by AI systems. The most obvious results are the development of technical efforts. These take on a number of forms, but typically there is a focus on the transparency of the algorithm, the development of fairness metrics, data preprocessing techniques identifying sensitive attributes in data and removing or canceling them, and discovering the effect of particular sensitive attributes to balance model predictions after processing.[100]

Though the proliferation of efforts is unquestionable, their success as results is less so. The Stanford AI Index Report of 2022 addresses engagement of bias among other factors. Damningly, the report finds that as AI language models are growing larger, bias generated within them is increasing.[101] But not only is bias in AI use increasing but bias in terms of who develops AI technology — lack of diversity — has not decreased significantly.[102] So here again, results are no better than mixed: bias is indeed being addressed technically and socially to some extent, but the public desire for results is not translating into less bias.

R e g u l a t i o n as an issue of concern seems to be producing some actual results. Various national AI regulatory efforts are in the works, including the Canadian AIDA (Artificial Intelligence and Data Act) and the UK National AI Strategy. The UK effort is in an early state. AIDA leaves many details to be developed in future regulation — notably the definition of 'high-impact systems' — and exempts both government and military from the Act.[103] The most advanced effort, the European

---

[98] J. Berryhill et al., *Hello, World: Artificial intelligence and its use in the public sector*, OECD Working Papers on Public Governance, no. 36, 2019.

[99] N. Turner Lee, P. Resnick, G. Barton, *Algorithmic bias detection and mitigation: Best practices and policies to reduce consumer harms*, Brookings 2019.

[100] T.P. Pagano et al., "Bias and Unfairness in Machine Learning Models: A Systematic Review on Datasets, Tools, Fairness Metrics, and Identification and Mitigation Methods?", *Big Data and Cognitive Computing* 7 [1] (2023), https://doi.org/10.3390/bdcc7010015.

[101] D. Zhang et al., The *AI Index 2022 Annual Report*, AI Index Steering Committee, Stanford Institute for Human-Centered AI, Stanford University, 2022, p. 3.

[102] Ibidem, pp. 169–170.

[103] Bill C-27, An Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential

Commission AI Act proposal, is moving through the adoption process, with tentative adoption in early 2024. The EU AI Act is clearly a first step which will have effects beyond the EU. But a number of aspects of its development tend to water down the results. These include: uncertainty as to what counts as an AI system, national level enforcement, and exemption of military AI use. The relation of the act as legal regulation to its purported foundations as an ethical endeavor is also questionable. The latter issue, indifferent in terms of the regulatory side, nonetheless calls into question the notion that the Act's adoption results from public ethical concern.

US based AI regulation at the national level has not proceeded beyond discussion, although some individual states have taken initiatives, e.g. focusing on specific uses of AI such as regulating automated employment decision tools to prevent bias in hiring.[104] There are clearly roadblocks at local levels however. New York City Council's AI regulation effort has been called a 'spectacular failure,' for example, due to uncertainty in defining AI, inability to understand real world AI use, and administrative unwillingness to subject the automated systems to scrutiny which would facilitate regulation.[105]

Responses to public concerns about AI degrading d e m o c r a c y are limited. The most obvious area to look for results is the demonstrated detrimental effect of AI use in social media. Insofar as social media giants can still be viewed as national level institutions however — not perfectly evident in some cases — we can distinguish here between adverse effects by AI driven social media internal to national areas and those caused by social media adoption which crosses national boundaries and plays into international tensions. The latter issue is producing results recently, in the banning of social media app TikTok on government issued devices in India, Canada, the USA, and the EU.[106] Nonetheless, the precise scope of these bans and the reason for them — data collection — indicate that the results are not so much ethically driven as driven by national and regional efforts to project or reinforce political and economic power globally.

Efforts to rein in adverse effects of AI on democracy internally have failed. Not only does the very nature of algorithm augmented social media enable and promote the destructive tendencies of human behaviour for the worst, e.g. in misinformation,[107] but as Lauer argues,[108] the generation of inaccurate and toxic information is an ethical problem rather than one that can be solved technologically and social

---

and related amendments to other Acts, 1st Session, 44th Parliament, Canada, 2022 (first reading 16 June 2022) (second reading 24 April 2023).

[104] A.S. Forman, N.M. Glasser, R.D. Madia, "New York City's Automated Employment Decision Tools Law Enforcement Postponed Until April 15, 2023", *National Law Review* 8 [298] (December 13, 2022), https://www.natlawreview.com/article/new-york-city-s-automated-employment-decision-tools-law-enforcement-postponed-until (accessed: 25.10. 2023).

[105] A. Fox Cahn, "The first effort to regulate AI was a spectacular failure", *Fast Company*, November 26, 2019.

[106] "Which countries have banned TikTok, and why?", *EuroNews*, March 13, 2023.

[107] K. Langin, "Fake news spreads faster than true news on Twitter — thanks to people, not bots", *Science*, March 8, 2018.

[108] D. Lauer, "Facebook's ethical failures are not accidental; they are part of the business model", *AI and Ethics* 1 [4] (2021) pp. 395–403, https://doi.org/10.1007/s43681-021-00068-x.

media giants have no interest in solving it because it is the core of their business model.

With regard to the j o b concern, the public perception of the potential effect of AI on work has been focused upon: 'will the AI put me out of a job?' NGOs and the public sector have begun to address this in guidelines and frameworks, e.g. the HLEG AI guidelines briefly mention job loss. But there is little interest in it in the private sector,[109] the context in which, ironically, the concern is most at home. Moreover, recent empirical evidence, covering 33 OECD countries, shows that AI and robots do indeed increase unemployment.[110] It seems that, at least in terms of a definite engagement of the question that mirrors the public form of this concern, i.e. 'is the development of AI counterproductive in terms of human employment as such?' — Wiener's concern back in 1948 — there have been few results in terms of questioning the ongoing development of AI a s s u c h. This is in keeping with Hagendorff's suggestion that the option of not using AI remains unconsidered.[111]

Reflections upon the results of public concerns regarding AI automation degrading labour conditions can be focused upon direct and indirect effects. Indirect effects include primarily the expanding practice of using human labour, low paid, or unpaid, often sourced in the global south,[112] and often psychologically distressing, in order to train or guide AI. Direct effects include using AI to analyse worker's physical movement, speech, absences, or work tempo in order to correct it to some purported most efficient level. Amazon leads negative headlines with regard to this concern, with Bao et al.,[113] observing that AI based work surveillance has led to layoffs of more than 10% of staff in some distribution centers due to purported inefficiency, while impinging upon privacy, and stressing workers. But while the work surveillance industry is expanding rapidly,[114] there is no indication of pausing for deeper consideration. Recent European cases[115] seem to indicate that legal impetus is on the side of corporations in portraying workplace surveillance as necessary and reasonable.

The issue of *AGI*, AI controlling humans, has sparked high profile contemporary warnings, e.g. those of Hawking, Musk, and Bostrom. Such warnings were circulated much earlier however, by figures such as Marvin Minsky.[116] The human control issue has already come to the fore in government and NGO efforts to regulate

---

[109] D. Schiff et al., "AI Ethics in the Public, Private, and NGO Sectors".

[110] F. Bordot, "Artificial Intelligence, Robots and Unemployment: Evidence from OECD Countries", *Journal of Innovation Economics & Management* 37 [1] (2022), pp. 117–138, https://doi.org/10.3917/jie.037.0117.

[111] T. Hagendorff, "Blind spots in AI ethics".

[112] K. Howson et al., *Unpaid labour and territorial extraction in digital value networks*, Global Networks, 2022.

[113] Y. Bao et al., *Ethical Disputes of AI Surveillance: Case Study of Amazon*, "7th International Conference on Financial Innovation and Economic Development (ICFIED 2022)," Atlantis Press, 2022.

[114] G. Marks, "Yes, you should monitor your remote workers — but not because you don't trust them", *Guardian UK*, September 25, 2022.

[115] M. Molè, "Just more surveillance? Rethinking the 'pressing social need' for AI surveillance under the ECHR", Cooperante, University of Lodz 2023.

[116] H. Knight, "Want some Advice? Ask the Computer", *Deseret News*, September 14th, 1966, p. 19.

AI use, e.g. the stress upon human agency and oversight in the HLEG guidelines. And yet the relatively middling private sector ranking of this concern,[117] indicates that the actual engagement of the issue is nowhere near its importance in the public perception of AI. The contemporary and historic public appears to think of the AI control issue in the forward-looking sense of what AI eventually means for human control of human life, whereas private sector and NGOs regard the issue in terms of control of AI with regard to specific applications. The recent Pew survey of a majority of AI researchers or developers, indicates that sixty eight percent do not think that principles promoting the public good are in the near future of AI, and the major worry is that social control and profit seeking are the focus of AI development.[118] Thus, there is much hype and sci-fi talk regarding AGI, but no real action regarding the main danger: use of AI as a blind for social control.

The basket of mid-range ranked public ethical concerns, m o n o p o l y, s p e e d o f A I d e v e l o p m e n t, and AI use for m i l i t a r y purposes, unsurprisingly do not fair better than higher ranked concerns. A negative result with regard to the monopoly concern is perhaps a foregone conclusion because in large part the majority of AI development is either linked to or being carried out by corporations which — if taken together — are already effective monopolies with regard to the technology and data undergirding AI efforts in their current paradigm. As Niyazov observes, on an alternate assessment of economic power, sixty-nine of the top one hundred world economies would be corporations.[119] Of these, the half dozen or so which lead digital tech and data development are among the largest.

Likewise, the speed of AI development, driven by these monopolies and their access to data shows no signs of pausing. This may not mean that the technological aspect of development can keep up a rapid pace. Despite an early quantifiable technologically driven rapidity,[120] the systems underlying AI have limits which are becoming apparent, e.g. in phenomenon such as 'dark silicon.'[121] In terms of ethical results more properly speaking, i.e. in terms of practical efforts to limit the speed of AI advance so as to reflect upon its uses, hype and hope are outstripping wisdom, as we have seen above with regard to economic growth and public sentiment.

Finally, we have seen that upcoming EU regulation has decisively exempted military AI uses. Despite laudable counter efforts in some countries such as Belgium,[122] a short survey of recent developments indicates that most militaries with the means — including the world's largest — are either already developing or planning AI for direct military applications. Meanwhile, direct uses of AI in military

---

[117] D. Schiff et al., "AI Ethics in the Public, Private, and NGO Sectors".

[118] Pew Research Center, *Experts Doubt Ethical AI*.

[119] S. Niyazov, *AI-powered Monopolies and the New World Order*, Towards Data Science, 2019.

[120] C. Saran, "Stanford University finds that AI is outpacing Moore's Law", *Computer Weekly*, December 12, (2019).

[121] A.C. Orgerie, *Consommation énergétique et impacts*.

[122] N. Amies, "Belgium upholds decision to ban 'killer robots'", *The Brussels Times*, January 15, 2023.

operations have already occurred in the Israel Palestine conflict,[123] possibly with AI equipped killer drones in recent conflicts in Libya,[124] and in the Ukraine war both directly on the battlefield and with regard to AI enabled analysis of tactics and strategy with an eye toward future military applications.[125]

4. Comparing the Telegraph and AI

As shown in Tables I and II below, there should be a sense already that the two technologies have many similarities in terms of public ethical concerns and expectations and the results of those concerns.

Table 1. Results of Expectations and Concerns of the Telegraphic Public

Telegraph — Positive Ethical Expectations	Results of Expectations — Few/Mixed/ Significant
U t o p i a / S p i r i t u a l: there will be positive moral influence on the community in general; also spiritual change in harnessing electricity	F e w: utopia not achieved but continually pushed ahead into the future
P e a c e: universalization of communication will help resolve international disputes and lead to peace	F e w: communication did not lead to peace
E c o n o m y: the telegraph as an ambassador for integrating technology *as such* into industry and economy to promote social advancement	S i g n i f i c a n t: positive effects on civic infrastructure, improved railway efficiency and safety; transportation, banking, and financing development
S o c i a l R e s p o n s i b i l i t y: the telegraph as a benefit to the public	M i x e d: positive effects on medicine; easier sharing of remote scientific data (weather); fire services amelioration
Telegraph — Negative Ethical Concerns	Results of Concerns — Few/Mixed/Significant
M o n o p o l y: worries that the telegraph will lead to information monopolization and service monopolies	F e w: Information increasingly controlled by newspapers, monopolies and others
R e g u l a t i o n: and about whether it should be government regulated and owned/controlled	M i x e d: nationalization in Britain and Europe and government regulation; few results in USA
A v a i l a b i l i t y: worries about the cost use of the telegraph	M i x e d: nationalization in Britain and Europe and government regulation; few results in USA
C o m m o d i f i c a t i o n: concerns about objectified and commodified information (hoarding, falsifying, theft, overcharging)	F e w: commodification of information, e.g. by newspapers, was made easier

---

[123] T. Kumon, "The first AI conflict? Israel's Gaza operation gives glimpse of future", *Nikkei Asia*, June 28, 2021.

[124] J. Dettmer, "Possible First Use of AI-Armed Drones Triggers Alarm Bells", *VOA News*, June 7, 2021.

[125] P. Tucker, "AI Is Already Learning from Russia's War in Ukraine, DOD Says", *Defense One*, April 21, 2022.

Labour: conditions of workers; produced a child labor 'army'	Mixed: some unionization, some regulation; some 'ethics washing'
Social Resentment of Change: due to gender issues and worries about losing the 'old' social world	Few: some integration of women in unions, etc.
Illegal or Immoral uses: worries about dangerous, illegal or unethical messages	Mixed: administrative controls Europe, gender segregation USA; telegrapher romance becomes social phenomenon in fiction
Purpose and Speed: multiplies useless information rapidly and enhances the unethical	Few: widespread propagation of the telegraph proceeds; no pauses for reflection on messages or need for 'pre-adoption' ethical improvement
Control: facilitates control of some groups, e.g. colonialism	Few: colonial control was aided by the telegraph

Table 2. Results of Expectations and Concerns of the AI Public

Artificial Intelligence — Positive Ethical Expectations	Results of Expectations — Few/Mixed/Significant
Social Responsibility: use of AI to benefit the public	Mixed: considerable economic adoption of AI; some uses of AI for global warming mitigation; some AI uses for participative democracy
Economy: AI will stimulate and have a good effect on the economy; historic and contemporary expectation	Significant: considerable adoption of AI for real research and technology needs; recent growth of AI related earnings; significant adoption of AI in emerging economies
Climate: AI development will be environmentally friendly, manage resources, make better decisions, streamline polluting industries, and mitigate climate damage	Few: AI contributions mainly focused on understanding climate damage; carbon footprint of AI itself is large and increasing
Peace: AI will develop according to current policies of peace, develop on peaceful models, or be actively used to attain peace	Few: non-use of AI in conflict not countenanced; deliberate use of AI for peace engagement extremely limited and unconvincing
Utopia: AI develops to guide and care for humans in future, AI becomes a religious or spiritual focus, AI leads to a golden age	Few: but indications of a general acceptance of AI in society and a public sentiment that new AI integrations are changing everything; tacit expectation of extraordinary and rapid results
Artificial Intelligence — Negative Ethical Concerns	Results of Concerns — Few/Mixed/Significant
Bias: AI decisions are biased for or against certain groups of people	Mixed results: frameworks, guidelines, best practices, and public commitments against bias; efforts toward technical solutions; but instances of AI system bias continually increasing
Regulation: AI not well regulated and needs further regulation	Mixed results: Strongest regulation proposals in EU; weaker (Canada) and state level (USA) proposals; regulation for particular uses; some failures in regulatory effort

Democracy: AI should be developed to uphold current democratic ideals, democratic degradation by AI needs to be addressed	Few: some government use bans on social media but linked to power projection; nature of algorithmic systems supports disinformation; AI supported big data and social media business models thrive on toxic information
Job loss: job losses to AI	Few: some attention in guidelines/frameworks; very low private sector interest; little institutional questioning of AI development despite empirical research supporting this concern
Labour degradation: AI will degrade working conditions	Few: efforts to track employees with AI and maximize efficiency with a booming worker surveillance industry; few evident efforts to rein in degradation in terms of secondary AI system labour such as microwork, particularly in non-western countries
AGI gaining control: fear of AI eventually controlling humans; historic and contemporary expectation	Few: high profile warnings; middling attention in frameworks and guidelines; negative expert outlook regarding social control using AI
Monopoly: AI contributing to data accumulation monopolies, fair use of AI hampered by existing monopolies	Few: AI monopoly is steadily being developed on basis of existing tech monopolies
Speed of AI Development: regulation of AI cannot keep up with development, guidelines and regulation must be dynamic, the speed of AI development should be slowed for society to reflect	Few: technological aspects of AI development still speeding up; explosion of AI uses planned or in development driven by hype
Military use of AI: military use should incorporate explainability, responsibility should be clear, dangerous to abdicate life and death decision to AI, military use should be prohibited	Few: Some local efforts to ban lethal military AI; EU AI Act exempts military uses; development of military applications by largest militaries; recent AI uses in war

4.1. Similarities and Differences

Both technologies are similar in that their effects and potential disasters are more cumulative than instant — in comparison to say the effect of a badly built bridge — but public ethical concerns regarding the telegraph are somewhat easier to draw into a conspectus because the history of telegraphy is complete as a practical mode of technology. On the other hand, the telegraph could be seen as a progenitor of AI in some ways: the byways tread in developing the former may have grooved ethical tracks for the latter.

In terms of differences, among the predominant public concerns on the AI side, the bias concern is foremost. Bias is directly related to the technical capabilities, purposes, and sources of training data used by algorithms, and does not translate well into telegraph terms. The democratic concern also has no clear equivalent in telegraph terms, though the latter affected administrative government considerably in democracies of the time. Telegraphy led to some job losses for those who had

previously carried information — e.g. by horse — but the issue does not seem to have been a public concern.

We have seen there was public concern about the availability — cost — of the telegraph services, one which is not evidently present in public concern about AI. This may be because, at least currently and with regard to social AI uses, the development of the latter is largely driven by a paradigm of data acquisition which encourages and profits by widespread use. The nature of information itself, whether dangerous or unethical, or, — more philosophically — whether useless, and the notion of the telegraph enhancing the unethical tendencies in human nature, lack a strong equivalent in public AI concerns. Concerns of availability and illegal uses for the telegraph, and concerns of bias for AI, have led to mixed results. Other divergent public concerns, such as social resentment of change, commodification, control, and job loss, have not led to significant results, though some, such as concerns over illegal or immoral uses and AGI have led to mixed results.

Public ethical concern for the telegraph does not seem to have included an environmental component. The telegraph involved "massive deforestation and habitat destruction, but this ecological impact was largely invisible to people who used the technology,"[126] much as it is for those who use AI.[127] Public concern for AI includes the component as climate concern, but relatively weakly and with emphasis on the technology as a fix rather than on its environmental footprint. Moreover, there are no significant results accruing from this concern. It seems that out of sight promotes out of mind in both cases.

On the whole however, the similarities are far more striking than the differences. The most significant results from the overlap occur in the economic expectation. Insofar as economic results are viewed as benefits by the public, then ethical expectations in this regard arguably were — and are — being fulfilled. Further overlap occurs in telegraphic public expectations of socially responsible use of the telegraph, which mirrors similar expectations for the AI public. For the telegraph these benefits were envisioned as civic infrastructure benefits, safety, and efficiency. For AI they are broadly perceived as generic 'economic' benefits as well as beneficial responses to pressing global problems. There is also overlap — or continuation — with the sense of the broader benefit of technological advancement and potential: a 'technology is the path to the future' view. Results from this social responsibility expectation are decidedly mixed however, for both the telegraphic and AI public.

The spiritual, utopian, and futuristic expectations regarding the telegraph, parallel the current public's perception of AI in 'singularities' and notions of benevolent AI to an astonishing degree. In both cases the emphasis has continually shifted to the future. As far as results however, the utopia is never judged to be achieved, but it is always just over the horizon. Expectations of peace from the technology were more pronounced in telegraphic public, but still present in the AI public. In neither case have results been forthcoming toward peace.

---

[126] S. FitzMaurice, *The Materiality of the Telegraph Revolution: A Visual Interview with Sophie FitzMaurice*, UC Berkeley Social Science Matrix, September 22, 2022.

[127] K. Crawford, *The atlas of AI.*

With regard to negative concerns, the only common concern to have achieved results, albeit mixed, is that of regulation. And here again, remarkably, current AI results are echoing past telegraph results, with Europe leading and North America and the developed anglosphere — except for the US — only grudgingly following. Concerns regarding monopoly are common and important to both publics, but relatively fruitless in terms of results.

The concern of losing control of AI is also partially mirrored by the telegraphic public's concern over control of the telegraph, except that for the former the worry is a hypothetical takeover by an advanced general AI, an 'evil machine,' whereas for the latter control by corporations and government was the worry. Here, arguably, the telegraphic public were wiser than the contemporary AI public in understanding the real danger of control through a technology, i.e. that the technology facilitates human control of other humans. Indeed, the soft power of control of the global south in the datafication economy feeding AI, recalls historic colonial control of the global south through the telegraph.

The labour concern shows definite similarities. Both technologies developed a component of underpaid and degraded labour: for the telegraph child labour predominantly, for AI the micro workers sustaining its use by social media and other tech giants. The latter are engaging more often than not in 'ethics washing' in the very same way that telegraphic giants such as Western Union did, i.e. in neither case did concerns produce significant results.

Purpose and speed of development as a public concern for both technologies has not led to any evident pauses for ethical discussion of the technology by society. Even regulatory discussion has not been able to keep pace with AI development, with engagement essentially 'tacked on' after the fact.

Finally, public concerns about military uses of AI are an abject failure in terms of results, despite some small local successes. Insofar as the telegraphic public had such concerns they were not widely voiced, although there is some overlap with worries related to colonial control and expansion as we saw. As with contemporary militaries, the telegraphic era militaries quickly embraced the new technology and even the limited public concerns regarding colonial control were countered by opposing voices calling for expanded telegraph use in colonial expansion. Thus, not only was and is military use of these technologies not high on the public agenda, but insofar as it is, the concern appears to achieve nothing.

4.2. Insights from the Comparison

What can we learn from the above comparison? It would be easy to simply suggest that looking at areas of overlapping public ethical expectation and concern for the telegraph can show us where we are going wrong this time around with AI, so as to deliberately correct for it. On that reading we might say, for example, that the fact of the similarity between the monopoly concerns of the telegraph public and the monopoly concerns of the present AI public, and the fact that the telegraphic public largely failed to address the issue then, should goad us into redoubling our efforts this time around.

That m i g h t work, but it misses something about public engagement of ethical concerns, namely: public engagement is bound up with individual engagement. Just as the individual can only act practically along ethical principles or toward ethical ideals shaped by public sentiment — the individual is most ethical in company —, so the public can only operationalize its ethical ideals if it can get the individuals within it to act practically toward them. And acting practically means in the first place a c t i n g more than n o t a c t i n g.

On that view, the negative ethical concerns of the telegraphic and AI public face the same headwinds as does any strong individual orientation toward worry and concern, whether ethical or otherwise. Such concerns are endless: "be careful of this," "don't do that," "watch out for a, b, and c...." In short predominantly prohibitive ethics, individual or public, are a fool's errand practically.

This may explain why the results of the negative ethical concerns discussed are so dismal. They can be qualified as negative concerns because the sentiment behind them is prohibiting, policing, or halting, the technologies in some way or other. But we are creatures of act, and it seems that when we come to creating technologies — an area for the play of action if ever there was one — we can't help ourselves, as Van den Eede puts it.[128]

Successes arising from negative ethical concerns in either technology are limited. They are those which yoke the prohibitive impulse to some definite act which the individual or public can participate in to some degree: regulation (the active creation of laws and guidelines), nationalization (the opening up of participation in the technology to all the individuals so as to activate the public ethical ideal), and unionization (the active localized participation of individuals in communities of mutual support which offset harms experienced relative to the technology). None of these approaches completely stamp out the harms at which they ostensibly aim. They do provide projects upon which the individual and public can act however, so as to be drawn together into community.

But those are not the best successes. For both technologies, the best successes arise from the positive ethical expectations for both technologies. The first of these is economic, and insofar as individuals actively participate in some new creation or development of the technology which builds something, results accrue. Socially responsible uses accompany this, as a result, wherein the individual, integrating their action with the positive social ideals at hand, explores different positive uses for the technology, in science, medicine, administration, transportation, etc.

What about peace and utopian expectations, are they not positive also? Yes, but they are also passive. They are states or outcomes rather than grounds of action. When mistakenly couched in abstract and universal terms they appear as unachieved. When understood in relative and more specific terms, i.e. relative to the positive and active public expectations, they appear as advanced just as far as we have actively advanced our economic and socially responsible activities.

---

[128] Y. Van Den Eede, *The beauty of detours: A Batesonian philosophy of technology*, New York: State University of New York Press 2019, p. X.

Where does that leave us with regard to current negative ethical concerns of the public about AI? If history is any guide, it suggests that we will not make much headway in results on those negative concerns where individual action cannot integrate with public action. Preventing job loss, preventing military use, preventing democratic disinformation, and so on, are not viable ways forward, because such actions end with their own 'success.' Insofar as such attempts are viewed through a fluid logic, stopping or ending actions passes little or nothing on to the process of future community. Just as we are not aware of crimes that have been prevented, we never really know the job losses, or democratic disinformation that has been prevented. Efforts to tackle algorithmic bias are a good example here. Bias is not actually being prevented, as noted above, even by technical efforts. What is happening is that technical and related communities are growing up where reflection about bias will eventually transform our social understanding and active treatment of one another into something better. We will build our way out of bias. We will never prevent our way out of it.

5. Conclusion

This paper has been an effort in comparative ethics, comparing the telegraph and AI with regard to the public ethical engagement of those technologies. Beginning with a survey of the telegraph in the public imagination, I explored some of the positive expectations and negative public concerns around the technology and the results of those expectations and concerns, repeating this procedure for artificial intelligence. Differences and similarities were considered to draw insights regarding the course of AI ethics.

C.I. Lewis, the American pragmatist, said of public morality: "having traditions is a tremendous economy. Largely, it accounts for human 'progress' and for 'civilization.' What one generation learns the hard way; later ones may come by without the initial grief and frustrations incident to finding out."[129] In AI ethics we can avoid some grief by learning from the ethical social outcomes of the telegraph that a more negative and prohibitory path is not likely to produce results. A more positive and creative approach might.

We need to concentrate our efforts into building an AI technology integrated with community, rather than into technological or other efforts to police the technology. If having a positive sense of developing the technology in specific ways in public applications worked for the telegraph, then it will work for AI. Considering public disapprobation around the telegraph, what has clearly not yielded results, are negatively focused concerns such as information control and commodification, control and war use, and concerns about immoral or frivolous uses. They are not likely to achieve results now for AI development. This does not mean giving up. It means concentrating efforts toward urging positive developments of AI. In other words, amplifying an active public participation in the technology and amplifying it so strongly as to 'suck all the air out of the room' which might be used for negative approaches.

---

[129] C.I. Lewis, *Essays on the Foundation of Ethics*, J. Lange (ed.), Albany: SUNY Press 2019, p. 11.

Acknowledgment

References

Amies N., "Belgium upholds decision to ban 'killer robots'," *The Brussels Times*, January 15, 2023, https://www.brusselstimes.com/350980/belgium-upholds-decision-to-ban-killer-robots, (accessed: 24.10.2023).

"Artificial Intelligence Is Helping Make Peace With Israel," *Israel Today*, February 10, 2023, https://www.israeltoday.co.il/read/artificial-intelligence-is-helping-make-peace-with-israel/ (accessed: 25.10.2023).

Auxier B., *64% of Americans say social media have a mostly negative effect on the way things are going in the U.S. today*, Pew Research Center, 2020, https://www.pewresearch.org/fact-tank/2020/10/15/64-of-americans-say-social-media-have-a-mostly-negative-effect-on-the-way-things-are-going-in-the-u-s-today/ (accessed: 20.10.2023).

Bao Y., Li W., Ye Y., Zhang Q., *Ethical Disputes of AI Surveillance: Case Study of Amazon*, "7th International Conference on Financial Innovation and Economic Development (ICFIED 2022)," Atlantis Press, pp. 1339–1343, 10.2991/aebmr.k.220307.220.

BBC, *How AI could unlock world peace*, 2019, https://www.bbc.com/future/article/20190219-how-artificial-intelligence-could-unlock-world-peace (accessed: 19.10.2023).

Bektaş Y., "Futurism, Universalism, and the Moral Agency of the Electric Telegraph," *Zeitschrift für Globalgeschichte und vergleichende Gesellschaftsforschung* 21 [6] (2011), pp. 22–43, https://doi.org/10.26014/j.comp.2011.06.02.

Berryhill J., Heang K.K., Clogher R., McBride K., *Hello, World: Artificial intelligence and its use in the public sector*, OECD Working Papers on Public Governance, 36 (2019), https://dx.doi.org/10.1787/726fd39d-en.

Bill C-27, An Act to enact the Consumer Privacy Protection Act, the Personal Information and Data Protection Tribunal Act and the Artificial Intelligence and Data Act and to make consequential and related amendments to other Acts, 1st Session, 44th Parliament, Canada, 2022 (first reading 16 June 2022).

Bordot F., "Artificial Intelligence, Robots and Unemployment: Evidence from OECD Countries," *Journal of Innovation Economics & Management* 37 [1] (2022), pp. 117–138. https://doi.org/10.3917/jie.037.0117.

Borenstein J., Grodinsky F.S., Howard A., Howard K., Miller W., Wolf M.J., "AI Ethics: A Long History and a Recent Burst of Attention," *Computer* 54 [1] (2021), pp. 96–102, https://doi.org/10.1109/MC.2020.3034950.

Briggs C.F., Maverick A., *The story of the telegraph and a history of the great Atlantic cable: a complete record of the inception, progress and final success of that undertaking, a general history of land and oceanic telegraphs, descriptions of telegraphic apparatus, and biographical sketches of the principal persons connected with the great work*, New York: Rudd & Carleton 1858.

Bughin J., Seong J., Manyika J., Chui M., Joshi R., *McKinsey Notes from the AI Frontier: Modeling the Impact of AI on the World Economy*, Discussion Paper, 2018.

Carey J.W., *Technology and Ideology: The Case of the Telegraph*, Cambridge: Cambridge UP 1983.

Carpenter F.G., *The North American Review*, 154, 424 (March, 1892), pp. 380–382.

Cassell J., Cramer M., "High Tech or High Risk: Moral Panics about Girls Online," [in:] *Digital Youth, Innovation, and the Unexpected*, T. McPherson (ed.), The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning, Cambridge, MA: MIT Press 2008, pp. 53–76, https://doi.org/10.1162/dmal.9780262633598.053.

Council of Europe, *AI Initiatives*, 2023, https://www.coe.int/en/web/artificial-intelligence/national-initiatives (accessed: 24.10.2023).

Crawford K., *The atlas of AI: Power, politics, and the planetary costs of artificial intelligence*, Yale: Yale University Press2021.

Dastin J., "Amazon scraps secret AI recruiting tool that showed bias against women," *Reuters*, 2018, https://www.reuters.com/article/us-amazon-com-jobs-automation-insight-idUSKCN1MK08G (accessed: 19.10.2023).

Dawson G.S., Desouza K.C., Denford J.S., *Understanding artificial intelligence spending by the U.S. federal government*, TechTank: Brookings 2022, https://www.brookings.edu/blog/techtank/2022/09/22/understanding-artificial-intelligence-spending-by-the-u-s-federal-government/ (accessed: 25.10.2023).

Dettmer J., "Possible First Use of AI-Armed Drones Triggers Alarm Bells," *VOA News*, June 7, 2021, https://www.voanews.com/a/africa _ possible-first-use-ai-armed-drones-triggers-alarm-bells/6206728.html (accessed: 25.10.2023).

Downey G., "Telegraph Messenger Boys: Crossing the Borders between History of Technology and Human Geography," *The Professional Geographer*, 55 [2] (2003), pp. 134–145.

Du Boff R., "The Telegraph in Nineteenth-Century America: Technology and Monopoly," *Society for Comparative Study of Society and History* 26 [4] (1984), pp. 571–586, https://doi.org/10.1017/S0010417500011178.

Ekin A., "AI can help us fight climate change: But it has an energy problem, too," *Horizon: The EU Research and Innovation Magazine*, European Commission, September 12 (2019), https://ec.europa.eu/research-and-innovation/en/horizon-magazine/ai-can-help-us-fight-climate-change-it-has-energy-problem-too (accessed: 25.10.2023).

European Commission High Level Expert Group on Trustworthy AI, *Stakeholder Consultation on Guidelines' first draft: Complete Stakeholder Feedback*, 2019, https://ec.europa.eu/futurium/en/ethics-guidelines-trustworthy-ai/stakeholder-consultation-guidelines-first-draft.html#Top (accessed: 20.10.2023).

Fast E., Horvitz E., *Long-Term Trends in the Public Perception of Artificial Intelligence*, Proceedings of the AAAI Conference on Artificial Intelligence, 31 [1] (2017), https://doi.org/10.1609/aaai.v31i1.10635.

FitzMaurice S., *The Materiality of the Telegraph Revolution: A Visual Interview with Sophie FitzMaurice*, UC Berkeley Social Science Matrix, September 22, 2022, https://matrix.berkeley.edu/research-article/the-materiality-of-the-telegraph-revolution-a-visual-interview-with-sophie-fitzmaurice/ (accessed: 25.10.2023).

Forman A.S., Glasser N.M., Madia R.D., "New York City's Automated Employment Decision Tools Law Enforcement Postponed Until April 15, 2023," *National Law Review* 8 [298] (2022), https://www.natlawreview.com/article/new-york-city-s-automated-employment-decision-tools-law-enforcement-postponed-until (accessed: 25.10.2023).

Fox Cahn A., "The first effort to regulate AI was a spectacular failure," *Fast Company*, November 26, 2019, https://www.fastcompany.com/90436012/the-first-effort-to-regulate-ai-was-a-spectacular-failure (accessed: 23.10.2023).

Gartner, *Gartner Says Digital Ethics is at the Peak of Inflated Expectations in the 2021 Gartner Hype Cycle for Privacy*, September 30, 2021, https://www.gartner.com/en/newsroom/press-releases/2021-09-30-gartner-says-digital-ethics-is-at-the-peak-of-inflate (accessed: 21.10.2023).

The Gateway, *Thinking machine myth hit by computer expert*, University of Alberta, March 2, 1966, https://archive.org/details/GAT _ 1966030201/page/n1/mode/2up?q=machine (accessed: 25.10.2023).

Gordon J.S., *A Thread across the Ocean: The Heroic Story of the Transatlantic Cable*, New York, Walker & Co. 2002.

Green G., "Five ways AI is saving wildlife — from counting chimps to locating whales. The Age of Extinction — Artificial Intelligence," *Guardian UK*, February 21, 2022, https://www.theguardian.com/environment/2022/feb/21/five-ways-ai-is-saving-wildlife-from-counting-chimps-to-locating-whales-aoe (accessed: 24.10.2023).

Hagendorff T., "Blind spots in AI ethics," *AI and Ethics*, 2 (4) (2022), pp. 851–867. https://doi.org/10.1007/s43681-021-00122-8.

Hagendorff T., "The ethics of AI ethics: An evaluation of guidelines," *Minds and Machines*, 30 [1] (2020), pp. 99–120, https://doi.org/10.1007/s11023-020-09517-8.

Haidt J., "YES, SOCIAL MEDIA REALLY IS UNDERMINING DEMOCRACY Despite what Meta has to say", *The Atlantic*, July 2022.

Halacy D.S. Jr., *Computers — The Machines We Think With* (Revised Edition), New York: Harper 1969.

Hedge F.H., *The national weakness: a discourse delivered in the First Church, Brookline, on Fast day, Sept. 26, 1861*, Leopold Classic Library 2017.

Höne K., "An Algorithm for Peace? AI in International Peace Mediation," Israel Public Policy Institute. Digital Transformation, Diplomacy & International Politics, 2022, https://www.ippi.org.il/an-algorithm-for-peace-ai-in-international-peace-mediation/ (accessed: 25.10.2023).

House of Representatives, *Hearings before the Subcommittees of the Committee on Appropriations: Second Supplemental Appropriation Bill for 1951*, Washington: US Government Printing Office 1951, https://www.google.fr/books/edition/Hearings/m11Ga3g7o-gC?hl=en&gbpv=1&dq=%22thinking+machine%22&pg=RA5-PA193&printsec=frontcover (accessed: 20.10.2023).

Howson K., Johnston H., Cole M., Ferrari F., Ustek-Spilda F., Graham M., *Unpaid labour and territorial extraction in digital value networks*, Global Networks 2022.

Hughes A., "A Woman's New York," *Reading Eagle*, January 8, 1966, https://books.google.fr/books?id=3gUrAAAAIBAJ&pg=PA5&dq=artificial+intelligence&article _ id=2048,3629321&hl=en&sa=X&ved=2ahUKEwjkn5KnvJP2AhXSy4UKHfhlD

b0Q6AF6BAgEEAI#v=onepage&q=artificial%20intelligence&f=false (accessed: 25.10.2023).

Jepsen T.C., *My Sisters Telegraphic: Women in the Telegraph Office*, 1846–1950, Athens, Ohio: Ohio UP 2000.

King D., Lichtenstein J., "Climate repair: three things we must do now to stabilize the planet," University of Cambridge, August 17, 2021, https://climatechampions.unfccc.int/climate-repair-three-things-we-must-do-now-to-stabilise-the-planet/ (accessed: 29.08.2023).

Knight H., "Want some Advice? Ask the Computer," *Deseret News*, September 14th, 1966, p. 19, https://books.google.fr/books?id=J9BSAAAAIBAJ&pg=PA10&dq=minsky-+%22artificial+intelligence%22&article _ id=3696,3135320&hl=en&sa=X&ved=2 ahUKEwiquuqknZv2AhVEx4UKHQc2DpMQ6AF6BAgHEAI#v=onepage&q=minsky%20%22artificial%20intelligence%22&f=false (accessed: 20.10.2023).

Kumon T., "The first AI conflict? Israel's Gaza operation gives glimpse of future," *Nikkei Asia*, June 28, 2021, https://asia.nikkei.com/Politics/International-relations/The-first-AI-conflict-Israel-s-Gaza-operation-gives-glimpse-of-future (accessed: 24.10.2023).

Langin K., "Fake news spreads faster than true news on Twitter — thanks to people, not bots," *Science*, March 8, 2018, https://www.science.org/content/article/fake-news-spreads-faster-true-news-twitter-thanks-people-not-bots (accessed: 23.10.2023).

Lauer D., "Facebook's ethical failures are not accidental; they are part of the business model," *AI and Ethics* 1 [4] (2021), pp. 395–403, https://doi.org/10.1007/s43681-021-00068-x.

Lew B., Cater B., "The telegraph, co-ordination of tramp shipping, and growth in world trade, 1870–1910," *European Review of Economic History* 10 [2] (2006), pp. 147–173, https://doi.org/10.1017/S1361491606001663.

Lewis C.I., *Essays on the Foundation of Ethics*, J. Lange (ed.), Albany: SUNY Press 2017.

Lin C., Ma C., Sun Y., Xu Y., "The telegraph and modern banking development, 1881–1936," *Journal of Financial Economics* 141 [2] (2021), pp. 730–749, https://doi.org/10.1016/j.jfineco.2021.04.011.

Littman M.L, Ajunwa I., Berger G., Boutilier C., Currie M., Doshi-Velez F., Hadfield G., Horowitz M., Isbell C., Kitano H., Levy K., Lyons T., Mitchell M., Shah J., Sloman S., Valor S., Walsh T., *Gathering Strength, Gathering Storms: The One Hundred Year Study on Artificial Intelligence, (AI100) 2021 Study Panel Report*, Stanford University, Stanford, CA, September 2021, http://ai100.stanford.edu/2021-report (accessed: 22.10.2023).

Lockey S., Gillespie N., Curtis C., *Trust in Artificial Intelligence: Australian Insights*, The University of Queensland and KPMG Australia, 2020, https://doi.org/10.14264/b32f129.

Marks G., "Yes, you should monitor your remote workers — but not because you don't trust them," *Guardian UK*, September 25, 2022, https://www.theguardian.com/business/2022/sep/25/monitor-workers-at-home-security-cybercrime (accessed: 20.10.2023).

McKinsey Global Survey on artificial intelligence, *The state of AI in 2020*, November 17, 2020, https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/global-survey-the-state-of-ai-in-2020 (accessed: 22.10.2023).

Molè M., *Just more surveillance? Rethinking the 'pressing social need' for AI surveillance under the ECHR*, Cooperante, University of Lodz 2023, https://cooperante.uni.lodz.pl/2023/02/14/%EF%BB%BFjust-more-surveillance-rethinking-the-pressing-social-need-for-ai-surveillance-under-the-echr/ (accessed: 25.10.2023).

Morus I.R., "Back To The Victorian Future," *Noema*, January 25, 2022, https://www.noemamag.com/back-to-the-victorian-future/(accessed: 24.10.2023).

Niyazov S., *AI-powered Monopolies and the New World Order*, Towards Data Science, 2019, https://towardsdatascience.com/ai-powered-monopolies-and-the-new-world-order-1c56cfc76e7d#:~:text=THE%20RISE%20OF%20CORPORATE%20POWER&text=These%20companies%20include%20so-called,,%20Tencent),%20or%20BAT (accessed: 18.10.2023).

Orgerie A.C., *Consommation énergétique et impacts environnementaux des systèmes distribués*, Colloquium, LORIA, Université de Lorraine, March 2, 2023.

Pagano T.P., Loureiro R.B., Lisboa F.V.N., Peixoto R.M., Guimarães G.A.S., Cruz G.O.R., Araujo M.M., Santos L.L., Cruz M.A.S., Oliveira E.L.S., Winkler I., Nascimento E.G.S., "Bias and Unfairness in Machine Learning Models: A Systematic Review on Datasets, Tools, Fairness Metrics, and Identification and Mitigation Methods," *Big Data and Cognitive Computing*, 7 [1] (2023), https://doi.org/10.3390/bdcc7010015.

Pew Research Center, *Experts Doubt Ethical AI Design Will Be Broadly Adopted as the Norm in the Next Decade*, June 16, 2021.

Public Opinion, *A Comprehensive Survey of the Press Throughout the World on all Important Current Topics*, 10, London, July-December 1866, https://www.google.fr/books/edition/Public _ Opinion/34ir2y8OqG8C?hl=en&gbpv=1&dq=telegraph+and+the+poor&pg=PA119&printsec=frontcover (accessed: 24.10.2023).

Putnis P., "New Technology, the 'control crisis,' and government intervention: Lessons from Telegraphy in the 1870s," [in:] *Record of the Communications Policy & Research Forum*, Metwork Insight Institute 2008.

Rahimi M., Moosavi S.M., Smit B., Hatton T.A., "Toward smart carbon capture with machine learning," *Cell reports physical science* 2 [4] (2021), https://doi.org/10.1016/j.xcrp.2021.100396.

Rao A.S., Gerard V., *Sizing the prize: What's the real value of AI for your business and how can you capitalise?*, PwC's Global Artificial Intelligence Study, 2017, https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html (accessed: 24.10.2023).

Rogers H., "Thoughts Suggested by the Failure of the Atlantic Telegraph," *Good Words*, London, 6, (Nov 1865), pp. 835–840.

Russell W., "Boost for Scots computer industry," *Glasgow Herald*, May 1 1986.

Sætra H.S., Danaher J., "To Each Technology Its Own Ethics: The Problem of Ethical Proliferation," *Philos. Technol* 35 [93] (2022), https://doi.org/10.1007/s13347-022-00591-7.

Sample I., "ChatGPT: what can the extraordinary artificial intelligence chatbot do?," *Guardian UK*, January 13, 2023, https://www.theguardian.com/technology/2023/jan/13/chatgpt-explainer-what-can-artificial-intelligence-chatbot-do-ai (accessed: 23.10.2023).

Saran C., "Stanford University finds that AI is outpacing Moore's Law", *Computer Weekly* December 12, 2019, https://www.computerweekly.com/news/252475371/Stanford-University-finds-that-AI-is-outpacing-Moores-Law (accessed: 25.10.2023).

Sauer G., *The Telegraph in Europe*: *A Complete Statement of the Rise and Progress of Telegraphy in Europe, showing the cost of construction and working expenses of telegraphic communications in the principal countries, etc. etc.*, Paris 1869.

Schiff D., Borenstein J., Biddle J., Laas K., "AI Ethics in the Public, Private, and NGO Sectors: A Review of a Global Document Collection," *IEEE Transactions on Technology and Society*, 2 [1] (2021), pp. 31–42, https://doi.org/10.1109/TTS.2021.3052127.

Singler B., "Blessed by the algorithm: Theistic conceptions of artificial intelligence in online discourse," *AI & Society*, 1 [11] (April 30, 2020), https://doi.org/10.1007/s00146-020-00968-2.

Snow C.P., *The Two Cultures*, intr. S. Collini, Cambridge: Cambridge UP 1993 [1959].

Strubell E., Ganesh A., McCallum A., *Energy and Policy Considerations for Deep Learning in NLP*, Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics, Association for Computational Linguistics, Florence, Italy, 2019, pp. 3645–3650, 10.18653/v1/P19-1355.

Supp-Montgomerie J., *When the Medium Was the Mission: The Atlantic Telegraph and the Religious Origins of Network Culture*, New York: NY University Press 2021.

Tucker P., "AI Is Already Learning from Russia's War in Ukraine, DOD Says," *Defense One*, April 21, 2022, https://www.defenseone.com/technology/2022/04/ai-already-learning-russias-war-ukraine-dod-says/365978/ (accessed: 25.10.2023).

Turner Lee N., Resnick P., Barton G., *Algorithmic bias detection and mitigation: Best practices and policies to reduce consumer harms*, Brookings 2019, https://www.brookings.edu/research/algorithmic-bias-detection-and-mitigation-best-practices-and-policies-to-reduce-consumer-harms/ (accessed: 23.10.2023).

Thoreau H.D., *Walden: or, Life in the Woods*, Boston: Ticknor and Fields 1854.

Toews R., "These Are The Startups Applying AI To Tackle Climate Change," *Forbes*, June 20, 2021, https://www.forbes.com/sites/robtoews/2021/06/20/these-are-the-startups-applying-ai-to-tackle-climate-change/?sh=6874a4e27b26 (accessed: 25.10.2023).

US Department of State, *Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy*, 2023, https://www.state.gov/political-declaration-on-responsible-military-use-of-artificial-intelligence-and-autonomy/ (accessed: 20.10.2023).

Van Den Eede Y., *The beauty of detours: A Batesonian philosophy of technology*, New York: State University of New York Press 2019.

Wache B., *Information Frictions, Global Capital Markets, and the Telegraph*, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2021: Climate Economics, Kiel, Hamburg: ZBW – Leibniz Information Centre for Economics 2021.

Ward O., *A Labor Catechism of Political Economy: A Study for the People Comprising the Principal Arguments for and Against the Prominent Declarations of the Industrial Party, requiring that the State Assume Control of Industries*, Self-Published 1877–1892, Washington 1878.

Waterlow S.S., "Fire and Police Telegraph," *Journal of the Society of Arts* 6 [266] (London, December 25, 1857), https://www.jstor.org/stable/41334442?x=-768.0821596244132&y=-356.78122198225395&w=1527.0821596244132&h=1441.7812219822538&index=0&seq=5 (accessed: 24.10.2023).

Weissman J., "ChatGPT Is a Plague Upon Education," *Inside Higher Ed.com*, February 9, 2023, https://www.insidehighered.com/views/2023/02/09/chatgpt-plague-up-on-education-opinion (accessed: 8.03.2023).

Western Union Telegraph Company, *Statement: The proposed union of the telegraph and postal systems*, Statement of the Western Union Telegraph Company, Welch, Bigelow, Cambridge MA 1869.

"Which countries have banned TikTok, and why?," *EuroNews*, March 13, 2023, https://www.euronews.com/next/2023/03/13/which-countries-have-banned-tiktok-cybersecurity-data-privacy-espionage-fears (accessed: 25.10.2023).

Wiener N., *Cybernetics: or Control and Communication of the Animal and the Machine*, Cambridge MA: MIT Press 1961 [1948].

Wilson B., *Heyday: the 1850s and the dawn of the global age*, New York: Basic Books 1980.

Wilson G., *The Progress of the Telegraph. Being the Introductory Lecture on Technology for 1858–9*, London: Macmillan 1859.

Winston B., *Media Technology and Society, a History: From the Telegraph to the Internet*, London: Routledge 1998.

Zhang D., Maslej N., Brynjolfsson E. Etchemendy J., Lyons T., Manyika J., Ngo H., Niebles J.C., Sellitto M., Sakhaee E., Shoham Y., Clark J., Perrault R., *The AI Index 2022 Annual Report*, AI Index Steering Committee, Stanford Institute for Human-Centered AI, Stanford University, 2022, https://aiindex.stanford.edu/wp-content/uploads/2022/03/2022-AI-Index-Report _ Master.pdf (accessed: 20.10.2023).